DEPARTMENT OF DEFENSE APPROPRIATIONS FOR 1970

2466-

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS HOUSE OF REPRESENTATIVES

NINETY-FIRST CONGRESS

FIRST SESSION

SUBCOMMITTEE ON DEPARTMENT OF DEFENSE

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[1] Temporarily assigned.

H.R. 15090

PART 3

PROCUREMENT

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DEPARTMENT OF DEFENSE APPROPRIATIONS FOR FISCAL YEAR 1970

MONDAY, MAY 5, 1969.

QUIET AIRCRAFT

PRIOR APPROVAL REPROGRAMING ACTIONS

WITNESSES

ARMY

BRIG. GEN. T. W. MELLEN, OFFICE, CHIEF RESEARCH AND DEVELOPMENT
COL. R. A. HISCOX, ASSISTANT DIRECTOR OF ARMY BUDGET, OFFICE, COMPTROLLER OF THE ARMY
JERRY NOWAK, U.S. ARMY AVIATION MATERIEL COMMAND
RAYMOND HOGAN, U.S. ARMY AVIATION MATERIEL COMMAND

NAVY

REAR ADM. W. D. HOUSER, NAVAL OPERATIONS, OFFICE OF THE CHIEF
MAJ. GEN. K. B. McCUTCHEON, NAVAL OPERATIONS, OFFICE OF THE CHIEF

AIR FORCE

MAJ. GEN. W. G. MOORE, DIRECTOR, OPERATION REQUIREMENTS AND DEVELOPMENT PLANS, DCS/RESEARCH AND DEVELOPMENT, U.S. AIR FORCE

Mr. MAHON. The committee will come to order.

Gentlemen, we welcome you in the committee room this morning.

QUIET AIRCRAFT PROGRAM

Before we begin the consideration of Procurement of Equipment and Missiles, Army, for fiscal year 1970, the committee would like to discuss with Army, Navy and Air Force witnesses certain fiscal year 1969 prior approval reprograming actions which involve the quiet aircraft program, and specifically the YO–3A, a new surveillance aircraft.

As I understand, you have been forewarned that we will discuss this matter at this time.

BACKGROUND OF QUIET AIRCRAFT PROGRAM

Before proceeding, I would like to briefly review with you the background of this program as previously furnished to the committee by various Department of Defense officials.

The committee understands that development of this aircraft was begun in about 1966 by the Advanced Research Projects Agency (ARPA). The YO–3A aircraft essentially is a modified Schweizer sailplane with a muffled engine and other quieting features. Two "quick fix" aircraft were successfully tested in South Vietnam in early 1968 as a triservice effort.

In May of 1968, D.D.R. & E. designated the Army as executive agent to procure all YO–3A aircraft for the three military departments. Triservice configuration conferences were held in mid-1968 to agree on one aircraft design. While all three services agreed generally on the configuration of the aircraft, there was no general agreement on the sensor package. The Air Force therefore initiated design of a separate sensor package.

The Army initiated an R.D.T. & E. effort to develop the aircraft based upon the agreed triservice configuration.

The Air Force, some time in 1968, began pursuing another quiet aircraft configuration, the Wren 460–QB, which is a modified commercial Cessna 182 aircraft. In November 1968, the Air Force advised the Army it did not plan to exercise its previous procurement option of 28 YO–3A aircraft, primarily because the Air Force sensor package was too large for the YO–3A.

As the situation stands now, the Army, Navy, and Marine Corps have agreed on the YO–3A aircraft and its sensor package, and the Air Force is planning to buy the Wren 460 aircraft, with a different sensor package.

Have I summarized the situation, correctly, or would you challenge any of these statements?

General MELLEN. Not as far as the Army, Mr. Chairman.

Mr. MAHON. Is this correct with respect to the Navy's position?

Admiral HOUSER. Yes, sir.

Mr. MAHON. The Air Force position?

General MOORE. For the Air Force, on the comment concerning we are going to procure the Wren aircraft—the Air Force does not know that it will be the Wren aircraft. We are going competitive to a number of contractors, and which contractor will provide the aircraft will have to be decided by the competition.

ARMY PROCUREMENT PLANS

Mr. MAHON. The Army proposes to buy 11 R.D.T. & E. models of the YO–3A aircraft for testing in South Vietnam. The committee has been advised that Lockheed has a cost-plus-incentive-fee contract, the incentives being delivery schedule and quietness of the aircraft. How much does the contractor stand to lose in failing to meet the delivery schedule, and how much will he gain by exceeding the quietness incentive? Who can answer this?

General MELLEN. I may have to get some help, Mr. Chairman.

He will not gain anything with respect to meeting the schedule, nor are there any penalties with respect to the schedule. He has not met the schedule to date, so the incentive for performance no longer pertains.

If I may ask, if I can get a dollar amount for the acoustic performance, do you know?

Mr. NOWAK. The total dollar figure of the reward or incentive is $59,500.

Mr. MAHON. He loses nothing because of the failure to keep the schedule?

General MELLEN. That is correct, sir.

COST OF ARMY DEVELOPMENT PROGRAM

Mr. MAHON. What was the original estimated cost of this development, and how much was funded in fiscal year 1968 for the program?

General MELLEN. $3.4 million of fiscal year 1968 funds were used for the YO-3A program. The original dollar estimate was $10.2 million.

Mr. MAHON. How much has the Army obligated thus far on the development of these 11 aircraft?

General MELLEN. $10.2 million.

Mr. MAHON. Will the funds obligated thus far pay Lockheed for its work to date as well as the work completed by Lockheed's subcontractors?

General MELLEN. To date it will, sir. However, I must state that in the last 3 days there are indications this will not pay for the total R. & D. and testing of the 11 aircraft to include the sensor.

We do not know exactly what the additional costs will be. The subcontractor, Electro Optics System, in Los Angeles, over the weekend has informed the prime contractor, Lockheed, that additional funds will be required to complete the sensor, and that additionally they are proposing deviation to the specifications for the sensor package we have asked for.

At this time I do not know and the Army does not know what these deviations are, whether we can accept them or how significant they are.

FAILURE TO MEET CONTRACT SPECIFICATIONS

Mr. MAHON. In what areas has the contractor failed to meet contract specifications, and what portion of the cost overruns can be attributed to contractor-design errors?

General MELLEN. He failed to meet specifications—may I use a slide, sir?

Mr. MAHON. Surely.

General MELLEN. (Slide.) This compares the original specifications with what we know the aircraft is today. The first column pertains to the characteristics that we have asked for. Based on our knowledge of the first aircraft and very preliminary testings that are now underway, items in the current column are as we see it now.

The minus indicates where the contractor has not met our desired specifications. The plus indicates where he has met or exceeded its characteristics.

The principal one of significance is in the weight, which in turn has an impact on the performance, duration, takeoff distance.

Mr. MAHON. It is difficult to read that chart. What does that chart show to be the chief deficiencies?

General MELLEN. The weight, sir.

Mr. MAHON. What are the weight figures?

General MELLEN. He will be about 160-odd pounds over what we desire at the present time.

Mr. MAHON. Is that the one you regard as the most significant?

General MELLEN. Yes, sir; because that also impacts on endurance. We desired ——— hours. We know it will be less than ——— hours, probably ——— somewhere in that neighborhood.

It also impacts on the runway requirements for takeoff. The heavier the aircraft, the longer the runway required. We asked for ——— and we know it will be more than that. How far more, we do not know.

Mr. LIPSCOMB. Mr. Chairman, could we have that chart inserted in our record?

Mr. MAHON. Insert the chart in the record.

General MELLEN. Very well, sir.

(The chart was provided to the committee and is classified.)

QUIET AIRCRAFT COST OVERRUNS

Mr. MAHON. How much of your cost overruns are attributed to the airframe, to the sensor package, and to the Government-furnished avionics package?

General MELLEN. I cannot give you specific in percentages or dollars, sir.

The sensor is $2.2 million. There is $600,000 involved in the R. & D., the design work, which is attributable to the prime contractor of the airframe.

Mr. MAHON. This chart indicates your costs increased from $10.2 million to $18.7 million.

General MELLEN. Yes, sir. There are some reasons for that. One, we have provided for more deliberate testing and proving of the components and the aircraft itself than originally intended.

We also had to provide for the training of the crews in the continental United States rather than Vietnam as originally planned. We did not originally intend to have a technical data package at all. We found it was necessary in order to support the evaluation in Vietnam.

In addition, these costs include the costs for the 6-months evaluation in terms of logistic support.

Mr. MAHON. Why were these requirements changed? How do you explain the modification? Whose determination was it?

General MELLEN. It was the Army's choice to do this after the contract and the development were underway. It was in response partly to direct requests by the command in Vietnam, and it was partly from our own judgment that in the case of the technical data package we would have to accommodate this if we were to support the 11 aircraft during evaluation.

In the case of the sensor itself, the initial design was not satisfactory. It was too large. It would create too much of an air disturbance. It had to be completely redesigned.

Mr. MAHON. Would the sensor package affect the Navy program, also?

General MELLEN. The Navy intends to use the same sensor package, sir.

Mr. MAHON. Sometimes you get the feeling it is hardly worthwhile to listen to original estimates with respect to the cost of military

equipment, because our experience has demonstrated they are so unreliable and so untrustworthy. This table will appear in the record.

(The table follows:)

YO-3A PROBLEM AREAS

[Dollars in millions]

Cost overruns	Approved funding	Required funding
Nonrecurring development	4.408	5.000
Aircraft	2.585	3.300
Logistics (6 months)	.526	.500
Sensors	2.700	4.900
GFE		.300
Training		.185
Technical data		2.000
Program slippage		1.500
Field modifications		.500
Qualifications test contingencies		.550
	10.219	18.735
Unfunded fiscal year 1969 requirement		8.516
OSD approved emergency fiscal year 1969 funds		2.150
Fiscal year 1969 R.D.T. & E. unfunded requirement		6.366

ACCURACY OF COST OVERRUN ESTIMATES

Mr. LIPSCOMB. Mr. Chairman, before we leave that chart, may I ask a question?

Is this chart completely out of date now inasmuch as within the last 3 days you have been informed of a change in R.D.T. & E. funding or requirements?

General MELLEN. It is not entirely out of date, sir. The funding for the sensor line is perhaps no longer accurate. What it would be, I do not know. The total would be different at the bottom, also.

For example, the Electro Optics System Corp. has quoted to Lockheed a requirement for $1.2 million over and above anything reflected here.

Mr. LIPSCOMB. This chart is only accurate up to what date?

General MELLEN. I would say up until last Friday, sir. I am giving you information that we have received by conversation and by telephone. I visited the plant and looked at the aircraft on Thursday. What the $1.2 million is for specifically, I do not know. Whether it is acceptable in light of the deviations to the sensor package specifications, I do not know, either.

Mr. LIPSCOMB. When would you anticipate that you could correctly inform the committee what the situation is?

General MELLEN. I would hope within a 7- to 10-day period. By the end of the week, I would say, Mr. Lipscomb.

Mr. LIPSCOMB. Thank you, Mr. Chairman.

RESPONSIBILITY OF CONTRACTOR FOR DESIGN ERRORS

Mr. MAHON. Is it possible for the Army to insist that the contractor pay for his design errors?

General MELLEN. May I ask the contracting officer.

Mr. HOGAN. No, sir. This is a cost-plus-incentive-fee-type contract. The design type of sensor package that he proposed was approved by the Army. He did make it. Then in testing or use, it proved unsatisfactory. So, in a sense, he made what we approved his making, and we authorized him to go off and design something else.

OVERWEIGHT CONDITION OF AIRCRAFT

Mr. MAHON. Army officials have previously advised the committee the aircraft has exceeded or met the specifications except for gross weight, takeoff distance, and rate of climb. What do you plan to do about the overweight condition of the aircraft?

General MELLEN. There are several possibilities in that regard, Mr. Chairman. For example, as the 11 aircraft are being assembled, weight savings are being incorporated. No. 5 and No. 6 are going to weigh less than No. 3 and No. 4. There are modifications to the canopy which would save a sizable amount in weight, 10-plus pounds. This must be weighed against the costs involved and the time involved to do it. It may well be when the Army tests the aircraft at the end of this month, the weight growth will not be so detrimental that we have to embark on a fix program.

STATUS OF SENSOR PACKAGE DEVELOPMENT

Mr. MAHON. What is the status of development of the sensor package which is contractor-furnished equipment? You may supply that for the record.

(The information follows:)

First sensor delivery to Lockheed was made on April 21, 1969. The item did not pass acceptance testing; and, after functional and mounting tests, it will be returned to the subcontractor, electro optical systems, for correction of deficiencies. Next sensor delivery will be May 21. All sensor deliveries are scheduled to be completed by August 15. Initial Government flight evaluations of the YO-3A sensor are scheduled to begin June 2, 1969.

Mr. MAHON. Will this sensor package include a ———.

General MELLEN. On ——— of the aircraft, Mr. Chairman.

Mr. MAHON. The Navy has agreed to use the sensor package being developed. Has the Navy contributed funds toward the development of the sensor package?

Admiral HOUSER. No, sir. The Army has supplied the funds.

Mr. MAHON. Has the Navy or Air Force contributed any R.D.T. & E. funds toward development of the aircraft?

Admiral HOUSER. No, sir.

NAVY PROCUREMENT

Mr. MAHON. Why is it that the Navy plans to reprogram money to buy 12 of the exact same aircraft with procurement funds while the Army is utilizing R.D.T. & E. funds to buy 11?

Admiral HOUSER. We were informed that this was a procurement action and could not be handled with R.D.T. & E. funds. The Army was developing the airplane and we were procuring it. Therefore, we would have to reprogram procurement funds and not R. & D. funds for this purpose, sir.

SERVICEWIDE REQUIREMENT

Mr. MAHON. What is the total future Army and Navy requirement for this aircraft?

General MELLEN. Right now, it stands at 11, sir. As part of the preliminary evaluation that you described in your earlier remarks, one of the recommendations was that the Army should determine what

the worldwide application of this aircraft might be and determine how many it would need and in what role it would be used.

Mr. MAHON. It might be changed later, but 11 is the figure now. What about the Navy?

Admiral HOUSER. The same thing, sir. We do not know of future requirements.

Mr. MAHON. What about the Air Force?

General MOORE. Sir, our initial procurement of the Air Force aircraft is 28. That is what we have requested in our reprograming action which is over here for your consideration.

Mr. MAHON. How firm is that figure?

General MOORE. I think there is a good possibility that we will require additional aircraft. We would hope when we got to contract to have an option in the contract to procure additional aircraft. This has not been decided.

UNIT COST BY SERVICE

Mr. MAHON. What will be the total unit cost of this aircraft to the Navy, and how does this compare with the unit cost to the Army? You may put that in the record.

Admiral HOUSER. All right, sir.

(The information follows:)

Based on the latest available information from the prime contractor, dated April 20, 1969, and reflecting a cost increase in the installed sensor system, the unit cost for the proposed Navy buy of 12 aircraft would be $1.12 million. This cost is subject to modification based on changes in the Army program.

Total unit cost of the Army aircraft, including nonrecurring expenses, logistics, training of personnel, and sensors, is $1,703,000.

Mr. MAHON. How many of the 12 Navy craft would be for the Marine Corps?

Admiral HOUSER. Eight sir.

ARMY REPROGRAMING ACTION FY 69-92

Mr. MAHON. According to Army reprograming action FY 69-92, $2.150 million was obtained from the fiscal year 1969 Emergency fund, Defense, and $6.366 million was obtained primarily from recovery of fiscal year 1967 and prior year funds that have become available through deobligations.

How far will this $8.5 million go toward completion of the 11 R.D.T. & E. aircraft and their deployment and operation in Southeast Asia.

General MELLEN. I think I addressed that problem earlier, Mr. Chairman. I think it will basically complete the aircraft. The problem is with the sensor.

Mr. MAHON. It was first thought this aircraft would be ———.

General MELLEN. ———.

ARMY REPROGRAMING ACTIONS FY 69-11 AND FY 69-88

Mr. MAHON. Let me draw your attention to two previous Army reprograming actions bearing on this matter. Army reprograming action FY 69-11 added $6.3 million to an existing $640,000 new surveil-

lance aircraft program. This was for initiation of the YO–3A program, and it provided a revised program of $6.7 million.

Reprograming action FY 69–88 added ——— million to this program for the procurement of ——— R. & D. test bed aircraft for an Army ——— mission. This provided a revised program of ——— million.

The reprograming action we have just been discussing would add another $8.5 million.

In late March 1969, Army officials advised the committee that a total of $18.7 million would be required to complete the entire YO–3A aircraft program through fiscal years 1969, including 6 months' operation in Southeast Asia.

It would appear, therefore, that the Army has used all but ——— million of the ——— million reprogramed for ——— mission aircraft. What has happened to the ——— requirement, and are they also to be YO–3A aircraft? How much has been obligated to date for the ——— mission aircraft?

REPROGRAMING ACTION FY 69–88 FOR OTHER AIRCRAFT

General MELLEN. ———. Its intent and purpose are to determine how these aircraft should be configured and how they should be employed. At the present time there is a variety, some five different aircraft, ———. We would hope to reduce that number. We could combine the type missions into one aircraft and, based on what we find out from these ——— R. & D. test beds, we would then develop and determine the program.

We have asked in 1969 for ——— million of OSD emergency funds to get this program started. In 1970, we have a need for ——— million. This will be contained in the Army's appropriations request. This would make a total of ——— million for the ——— aircraft R. & D. program.

That includes procurement of the aircraft based on the competition as well as the procurement and test and development of the electronic equipment to be tested.

Mr. MAHON. Have you used any of the ——— million for the YO–3A?

General MELLEN. No, sir.

NAVY REPROGRAMING ACTION FY 69–5

Mr. MAHON. Navy reprograming FY 69–5 added ——— million to the R. D. T. & E. aircraft and related equipment program for a ——— which is item No. 2 in the reprograming document which is before the committee. Is this related to the quiet aircraft program? If so, how much has been spent to date in this effort?

General MCCUTCHEON. That money, Mr. Chairman, is for a ——— system to go in a squadron of our A–4 aircraft. Pending evaluation on that, which is a year or so off, we may be able to use part of that system in a quiet airplane.

At this stage of the game, none of it is identified for the YO–3A.

NAVY REPROGRAMING ACTION FY 69–1

Mr. MAHON. The Navy exhibit P–1 for fiscal 1970 indicates that $6.1 million was funded in fiscal year 1969 for 12 YO–3A aircraft. This entry in the P–1 relates to Navy prior approval reprograming action FY 69–1, which was denied by this committee when it was established that $6.1 million would be insufficient for this purpose because the amount was dependent upon Air Force participation in the program and, in addition, spares and repair parts were not included.

What is now the status of this Navy reprograming?

Admiral HOUSER. Mr. Chairman, our Navy reprograming is not ready at this time. We still have a requirement for the quiet aircraft. It still stands. However, we are uncertain as to the price increases. As we were preparing our reprograming document for your consideration this morning, we were informed of an additional price increase over the $12.2 million which we thought it would be. This figure includes spares.

We are watching this price increase closely. We are going back to the contractor to see what can be done to reduce the cost, hopefully to stop the escalation of the costs.

We do not have a reprograming document for you this morning.

AIR FORCE QUIET AIRCRAFT

Mr. MAHON. The committee understands that since the fiscal year 1969 supplemental hearings, the Air Force sought competition from a number of aircraft companies on its OX–1 quiet aircraft program. What was the result of this competition and where does the Air Force stand at the moment on its quiet aircraft program?

General MOORE. Sir, we have prepared the paperwork necessary to go out with our requests for proposals to industry. However, before we can send this request out, we must have approval from Congress for our reprograming action.

This reprograming action is in your hands now for action, sir. As soon as we get that, we propose to go out with our request for proposals.

Mr. MAHON. Do you have approval from the authorizing committees of the House and Senate, or do you know?

General MOORE. I believe we do have, sir, from Mr. Rivers' committee.

MODIFICATION OF BULLPUP MISSILE

General MCCUTCHEON. Mr. Chairman, I would like to amplify my previous remark just a little further in regard to the money you asked about in 1969 for the LDTS program. This specifically is for the element of the program that will modify the Bullpup missile to the Bulldog, using a ——— system, but it is all within the overall program elements related to the A–4.

Mr. MAHON. Those of you who came this morning to appear in connection with the quiet aircraft program will be excused now, and we will proceed with the Procurement of equipment and missiles, Army, hearings.

Thank you, gentlemen.

MONDAY, MAY 5, 1969.

PROCUREMENT OF EQUIPMENT AND MISSILES, ARMY

WITNESSES

MAJ. GEN. H. A. MILEY, JR., ASSISTANT DEPUTY CHIEF OF STAFF FOR LOGISTICS (PROGRAMS AND BUDGET)
MAJ. GEN. L. B. TAYLOR, DIRECTOR OF ARMY BUDGET, OFFICE, COMPTROLLER OF THE ARMY
MAJ. GEN. J. L. KLINGENHAGEN, SYSTEM MANAGER, ADVANCED AERIAL FIRE SUPPORT SYSTEM OFFICE
BRIG. GEN. D. P. BOLTON, DEPUTY DIRECTOR, OFFICE, DEPUTY CHIEF OF STAFF FOR MILITARY OPERATIONS
BRIG. GEN. F. KORNET, JR., DIRECTOR OF AMMUNITION, OFFICE, ASSISTANT DEPUTY CHIEF OF STAFF FOR LOGISTICS (PROGRAMS AND BUDGET)
BRIG. GEN. C. J. LeVAN, DIRECTOR OF AIR DEFENSE, OFFICE, ASSISTANT CHIEF OF STAFF FOR FORCE DEVELOPMENT
COL. P. J. COLE, SPECIAL ASSISTANT FOR LOGISTICS SUPPORT OF COMMUNICATIONS AND ELECTRONICS, OFFICE, DEPUTY CHIEF OF STAFF FOR LOGISTICS
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COL. R. A. HISCOX, ASSISTANT DIRECTOR OF ARMY BUDGET, OFFICE, COMPTROLLER OF THE ARMY
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LT. COL. L. A. BROOKS, ASSISTANT FOR BUDGET AND CONGRESSIONAL COORDINATION, OFFICE, ASSISTANT DEPUTY CHIEF OF STAFF FOR LOGISTICS (PROGRAMS AND BUDGET)
LT. COL. G. PETRENKO, OFFICE, ASSISTANT CHIEF OF STAFF FOR FORCE DEVELOPMENT
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L. MOORE, OFFICE, COMPTROLLER OF THE ARMY
DOUGLAS C. SINCLAIR, DEPUTY (COMPTROLLER), OFFICE OF THE ASSISTANT TO THE SECRETARY OF DEFENSE (LEGISLATIVE AFFAIRS)

DEPARTMENT OF THE ARMY

PROCUREMENT OF EQUIPMENT AND MISSILES, ARMY

PROGRAM AND FINANCING (in thousands of dollars)

	Budget plan (amounts for procurement actions programed)			Obligations		
	1968 actual	1969 estimate	1970 estimate	1968 actual	1969 estimate	1970 estimate
Program by activities:						
Direct:						
1. Aircraft	976,951	647,100	714,100	880,111	626,000	655,400
2. Aircraft spares and repair parts	304,778	195,400	227,400	287,937	177,000	222,800
3. Missiles	460,037	852,500	915,960	506,796	829,800	925,000
4. Missile spares and repair parts	32,700	55,400	56,700	41,376	40,000	56,600
5. Tracked combat vehicles	405,930	283,600	305,800	399,383	290,000	315,000
6. Weapons and other combat vehicles	196,118	215,300	123,770	159,711	197,000	125,200
7. Tactical and support vehicles	402,365	363,850	384,102	438,453	335,000	382,100
8. Communications and electronics equipment	608,972	669,250	441,320	574,115	610,000	419,400
9. Other support equipment	339,794	398,000	312,290	449,017	355,000	303,800
10. Ammunition	2,424,086	2,962,352	1,732,158	2,165,963	2,921,000	1,907,100
11. Production-base support	279,291	219,000	345,500	338,763	145,100	236,700
Total direct	6,481,022	6,861,752	5,559,100	6,231,625	6,255,900	5,549,100
Reimbursable:						
1. Aircraft	25,269	50,000	80,000	16,680	40,000	70,000
2. Aircraft spares and repair parts	10,097	13,000	13,000	10,000	13,400	10,100
3. Missiles	41,408	125,000	60,000	72,730	115,000	60,000
4. Missile spares and repair parts	19,900	6,600	4,900	19,000	6,600	4,900
5. Tracked combat vehicles	66,488	25,000	50,000	65,230	25,000	45,000
6. Weapons and other combat vehicles	25,846	25,000	30,000	26,309	25,000	30,000
7. Tactical and support vehicles	138,949	135,000	150,000	175,790	140,000	145,000
8. Communications and electronics equipment	50,881	55,000	65,000	49,920	60,000	45,000
9. Other support equipment	42,432	40,400	47,100	50,270	40,000	45,000
10. Ammuniction	1,593,158	1,425,000	1,600,000	1,438,570	1,435,000	1,575,000
Total reimbursable	2,014,428	1,900,000	2,100,000	1,924,580	1,900,000	2,050,000
Total	8,495,450	8,761,752	7,659,100	8,156,205	8,425,900	7,599,100

DEPARTMENT OF THE ARMY

PROCUREMENT OF EQUIPMENT AND MISSILES, ARMY—Continued

PROGRAM AND FINANCING (in thousands of dollars)

	Budget plan (amounts for procurement actions programed)			Obligations		
	1968 actual	1969 estimate	1970 estimate	1968 actual	1969 estimate	1970 estimate
Financing:						
Receipts and reimbursements from:						
Federal funds	−1,963,923	−1,750,000	−2,000,000	−1,844,460	−1,750,000	−2,000,000
Trust funds	−153,066	−250,000	−200,000	−92,880	−250,000	−200,000
Non-Federal sources[1]	−4,427			−9,885		
Unobligated balance available, start of year:						
For completion of prior year budget plans				−1,934,514	−1,974,609	−2,110,461
Available to finance new budget plans	−162,074	−359,600	−90,000	−162,074	−359,600	−90,000
Reprograming from prior year budget plans	−171,560	−200,000	−250,000			
Unobligated balance transferred from other accounts		−543,752	−50,000	−46,601	−543,752	−50,000
Unobligated balance available, end of year:						
For completion of prior year budget plans				1,974,609	2,110,461	1,920,461
Available to finance subsequent year budget plans	359,600	90,000		359,600	90,000	
Budget authority	6,400,000	5,748,400	5,069,100	6,400,000	5,748,400	5,069,100
Budget authority:						
Appropriation	5,462,500	5,031,400	5,069,100	5,462,500	5,031,400	5,069,100
Transferred from other accounts	937,500			937,500		
Appropriation (adjusted)	6,400,000	5,031,400	5,069,100	6,400,000	5,031,400	5,069,100
Proposed supplemental appropriation Southeast Asia		717,000			717,000	
Relation of obligations to outlays:						
Obligations incurred, net				6,208,980	6,425,900	5,399,100
Obligated balance, start of year				4,175,989	4,543,958	4,869,858
Obligated balance, end of year				−4,543,958	−4,869,858	−4,407,058
Outlays				5,841,011	6,100,000	5,861,900

[1] Reimbursements from non-Federal sources are derived principally from cash sales to foreign governments (10 U.S.C. 2210).

DEPARTMENT OF THE ARMY

OBJECT CLASSIFICATION (in thousands of dollars)

	1968 actual	1969 estimate	1970 estimate
Direct obligations:			
Personnel compensation:			
Permanent positions	14,011		
Positions other than permanent	21		
Other personnel compensation	539		
Total personnel compensation	14,571		
Personnel benefits: Civilian	1,134		
Travel and transportation of persons	5,549		
Transportation of things	120,657	124,000	117,000
Rent, communications, and utilities	882	880	880
Printing and reproduction	8	8	8
Other services	714,628	694,000	673,000
Supplies and materials	3,797,328	4,054,972	3,218,772
Equipment	1,531,594	1,617,000	1,506,400
Lands and structures	45,320	35,000	33,000
Grants, subsidies, and contributions	44	40	40
Total, direct obligations	6,231,625	6,525,900	5,549,100
Reimbursable obligations:			
Transportation of things	38,432	38,000	41,000
Other services	109,625	114,000	123,000
Supplies and materials	1,116,995	1,102,000	1,189,000
Equipment	659,528	646,000	697,000
Total, reimbursable obligations	1,924,580	1,900,000	2,050,000
Total, obligations	8,156,205	8,425,900	7,599,100

PERSONNEL SUMMARY

Total number of permanent positions	1,452		
Full-time equivalent of other positions	6		
Average number of all employees	1,347		
Average GS grade	10.9		
Average GS salary	$11,689		
Average salary of ungraded positions	$7,600		

Mr. MAHON. We shall now consider the Procurement of equipment and missiles, Army (PEMA) budget request.

For fiscal year 1970, the Army is requesting a total of $5,069,100,000 for the PEMA account, plus authority to transfer $50 million from the defense stock fund. The total direct budget plan for fiscal year 1970 is estimated to be $5,559,100,000.

A total of $5,031,400,000 was appropriated for this purpose in fiscal year 1969. There is a supplemental pending which would add another $717 million for fiscal year 1969 and, if approved, the total amount of new budget obligational authority for the PEMA account in fiscal year 1969 would be $5,748,400,000.

In addition, $510 million was to be transferred to the fiscal year 1969 PEMA account from the stock funds.

As we proceed in our consideration of the fiscal year 1970 PEMA request, I think it best to keep in mind that about $325 million of the direct fiscal year 1970 PEMA program is for modernization and improvement of the Republic of Vietnam Armed Forces, of which I believe, $157.1 million is for ammunition in support of the RVNAF improvement program. Is that correct, General Miley?

General MILEY. That is the right amount, sir.

Mr. MAHON. I just wanted to put the fiscal year 1970 PEMA request in a little better perspective.

General Miley, I believe you have a statement in support of the fiscal year 1970 budget request for PEMA. You may proceed.

GENERAL STATEMENT

General MILEY. Mr. Chairman and members of the committee, I am Major General Miley, Assistant Deputy Chief of Staff for Logistics for Programs and Budget.

It is my privilege to appear before this committee to present the Army's fiscal year 1970 program for the procurement of military equipment and ammunition, budgeted under the appropriation title, "Procurement of equipment and missiles, Army."

The Logistics Guidance issued by the Secretary of Defense served as the basis for funding of the fiscal year 1970 PEMA budget request. This guidance prescribes the methodology for computing the inventory objectives and post D-day consumption requirements for the approved Armed Forces. For the fiscal year 1970 budget the approved forces consisted of 27⅔ division force equivalents.

With the PEMA funds requested for fiscal year 1970, we will be able to support operations in Vietnam at the level contemplated when we prepared the budget until fiscal year 1971 funds become available. Our budget request will generally provide for replacement of normal peacetime losses through the fiscal year 1970 funded delivery period.

Chart 1 in my statement places the fiscal year 1970 PEMA request of $5,559.1 million in perspective with other appropriation estimates and with the overall direct Army budget plan of $24,966.7 million. The PEMA portion, the third largest is approximately 22 percent of the Army total. The next chart (Chart 2) breaks out the PEMA program for fiscal year 1970 on a percentage basis by budget activity. It highlights the areas of heaviest anticipated investment. In fiscal year 1970, as in fiscal year 1969, the two categories of ammunition and

aircraft (including aircraft spares and repair parts) account for half of the PEMA dollars. Missiles (including missile spares and repair parts) represent 18 percent of the total.

Chart 3 shows these amounts requested by budget activity in the column headed fiscal year 1970. Included also is the estimated program for fiscal year 1969 and the fiscal 1970 estimate for Southeast Asia. Increases in fiscal year 1970 over fiscal year 1969 are required for the following budget activities: Aircraft, aircraft spares and repair parts, missiles, missile spares and repair parts, tracked combat vehicles, tactical and support vehicles and production base support. Decreases are shown for the other activities.

In the interest of examining the Army's budget request under manageable and meaningful headings, I have identified what might be termed the big 10 expense categories in the budget and listed them on the next Chart No. 4 in my statement. These ten (10) items total just over $4.3 billion and just under 80 percent of the total budget request of $5.6 billion. I propose to discuss each of these in some detail, with a view to assisting the committee in analyzing the fundamental structure of the PEMA budget request.

The first and largest of the big 10 is ammunition, in the total amount of $1.7 billion. Of this total we identify $1.6 billion for Southeast Asia of which $560 million is for the South Vietnamese forces leaving $109.1 million for the remainder of the Army's requirement. The total of $1.7 billion for fiscal year 1970 is significantly below the $2,962 million for ammunition in the fiscal year 1969 budget and implicitly forecasts a reduction in combat activity in Southeast Asia during the delivery period of this budget.

Because of the dollars involved, we manage ammunition more intensively than perhaps any other materiel category. We have established, at the Army Staff level, a special assistant for ammunition who receives monthly data on ammunition stocks and consumption in Southeast Asia.

Our experience for the first three (3) months of this year has supported, in part, our forecast of reduced activity, but we intend to watch the situation very closely.

The next of the Big 10 is Aircraft which totals $612 million. I point out, here, that I am talking about the actual aircraft in the budget request exclusive of other aircraft related costs such as modifications and ground support equipment.

The next Chart No. 5 in my statement shows the aircraft by type and quantity which are contained in our request. This chart also shows the forecast losses and estimated asset position, for each aircraft, at the end of the fiscal year 1969 and fiscal year 1970 delivery period in relation to both the war time and post-war inventory objectives. (Chart classified.)

The next largest item is Safeguard. We are carrying the latest adjusted figure in our budget request for the antiballistic missile system of $360.5 million. I understand that you have been thoroughly briefed on Safeguard and, hence, I will not elaborate further, in my statement.

Next to Safeguard in the big 10 comes the repair parts. Under this heading I have included all the PEMA-funded repair parts and replacement components relating to aircraft, missiles, vehicles both

tracked and wheeled, communications equipment, construction and support items. PEMA-funded repair parts are distinguished from stock fund parts primarily because they are recoverable and rebuildable at depot level. Because of this characteristic our requirements are identifiable under two headings. The first is provisioning. This is the requirement to provide an initial float of parts behind new major items as they are added to the inventory. The second is replenishment. This is the requirement generated by losses to the system or washout of items, when they cannot be rebuilt economically. Of the $323.3 million contained in our budget request $199.5 is for replenishment. The largest single category of repair parts is for aircraft which totals $201.3 of which, $65.1 is for provisioning and $136.2 is for replenishment.

Next in order of dollar ranking comes the big four tactical vehicles. These are the ¼-ton, 1¼-ton, 2½-ton, and 5-ton trucks which are the backbone of the Army's ground transport capability. The total for these four vehicles is $302.7 million which is approximately 80 percent of our total request for tactical and support vehicles. I have provided in my statement a Chart No. 6 (Chart classified) on which I have placed our fiscal year 1970 request for these tactical vehicles in relation to requirement and losses.

The next category in the big 10 listing is tracked combat vehicles. Under this heading I have included the M60A1 tank family, the M551 Sheridan vehicle, and the seven (7) tracked vehicle carriers which are members of the M113 armored personnel carrier family. The total for these items is $240.8 million which is just about 80 percent of the total in our budget request for tracked combat vehicles.

I have provided in my statement a chart No. 7 (chart classified) on which I have analyzed our procurement request for these tracked combat vehicles in relation to requirements and forecasted losses. The top section of the chart addresses the carrier family and shows that our request contains a total of ——— vehicles. This chart also shows our forecast losses for the budget period, including transfers to the RVNAF.

The lower half of chart No. 7 addresses the M551 Sheridan vehicle and the M60A1 tank family. These data relate the quantities contained in the budget request to our forecast losses and inventory objectives both current and postwar.

The Sheridan is now deployed and fighting in Vietnam. Reports indicate that it is performing well and we expect to deploy more for troop use and maintenance float.

We are procuring M60A1 tanks and combat engineer vehicles, plus the armored vehicle bridge, all of which have the same chassis. This will keep our tank line going at the minimum sustaining rate. This procurement of M60A1 tanks will increase our inventory of first line tanks competitive with modern Soviet tanks.

The next item on the list in order of dollar magnitude is "Air-defense missiles." Under this heading I have included in my statement a chart No. 8 (chart classified) which places our procurement request for air defense missiles in relation to our inventory objectives and losses. Our purpose in this case is to keep the production line going at a minimum sustaining rate and build up a modest inventory for future years training consumption before shutting the line down.

My next category is antitank missiles. Included are the Shillelagh and Tow for a total request of $206.5 million. The development and procurement of these antitank missiles has been a high priority program for the Army over the past several years.

I have included in my statement a chart No. 9 (chart classified) which places our request in relation to assets and losses. The fiscal year 1970 procurement will be only the second buy of Tow.

Next on the big 10 list is modernization of ammunition base priced at $184.1 million. The U.S. Army manages a Government-owned ammunition production base consisting of 25 Government-owned contractor operated plants. These plants produce explosives and propellants, the metal components for ammunition items and perform the explosive loading of metal components which have been produced either in the Government-owned plants or by private contractors.

This large industrial base produces for the Air Force and Navy as well as the Army. Its acquisition cost was $1.8 billion and its current replacement cost is estimated at $4.8 billion. Most of the facilities were constructed in World War II. The base was operated at near full capacity during the Korean war. Between wars, the facilities were almost completely shut down and minimal effort was applied to their maintenance.

A detailed and exhaustive survey of the ammunition base was conducted over a year ago. The findings of this survey may be summarized in two sentences. First, most of the production facilities, by virtue of their intensive use during the Korean war and the present war coupled with minimum maintenance between the wars, are in advanced stages of wear, are marginally safe to operate in certain cases and are costly to maintain. Second, the production processes generlly reflect World War II technology and the ammunition plants are therefore inefficient and costly to operate by modern production standards.

Based on these findings, the Army has developed a modern, safe, efficient ammunition production base. The $184 million contained in this budget request is the first increment of this program and contains 50 highest priority projects applicable to 19 of the 25 plants.

The last of the big 10 items is "Duel blade." The budget request contains $129.5 million to provide a variety of activities.

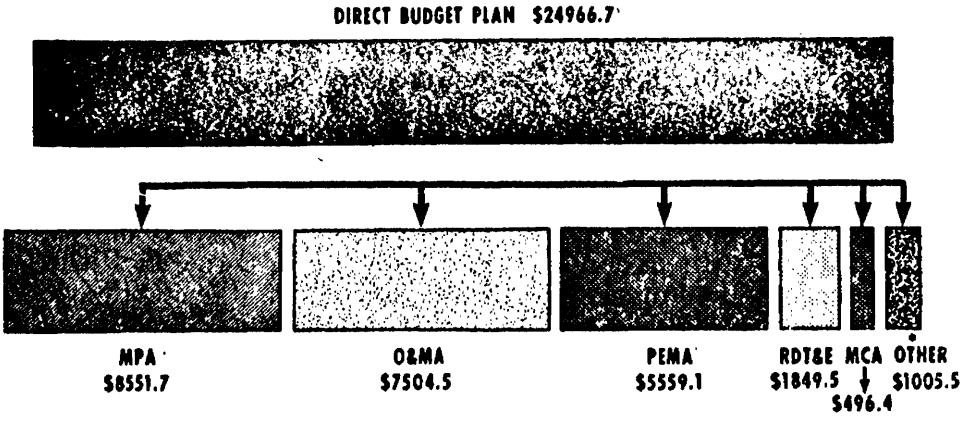
Mr. Chairman, that completes my discussion of the item categories which I have identified as the big 10. These item categories account for $4,313.2 million of the total Army request of $5,559.1 million. The remaining $1,245.9 million is required to provide the many other items such as rifles, machineguns, tactical radios and generators, engineer equipment and modification kits which the Army urgently requires to prosecute the war in Vietnam and meet its other worldwide commitments. The fiscal year 1970 PEMA was constructed to fully meet requirements of our forces in Vietnam on the assumption that the war will continue through the funded delivery period but with due regard for austerity in meeting all other requirements.

That concludes my statement. I have brought with me today a group of Army people who have participated in the preparation of this budget request and we are prepared to answer questions which the committee may have.

CHART 2

TOTAL ARMY BUDGET FY 1970

(IN MILLIONS OF DOLLARS)



• Primarily National Guard and Reserves.

CHART 1

DISTRIBUTION OF FY 1970 PEMA BUDGET

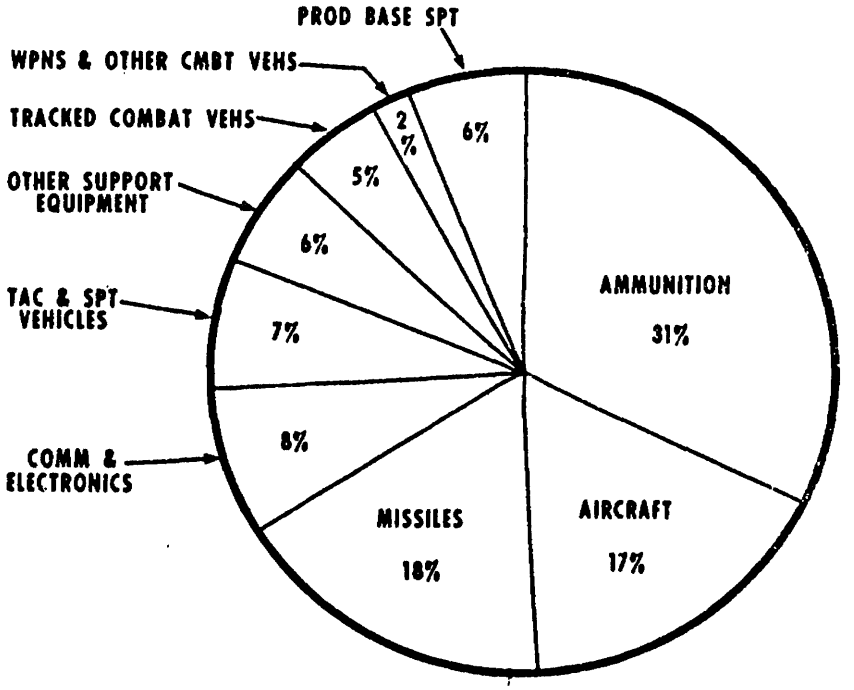


CHART 3

FY 1970 PEMA BUDGET

($ IN MILLIONS)

BUDGET ACTIVITY	FY 1969	FY 1970	SEA - FY 1970
1. AIRCRAFT	$647.1	$714.1	$650.9
2. AIRCRAFT SPARES & REPAIR PARTS	195.4	227.4	122.3
3. MISSILES	852.5	916.0	- -
4. MISSILE SPARES & REPAIR PARTS	55.4	56.7	10.0
5. TRACKED COMBAT VEHICLES	283.6	305.8	91.7
6. WEAPONS & OTHER COMBAT VEHICLES	215.3	123.8	37.8
7. TACTICAL & SUPPORT VEHICLES	363.9	384.1	206.0
8. COMMUNICATIONS & ELECTRONICS EQUIPMENT	669.2	441.3	184.7
9. OTHER SUPPORT EQUIPMENT	398.0	312.3	201.0
10. AMMUNITION	2962.4	1732.1	1623.0
11. PRODUCTION BASE SUPPORT	219.0	345.5	149.9
TOTAL	$6861.8	$5559.1	$3277.3

CHART 4

FY 1970 PEMA BUDGET

BIG TEN

	($ millions)
Ammunition	1732.1
Aircraft	612.6
SAFEGUARD	360.5
Repair Parts	323.3
Big Four Tactical Vehicles	302.7
Tracked Combat Vehicles (Tank & Carrier Families and SHERIDAN)	240.8
Air Defense Missiles	221.1
Anti-tank Missiles	206.5
Modernization of Ammo Base	184.1
DUEL BLADE	129.5
	4313.2
All Other	1245.9
Total Budget	5559.1

LACK OF DETAILED KNOWLEDGE OF ESTIMATES

Mr. MAHON. Thank you very much, General.

I get quite discouraged; I feel that when you and others as witnesses appear in defense of a figure exceeding $5 billion in expenditures that you do not know all the intimate details related to the money; the people above you do not know all of the details and the people below you do not know.

I am not able to make sure in my own mind just how we could best explore these requirements and these costs. What would be your comment?

General MILEY. Sir, I have attempted this year in my statement and charts attached thereto to block out areas that we might examine together in order that we would not get lost in the great maze of items in what we call the shopping list. I think if the committee finds it use-

ful, this might be the way of analyzing Army budgets in the future, to identify the large cohesive areas that can be examined in this fashion. This is my purpose in my statement and attached charts today.

Mr. MAHON. What can we do to bring under closer rein and enable us to have greater confidence in the validity of the figures presented to the Congress by the Department of Defense? The figures are so big and the program so complex that it is impossible for General Miley or really anybody else to have a complete grasp of every detail and to know with great assurance whether or not the request is absolutely valid in the overall and in intimate detail.

General MILEY. Sir, I fully appreciate that neither General Miley nor anyone else can know all the intimate deails of the budget but I always regard my appearance before this committee and other committees in the spring of each year—and this is my third year—as the culmination of a yearlong effort to acquaint myself with every possible detail that I can acquire in the 12 months before my appearances. This is my full-time job.

Mr. MAHON. How many people do you work with?

General MILEY. I have in my immediate division on the Army staff, I would estimate, putting my budget together, somewhere in the order of 120 to 130 people, including clerical help. But this is our full-time job, to develop the budget, analyze it, acquaint ourselves with the details and, hopefully, assist your committee and other committees in understanding these details. Throughout the year we travel out to look at the hardware, we visit the plants where the hardware is being built, we go to the proving grounds where the items are being tested, we sit in on decisionmaking events related to our program and regard this as our full-time job to get ready for the hearings before your committee.

Mr. MAHON. Off the record.

(Discussion off the record.)

TRANSFER OF FUNDS TO PEMA ACCOUNT

Mr. MAHON. General Miley, in fiscal year 1969 you were to transfer $510 million to the PEMA account from the Army and Defense stock funds. Your program and financing schedule shows that a total of $543.8 million was actually transferred from other accounts. Where did you get the additional $33.8 million?

General MILEY. The additional $33.8 million came from the Emergency fund, Southeast Asia, Defense.

EXPENDITURE OF PEMA FUNDS IN 1970

Mr. MAHON. General Miley, would you submit a tabulation relating to the expenditure of PEMA funds in fiscal year 1970. The following information should be included in the table:

(*a*) The amount of the fiscal year 1970 NOA request to be expended in fiscal year 1970 by budget activity.

(*b*) The amount of the fiscal year 1969 appropriation to be expended in fiscal year 1969 and fiscal year 1970 by budget activity.

(*c*) The amount available for expenditure in fiscal year 1970 from appropriations made prior to fiscal year 1969, by fiscal year and by budget activity.

(The information follows:)

Estimated fiscal year 1970 NOA request to be expended in fiscal year 1970

Activities:	*Expenditures (millions)*
1. Aircraft	$51.4
2. Aircraft spares and repair parts	24.2
3. Missiles	245.9
4. Missile spares and repair parts	7.1
5. Tracked combat vehicles	44.6
6. Weapons and other combat vehicles	12.5
7. Tactical and support vehicles	33.1
8. Communications and electronics equipment	52.7
9. Other support equipment	65.7
10. Ammunition	903.2
11. Production-base support	21.4
Total, direct Army	1,461.8

ESTIMATED FISCAL YEAR 1969 APPROPRIATION TO BE EXPENDED IN FISCAL YEARS 1969 AND 1970

[In millions of dollars]

Activities	Fiscal year 1969	Fiscal year 1970
1. Aircraft	52.1	428.6
2. Aircraft spares and repair parts	25.4	110.1
3. Missiles	172.8	346.5
4. Missile spares and repair parts	4.7	29.5
5. Tracked combat vehicles	46.0	130.2
6. Weapons and other combat vehicles	24.2	93.2
7. Tactical and support vehicles	56.6	181.0
8. Communications and electronics equipment	96.9	383.8
9. Other support equipment	93.7	231.4
10. Ammunition	1,322.2	1,298.9
11. Production-base support	63.1	92.3
Total direct, Army	1,957.7	3,325.5

AVAILABLE FOR EXPENDITURE IN FISCAL YEAR 1970, FROM APPROPRIATIONS MADE PRIOR TO FISCAL YEAR 1969

[Dollars in millions]

Activities	Total	Estimated unexpended balance June 30, 1969—fiscal years						
		1968	1967	1966	1965	1964	1963	1962 and prior
1. Aircraft	$477.7	$329.7	$112.2	$24.3	$7.9	$3.6	.....	.....
2. Aircraft spares and repair parts	165.5	104.2	45.2	11.2	4.2	.7	.....	.....
3. Missiles	209.5	136.3	59.0	7.6	2.7	3.9	.....	.....
4. Missile spares and repair parts	23.5	16.1	6.3	1.1	.....	.....	.....	.....
5. Tracked combat vehicles	217.7	119.6	91.5	2.8	1.7	1.1	$1.0	.....
6. Weapons and other combat vehicles	71.3	57.4	11.1	1.1	1.0	.7	.....	.....
7. Tactical and support vehicles	241.8	130.8	103.8	4.1	3.1	.....	.....	.....
8. Communications and electronics equipment	306.2	200.7	72.3	8.2	7.5	7.3	9.6	$0.6
9. Other support equipment	216.0	121.8	65.3	8.5	9.9	7.4	2.5	.6
10. Ammunition	603.3	494.7	69.4	27.8	8.3	2.1	1.0	.....
11. Production-base support	203.4	128.3	53.0	12.2	4.4	3.1	1.6	.8
Total estimated unexpended balance June 30, 1969	2,735.9	1,839.6	689.1	108.9	50.7	29.9	15.7	2.0

FISCAL YEAR 1070 EXPENDITURES BY NOA YEAR

Mr. MAHON. The foregoing tables indicate that you plan to expend approximately $4.8 billion in fiscal 1970 from fiscal 1969 and fiscal 1970 NOA. In addition, you had another $6.9 billion available for

expenditure in fiscal years 1969 and 1970 from fiscal year 1968 and prior years. How much do you plan to expend in fiscal year 1970 from the PEMA account?

General MILEY. Is your question how much I plan to expend from prior year appropriations in fiscal 1970?

Mr. MAHON. From all appropriations, fiscal 1970 and prior years.

General MILEY. I have the data for the fiscal 1968 appropriation that will be expended in 1969 and 1970, but I will have to provide for the record a rollup of all the prior year expenditures for those 2 years.

Mr. MAHON. Very good.

(The information follows:)

Procurement of equipment and missiles, Army—Estimated expenditures in fiscal year 1970

Program year:	*In millions*
Fiscal year 1970	$1,461.8
Fiscal year 1969	3,325.5
Fiscal year 1968	816.7
Fiscal year 1967	150.8
Fiscal year 1966	66.8
Fiscal year 1965	16.8
Fiscal year 1964	13.0
Fiscal year 1963	9.0
Fiscal year 1962 and prior years	1.5
Total	5,861.9

UNOBLIGATED AND UNEXPENDED BALANCES

Mr. MAHON. In its report on the fiscal year 1969 DOD appropriation bill the committee stressed the fact that the military departments should more closely control and analyze unobligated and unexpended balances remaining in various procurement accounts.

On February 17, 1969, GAO published a report on the "Application of the Full Funding Concept and Analysis of the Unobligated and Unexpended Balances in Selected Appropriations." GAO found approximately $52.5 million in unobligated and unexpended balances in excess of Army needs in those limited R.D.T. & E. and procurement accounts reviewed: specifically, $1.5 million R.D.T. & E. and $6.6 million PEMA unexpended obligations, and $44.4 million in PEMA unobligated balances. What additional control do you propose instituting to recoup those unobligated and unexpended balances at Army commands?

General MILEY. During the past 2 years we have instituted what we considered to be a fairly intensive program to examine the fiscal records at the field level with a view to doing two things: first, to recover for other uses any appropriated funds which are in effect lying dormant at these field stations for which no demonstrated use can be provided. The other purpose of this program has been to fully implement at the field level the full funding concept, to be sure that when the fiscal year closes that these field stations have committed on their books the funds required under the full funding concept to execute the total program.

To perform these intensified efforts in the program we have made use of both the Army Audit Agency, who have made field trips to most of the principal commands utilizing PEMA funds, examined their

books and records and reported back areas where in their view there were funds which could be recovered. In addition to the use of the Army Audit Agency personnel, I have also sent teams from my office and from AMC headquarters generally on a joint basis to do these two things.

We think this 2-year program has been productive and we intend to continue it in the future, intensifying it in those areas or for those field commands where we think more attention should be paid.

Mr. MAHON. During the 2 years did your field teams identify unobligated and unexpended balances not previously reported by the various commands?

General MILEY. They actually identified areas of both unobligated and unexpended funds which we later withdrew from the field with the help of Headquarters, Army Materiel Command.

Mr. MAHON. What was the total in 1969?

General MILEY. I would have to furnish that for the record.

Of course, in the case of fiscal 1969 we are still in the middle of the program where things are being adjusted upward and downward.

Mr. MAHON. Maybe you could provide fiscal 1968 and the amount identified thus far in fiscal 1969.

(The information follows:)

AMC Headquarters has withdrawn $67.5 million of fiscal year 1968 and prior year PEMA program from the commodity commands during fiscal year 1969 based upon the findings of the Army Audit Agency, DA and AMC Headquarters teams, and items identified by the GAO. These funds will be required to meet recoupment targets to fully fund the fiscal year 1969 program. Since recoupments are obtained as reductions in prior year programs, none can be generated from the current year program. Any reductions in the fiscal year 1969 program during fiscal year 1969 are used to finance additional requirements for resources during this year. Subsequent reductions in the fiscal year 1969 program will be reflected as recoupments in fiscal year 1970 and later years.

ERRORS IN CONTRACT BALANCE RECORDS

Mr. MAHON. GAO found that records of contract balances maintained by finance and accounting offices, by contracting officers and by contract administration officers are often not in agreement. Has this been a problem to your office in the past?

General MILEY. This has been a problem, I think, to my office and probably to the Army for a considerable number of years. This has to do with the obligating actions that are in float between the time the obligating action is accomplished in the procurement office and the time that the finance office for the same command records it on the books. At times in the past this float has been large and alarming, but I feel that by virtue of closer controls, some of which I described earlier, we have reduced this float to a manageable size. The float is not unmanageable any more. It is fairly reasonable.

DEOBLIGATION OF FUNDS AFTER CLOSE OF FISCAL YEAR

Mr. MAHON. During its study, GAO noted that the Aviation Systems Command had committed retroactively to June 30, 1968, about $3 million of its 1965 program and about $19 million of its 1966–68 program, and on July 17–18, 1968, decommitted these amounts.

Records at the command indicated that the commitment action was taken following the receipt of instructions addressed to the Army Materiel Command by Headquarters, Department of the Army. The instructions reportedly made clear that the showing of unobligated balances as committed would help the Army obtain more of its fund requirements in future budget presentations. Similarly, GAO found that about $93 million was committed by the Army Ammunition Procurement and Supply Agency in the latter part of June 1968, and decommitted the following month.

General Miley, according to GAO, you issued those instructions to the Army Materiel Command. Would you please comment on this situation?

General MILEY. I am well aware of the letter you refer to. The purpose of that letter was to clear up a misunderstanding that my field teams and the other people who had gone out to the field in this 2-year program that I discussed earlier, a certain amount of confusion concerning the full funding concept. I urged AMC and, hopefully, through AMC to the field, I urged them to examine carefully their commitment actions to make sure that when they did initiate the obligation of a program or weapon system that their books of record would reflect the total commitments which, in their view, would support the full funding concept. I am not familiar with the two instances that you discuss at AVCOM and at MUCOM. I would have to examine them in detail. However, the purpose of the letter was exactly clear, to make sure that we are following the full funding concept.

Mr. MAHON. Could you provide for the record, then, the results of any inquiries at those two commands to determine how your instructions could have been misinterpreted?

General MILEY. I will do that.

(The information follows:)

IMPROPER OBLIGATION OF FUNDS BY AVCOM AND MUCOM

An inquiry to the Aviation Systems Command revealed that the data obtained from procurement documents and provided to the fiscal office as the basis for recording the commitments were incorrect. The commitments were, therefore, improperly made. When the mistake was discovered, the funds were decommitted. In the case of the Army Ammunition Procurement and Supply Agency, the funds were committed to comply with the interpretation of Army regulations on commitment accounting included in the June 18, 1968, letter from the Deputy Chief of Staff for Logistics (DCSLOG) to the Army Materiel Command. However, the accounting personnel at that office after reviewing the circumstances considered that the interpretation in the letter conflicted with the Army regulations. Since these persons are responsive to accounting regulations and are personally accountable for their actions, they felt that they had to comply with their own understanding of the Army regulations. The funds were decommitted for that reason.

The basic problem is interpretation of the language in the Army regulations prescribing the principles of accounting for commitments. The difficulty primarily concerns items such as aircraft and ammunition where more than one contract is required for the components to support procurement of a single end item. For example, a finished complete round of ammunition consists of the basic shell, explosives to fill it, a fuze to detonate it, and propellant to get it to the target. Additionally, when all these "components" have been procured, they must be brought together at a load, assembly, and pack facility and assembled to provide the completed round in a ready-to-use configuration. The two commands in question have been interpreting the regulation very restrictively and consequently have been making commitments only after the receipt of appropriate ordering documents on an individual component basis, separately received. In the interest of making timely commitments, the Office of DCSLOG letter in question was

intended to clarify this situation by advising the field that commitments should be made at one time to provide for all components necessary to produce a completed end item. The pertinent regulation, however, can continue to be interpreted in such a way as to deter the recording of commitments. A proposed change to pertinent Army regulations along the lines of the DOSLOG letter has been drafted and is presently undergoing preliminary review. It is hoped that this change will cause commitments to be made at the earliest possible time in the procurement cycle so as to officially reserve the entire amount of funds required for the full funding of each item in its entirety.

Mr. MAHON. As you know, the practice of committing funds in advance of firm contract requirements is contrary to DOD directives and beclouds the true status of the program presented for review to higher levels. I feel certain that appropriate steps will be taken to prevent a recurrence of such a practice as we have just enumerated. I would appreciate your advising the committee what action you take in this regard.

General MILEY. We are in the process now of redrafting the Army regulation which pertains to the full funding concept and the commitment of funds in accordance with this concept. It is our intention to have this redrafted Army regulation published. Then go to the field with this Army regulation to conduct discussions and educational periods to make sure that it is fully understood.

PEMA UNOBLIGATED BALANCES

Mr. MAHON. General Miley, would you submit for the record a tabulation relating to unobligated balances of PEMA funds including the following information:

(*a*) The unobligated balances as of the last reporting date by budget activity and by fiscal year.

(*b*) The estimated unobligated balances at the end of fiscal years 1969 and 1970 by budget activity.

(The information requested follows:)

PEMA UNOBLIGATED BALANCES BY BUDGET ACTIVITY AND BY FISCAL YEAR AS OF FEB. 28 1969

[In millions of dollars]

Activities	Total	Fiscal year—							
		1969	1968	1967	1966	1965	1964	1963	1962 and prior
1. Aircraft	469.9	343.7	189.2	41.9	8.4	5.1	1.2	0.2	0.2
2. Aircraft spares and repair parts	75.1	44.2	19.5	11.0	.....	.1	.3	.....	.....
3. Missiles	300.9	268.9	20.1	5.9	.9	.4	3.4	.3	1.0
4. Missile spares and repair parts	42.7	34.8	7.0	.7	.2	.....	.....	.....	.....
5. Tracked combat vehicles	205.8	123.5	49.3	23.0	3.9	2.4	1.9	.7	1.1
6. Weapons and other combat vehicles	120.4	66.5	44.1	7.8	1.3	.5	.1	.1	.....
7. Tactical and support vehicles	229.3	148.5	27.6	37.0	9.6	4.6	1.8	.2	.....
8. Communications and electronics equipment	676.9	485.3	130.8	38.8	10.6	5.5	3.9	1.8	.2
9. Other support equipment	273.6	200.0	45.8	13.6	5.3	1.6	4.2	3.1	.....
10. Ammunition	1,431.3	914.8	425.8	61.9	27.6	.....	1.0	.2	.....
11. Production-base support	269.0	155.7	94.0	9.2	8.0	1.5	.4	.2	.....
Total	4,214.9	2,785.9	1,053.2	250.8	75.8	21.7	18.2	6.8	2.5

ESTIMATED UNOBLIGATED BALANCES AT THE END OF FISCAL YEARS 1969 AND 1970[1]

[In millions of dollars]

Activities	Fiscal year— 1969	1970
1. Aircraft	265.9	299.6
2. Aircraft spares and repair parts	46.4	46.0
3. Missiles	61.6	52.6
4. Missile spares and repair parts	18.3	15.4
5. Tracked combat vehicles	45.5	21.3
6. Weapons and other combat vehicles	79.7	68.3
7. Tactical and support vehicles	93.3	85.3
8. Communications and electronics equipment	283.8	270.7
9. Other support equipment	164.5	159.0
10. Ammunition	550.2	275.2
11. Production-base support	148.7	230.5
Total, direct Army	1,762.9	1,522.9
Total, reimbursable	347.7	397.6
Unobligated balance available, end of year, for completion of prior-year budget plans	2,110.5	1,920.5

[1] Based on revised budget submission dated Apr. 11, 1969.

Mr. MAHON. Submit a statement indicating the amounts obligated in fiscal years 1968 and 1969 which were later deobligated, and the reasons therefor.

(The information follows:)

	(*Millions*)
Fiscal year 1968	$362.1
Fiscal year 1969, Mar. 31, 1969	248.1

Deobligations are attained on a continuing basis for reasons such as changes or cancellation of requirements; refinement of original cost estimates; modifications and engineering changes to weapons systems following manufacturers' review of drawings and specifications; provisions of incentive-type contracts or other legal determinations; and from cost reductions disclosed upon final settlement of contracts.

It should be realized that reasons similar to the above could also result in increased obligation adjustments which offset the deobligations.

What have been the unobligated balances available at the end of each of the past 5 fiscal years? What part of these funds have remained unobligated due to delays and revisions in the program? The Air Force justifications indicate that 52 percent of their unobligated balances are due to program delays and revisions. Do you have comparable figures?

(The information follows:)

PEMA unobligated balance available, end of year, for completion of prior year budget plans

Fiscal year:	(*Dollars in thousands*)
1964	1,145,090
1965	1,047,526
1966	1,102,666
1967	1,934,514
1968	1,974,609

Approximately 15 percent of the above program remaining unobligated at the end of the fiscal year is due to delays and revisions in the program.

What has been the relationship between your unobligated balances and the amounts recouped over the past 5 years? Have you been able to recoup a relatively stable percentage of the unobligated balances? How does the proposed fiscal 1970 recoupment compare with those over the past 5 years as a percentage of the unobligated balance?

(The information follows:)

PROCUREMENT OF EQUIPMENT AND MISSILES, ARMY

[In thousands of dollars]

Fiscal year	Unobligated balance [1]	Recoupments	Percent recouped
1964	1,145,090	202,773	17.7
1965	1,047,526	93,582	8.9
1966	1,102,666	103,059	9.3
1967	1,934,514	22,255	1.1
1968	1,974,609	171,560	8·7
1969 estimate	2,110,461	200,000	9.5
1970 estimate	1,920,461	250,000	13.0

[1] Excludes amount available fo finance subsequent year budget plans.

Note: While over the past 5 years an average of 8 percent of the unobligated balance available for execution has been recouped, there have been substantial fluctuations. Target recoupments for fiscal year 1969 and fiscal year 1970 are considerably higher than prior years.

RECOUPMENTS

Mr. MAHON. Will you submit a statement showing the amounts recouped in fiscal years 1968 and 1969, to date, and the planned recoupments in fiscal year 1970?

(The information follows:)

The amount recouped in fiscal year 1968 was $172 million. As of February 28, 1969, recoupments during fiscal year 1969 amounted to $169.6 million. The latest information indicates that the target of $200 million for fiscal year 1969 will be realized. The recoupment target for fiscal year 1970 is $250 million.

FISCAL YEAR 1968 PROCUREMENT ACTIONS

Mr. MAHON. Based upon a review of DD forms 350, how many procurement contracts were let by the Army in fiscal year 1968?

General MILEY. The Army does not maintain its records which reflect procurement contracts but they do maintain records which reflect procurement actions. Procurement actions are a combination of initial contracts and modifications to those contracts. In fiscal 1968 the Army executed 4,647,991 procurement actions.

LETTER CONTRACTS

Mr. MAHON. How many letter contract awards were awarded?

General MILEY. The Army awarded 670 letter contracts for a value of $2 billion.

SOLE-SOURCE FIXED-PRICE PROCUREMENT ACTIONS

Mr. MAHON. How many fixed-price contracts were awarded, sole source, in number and value? You can submit this for the record.

(The information follows:)

The dollar value of sole-source fixed-price procurement actions of $10,000 or more is $3,946,976,000. As indicated in response to a previous question, the Department of the Army maintains statistics centrally on the basis of procurement actions as opposed to individual contracts.

OTHER FIXED-PRICE PROCUREMENT ACTIONS

Mr. MAHON. How many fixed-price contracts were awarded other than sole source, that is, multiple source, in number and in value?

(The information follows:)

The dollar value of other than sole-source fixed-price procurement actions of $10,000 or more is $4,275,383,000. As indicated previously, the Department of the Army maintains statistics centrally on the basis of procurement actions as opposed to individual contracts.

COST-PLUS-FIXED-FEE PROCUREMENT ACTIONS

Mr. MAHON. How many of the contracts were cost-plus-fixed-fee contracts, in number and in value?

(The information follows:)

There were 4,059 Department of the Army cost-plus-fixed-fee procurement actions of $10,000 or more at a value of $2,414,030,000.

COMPETITIVE PROCUREMENT ACTIONS

Mr. MAHON. Based upon data on procurement contracts of $10,000 or more, what has been the trend in the percentage of Army procurement contracts which are competitive? Give the percentages for the past 7 years.

(The information follows:)

The trend and percentages of all Army competitive procurement actions of $10,000 or more for the past 7 years are:

Fiscal year 1962	43.8
Fiscal year 1963	43.2
Fiscal year 1964	47.4
Fiscal year 1965	48.4
Fiscal year 1966	39.1
Fiscal year 1967	33.9
Fiscal year 1968	29.8

Downward trend in latter years results from follow-on procurement of ammunition and aircraft to support the war effort in Vietnam.

CONTRACT MODIFICATIONS

Mr. MAHON. How many contract modifications were let in fiscal year 1968? What is the total value of these modifications?

(The information follows:)

The dollar value of contract modifications ($10,000 or more) executed by the Department of the Army in fiscal year 1968 is $5,175,919,000.

Available fiscal year 1968 statistical data do not identify the number of modification actions.

Aircraft Procurement

Mr. Mahon. Your aircraft procurement program totals $612 million, exclusive of other aircraft-related costs, such as modifications and ground-support equipment. The total aircraft program of $714.1 million is an increase of $67 million over your fiscal year 1969 program.

AIRCRAFT LOSS RATES

Aside from the AH–56A Cheyenne helicopter you are requesting funds for the procurement of almost 800 CH–47 Chinooks, UH–1H Iroquois, and OH–6/OH–58 helicopters, as well as six CH–54 flying cranes. How recent are the loss data the Army used in computing its fiscal year 1970 aircraft procurement program?

General Miley. The program is based on the loss rates—the budget submission actually reflect loss data through October 1968.

Mr. Mahon. Are those October 1968 figures still valid?

General Miley. We maintain very close watch over aircraft losses, and I would like to ask Colonel Thompson who is in the Aviation Logistics Management Office on the Army staff to comment on that question.

Colonel Thompson. These loss data are updated twice each year and we keep very close tabs on them. For the current year, for instance, using those loss data that were used for the budget, we are losing five less aircraft as of the end of April 30 than we had estimated.

Mr. Mahon. Five less during what period? Per month?

Colonel Thompson. No; total. In other words, for helicopters we estimated that as of the 30th of April we would lose ——— when actually we have lost ——— or five less, as of that date, for the entire fiscal year 1969.

There have been some helicopters that have lost a few more or a few less. I would say that the data as a whole is quite valid.

AIRCRAFT PRODUCTION RATES

Mr. Mahon. Will your aircraft production rates increase or decrease as compared to fiscal year 1969, and to what extent?

General Miley. I can take them one by one. In the case of the Chinook, our production rate through the fiscal year 1969 buy will be ——— per month and in 1970 it will go ——— per month. ———.

Mr. Mahon. Then in the case of the Chinook, it is increasing?

General Miley. It is increasing; yes, sir.

In the case of the UH–1 family, our fiscal 1969 rate ranges from a high of ——— to a low of ——— and our fiscal 1970 rate will run at ——— per month. So it will be considerably lower in the case of the UH–1.

In the case of the OH–6A, it is scheduled to go out of production. The new light observation helicopter, OH–58A, is coming into production. It is probably more meaningful to compare these rates. Fiscal 1969, we plan to run the OH–58A at an average rate of ——— per month, and in fiscal 1970 the rate will be ——— per month.

In the case of the crane, our rate in fiscal 1969 will be ——— per month, and in fiscal 1970, ——— every other month. The OV–1 rate in fiscal 1969 alternates, ——— and in 1970, ——— per month.

AH–56A is beginning production and will run at a very low rate through 1969, then builds up at the end of 1970. Our production under the present plan will be at a peak rate of ——— per month. In the case of the U–21, they will all be delivered in 1 month, the 1970 delivery rate will be ——— per month. The buy is considerably larger.

In the case of the RU–21 we run the ——— aircraft out at ———. The Cobra production runs out in April of 1970.

So generally, our production rates except for the Cheyenne and Chinook are lower in 1970 than in 1969.

ADVANCE PROCUREMENT FUNDS

Mr. MAHON. You are not requesting advance procurement money for the Chinook, the Iroquois, the LOH, the Flying Crane, or the OV–1. Does this mean that no fiscal year 1971 procurement is anticipated for any of these aircraft?

General MILEY. No. We have made adjustments in our current production schedules for these aircraft which eliminate the requirement for long leadtime procurement. It does not reflect any decision not to procure any aircraft in 1971.

Mr. MAHON. How are you able to buy these aircraft in fiscal 1970 without advance procurement funds having been made available last year?

General MILEY. In 1969 we stretched out our procurement programs on a one-time basis to eliminate this requirement for long leads. This was accomplished by stretching out our delivery schedules. This means we are current in 1970 with our long leadtime requirement.

CH–47 CHINOOK HELICOPTER

Mr. MAHON. You are requesting $56.3 million for 36 additional CH–47 Chinook helicopters. Are these to replace losses of the CH–47 or the CH–37, or both?

General MILEY. I would assume, subject to verification by Colonel Thompson, that we are addressing the washout of both aircraft. I would like to ask him for verification of that.

Colonel THOMPSON. Yes, sir; They are primarily for replacement of losses of the CH–47 in Vietnam. The CH–37 is not located in Vietnam. We have one CH–47 loss that we are expecting to replace which would be other than Vietnam.

Mr. MAHON. Do you foresee any Chinook procurement in fiscal year 1971?

General MILEY. Our 5-year approved defense plan does not provide for an additional procurement in fiscal 1971. However, this will be entirely dependent, I would guess, on the continuation of the war in Southeast Asia.

Mr. MAHON. What is the total approved inventory objective of the CH–47 Chinook, and what will be our asset position for this helicopter after the fiscal 1970 program? I believe your table includes both the CH–47 and the CH–37 in one total. For purposes of this discussion, I am interested in the Chinook only.

General MILEY. Again, I will defer to Colonel Thompson, I believe it is the Army's plan to washout the remaining CH–37's during the

fiscal 1970 funded delivery period, leaving our standard fleet at the end of fiscal 1970 procurement a pure Chinook fleet. Is that correct?

Colonel THOMPSON. That is the present plan. The CH–37 is an older aircraft and is becoming more costly to maintain. To have a standard fleet we plan to have a pure CH–47 fleet, if this becomes possible.

Mr. MAHON. So the asset position in the table refers primarily to the Chinook?

Colonel THOMPSON. To the Chinook; yes, sir.

UH–1H IROQUOIS HELICOPTER

Mr. MAHON. You were funded a total of about ——— UH–1H Iroquois helicopters in fiscal 1968 and fiscal 1969. How many UH–1H Iroquois helicopters have been lost in Southeast Asia in the past year?

Colonel THOMPSON. The number lost in the last year, is that your question?

Mr. MAHON. Yes. You can provide the total for fiscal year 1968, and then the losses thus far during 1969.

Colonel THOMPSON. During fiscal year 1969, from July 1, 1968, until April 30, 1969, ——— UH–1 helicopters have been lost.

In the entire fiscal 1968 period—are you seeking both combat and operational losses?

Mr. MAHON. Primarily combat losses.

Colonel THOMPSON. There were ——— combat losses of UH–1 in Southeast Asia in fiscal 1968.

Mr. MAHON. Were there any other losses in Southeast Asia of that aircraft?

Colonel THOMPSON. Yes, sir. There were ——— operational losses, due to all other causes.

OH–58A AND OH–6A HELICOPTERS

Mr. MAHON. What is the total inventory objective for the OH–58A, LOH helicopter?

General MILEY. We do not break out the inventory objectives as between the OH–6A and OH–58A since we regard these as the same helicopter, meeting the same requirement. Our current wartime objective for this light observation helicopter is ———. Our postwar objective is ———.

Mr. MAHON. Does the OH–6A provide suppressive fire as does the OH–58A?

General MILEY. Both the OH–6A and OH–58A can be equipped with machineguns. This depends upon whether the mission is observation or scout. To the extent that they fire at the enemy on the ground they provide some suppressive fire. I would suggest that the Cobra is the aircraft to provide suppressive fire in the landing zone.

Mr. MAHON. How many of the 600 LOH aircraft requested are the OH–58A model equipped to provide suppressive fire?

General MILEY. All 600.

Mr. MAHON. Is there a difference in the price between the OH–6A and the OH–58A?

General MILEY. There is a difference in price. In fiscal year 1969 where we procure them both we used as the program unit cost for the OH-6A a number of $106,500. For the OH-58A the figure of $89,700.

Mr. MAHON. What is the reason for the difference in price between the two different helicopters?

General MILEY. The OH-58A price is the result of a competitive procurement betwee Bell and Hughes for a quantity of in excess of 2,000 aircraft. The price I gave you for the OH-6A was a noncompetitive procurement from Hughes. I suspect the difference is primarily the effect of competition and the larger quantity.

AH-56A CHEYENNE HELICOPTER

Mr. MAHON. I would like now to turn to the AH-56A Cheyenne helicopter. In April 1968, Congress was told that—

> The decision to begin production of the AH-56A in fiscal year 1969 before the flight tests are completed involves a relatively small risk and allows us to take advantage of the favorable price.

As things stand today, that decision involved more than a small risk, did it not?

General MILEY. Apparently the Army's estimation of the risk involved was somewhat optimistic, I would say.

Mr. MAHON. When was the contract for the Cheyenne awarded to Lockheed?

General MILEY. The production contract for the Cheyenne was a price option contained in the development contract of the R. & D. contract, and the Army executed this price option on January 8, 1968.

Mr. MAHON. When was the R. & D. contract awarded?

General MILEY. I would have to ask General Klingenhagen, the Army's system manager for the Cheyenne, to furnish that.

General KLINGENHAGEN. March of 1966.

Mr. MAHON. How many prototypes were to be delivered under the development portion of the contract?

General KLINGENHAGEN. Ten prototypes.

Mr. MAHON. Were all 10 delivered on time?

General KLINGENHAGEN. Yes; they were.

General MILEY. Could I get that question again? Were they all delivered on time?

Mr. MAHON. On time.

General KLINGENHAGEN. They were on time; yes.

CHEYENNE PRODUCTION OPTIONS

Mr. MAHON. What were the production options in this contract and when were they exercised? I believe you answered the latter part of the statement.

General MILEY. As I recall, subject to correction by General Klingenhagen, we had options for 375, which is the quantity we actually procured. We had an option for 500, an option for 1,000, and an option for 1,500 helicopters.

Mr. MAHON. When was the first option to have been exercised originally?

General MILEY. The option and the prices related to the option were effective up to March 31, 1967. However, the option language in the contract provided for the execution of the options through December 31, 1967, subject to—and I am quoting the language of the contract loosely—"subject to equitable adjustment between the parties."

The equitable adjustment was to provide for whatever additional costs were involved in the delay of exercising the option from March 31 through December 31. As I stated earlier in my testimony, we actually exercised the option on the 8th of January and this extension from the 31st of December to the 8th of January was based on mutual agreement of the parties.

Mr. MAHON. And that was for 375 production models?

General MILEY. 375 aircraft.

Mr. MAHON. What was the reason for the delay from March 1967 to January 1968, a little over 9 months, in exercising this option?

General MILEY. I think General Klingenhagen might address that.

General KLINGENHAGEN. It was not exercised earlier to minimize the risks on this new development; delaying the option permitted more testing and visibility prior to committing funds for production.

CHEYENNE OSCILLATION PROBLEM

Mr. MAHON. When was the Army first aware of serious problems being experienced during the Cheyenne development program?

General KLINGENHAGEN. The accident—an incident in last August of an aircraft on the ground while it was running tests. An unstable oscillation set in and the rotor became uncontrollable and hit the fuselage, is the first indication of a critical problem.

Since that time, of course, action was taken to try to correct that particular oscillatory problem. However, another type of oscillation occurred at higher speeds which became evident this past January as a result of flight testing. The data began to appear that we might have a problem that becomes aggravated at higher speeds.

CHEYENNE TRANSMISSION PROBLEMS

Mr. MAHON. Weren't there other earlier problems such as problems with the transmission? When did that first develop?

General KLINGENHAGEN. The problem on the transmission, the qualification of the transmission did occur earlier in 1968 when we had difficulty qualifying the transmission.

Mr. MAHON. That was subsequent to this?

General KLINGENHAGEN. No. We had experienced problems with the transmission sometime prior to the August accident. However, this did not appear to be a real critical problem, although it did delay the test program; that is, we did not have sufficient transmissions to explore the flight testing as quickly as we should have. However, the transmission was qualified late last year. So that that has not held up the test program for the past few months.

COST BASIS FOR THE EXTENDED OPTION

Mr. MAHON. When the Army did exercise the extended option, upon what were the costs to be based?

General MILEY. The final price of the contract was to be based on the prices contained in the R. & D. contract, subject, as I said earlier, to equitable adjustment for the effects of the delay. There were actually target and ceiling prices quoted in the R. & D. contract for the various options contained therein. With these targets and ceiling prices as a base, the Army has been negotiating with the contractor to determine the final price of the 375 aircraft.

Mr. MAHON. What was the initial target and ceiling price for 375 helicopters if the option had been exercised on March 31, 1967?

General MILEY. As I recall, and again General Klingenhagen will correct me if I am wrong, the original target price for the 375 airframes was $333 million, with a 10 percent on top of that to develop the ceiling price. So in essence the target price was $333 million for the 375 airframes, and $365 million—is that correct?

General KLINGENHAGEN. $363 million.

General MILEY. $363 million as the ceiling price for these aircraft—airframes.

CURRENT CHEYENNE PROGRAM ESTIMATE

Mr. MAHON. What is the Army's current program estimate for 375 Cheyennes? I realize you are still in negotiation, but what is your current estimate?

General MILEY. We are still in negotiation. Of course, I must point out that the numbers I have been using refer to the airframe alone, exclusive of Government-furnished equipment and other support costs. So addressing that number again, with negotiations going on, about all I can furnish you are limits of the final negotiated target price. I would guess—and again I will let General Klingenhagen correct me on this if I am wrong—that the lower end of this spectrum might run in the neighborhood of $100 million and the upper end in the neighborhood of $200 million. Is that correct?

General KLINGENHAGEN. That is about right.

General MILEY. I am talking about target prices. The ceiling, of course, is always 10 percent above the target.

Mr. MAHON. Let us review that one again.

I think you said that under the original option the initial target price was $333 million, and the original ceiling price was $363 million.

General MILEY. Yes. Added to that $333 million, I am giving you the lower and upper limits of the increment above that.

Mr. MAHON. So that we are talking now about $433 million as a target price?

General MILEY. That is right.

General KLINGENHAVEN. That is right.

General MILEY. Again, these are subject to final negotiations between the parties.

CHEYENNE COST ESCALATION

Mr. MAHON. What was the original estimated weapon cost for the Cheyenne, including engine, GFE, technical data, testing and other items, and how does this compare with the current Cheyenne weapon system cost?

General MILEY. During the presentation of last year's PEMA budget, Army witnesses testified to the overall program unit cost for the aircraft, including GFE and other support costs over the entire pro-

curement time frame and for the 375 aircraft. We estimated at that time the program unit cost to be in the neighborhood of $2.3 million each.

Our present estimates, again conditioned by the successful termination of the negotiations, are probably in the range—again, General Klingenhagen will have to help me—of $2.6 million to $3 million per copy; that is as good as I can furnish this morning.

STATUS OF CONTRACT NEGOTIATIONS

Mr. MAHON. How long has the Army been attempting to negotiate the definitization of the letter contract for the 375 production models and what is the present status of these negotiations?

General MILEY. The contractor's adjusted price quotation was furnished to the Army, and I am guessing again, in October of last year.

General KLINGENHAGEN. Yes.

General MILEY. Since October the two parties have been negotiating intensively. We have had various estimated dates for the completion of negotiations, and the most recent was April 15. However, as the committee may be aware, on the 10th of April the Army issued what is known as a cure notice to the contractor. A cure notice is a contractual document which is issued to a contractor when, in the opinion of the Army, the contractor is not making reasonable progress on his contract and the contractor is required to respond to the cure notice, outlining his program to cure himself.

The issuance of this cure notice essentially suspended contract negotiations and will suspend them, I imagine, until the contractor's response to the cure notice is received by the Army, evaluated by the Army, and the Army determines what action it will take on the contractor's response to the cure notice.

Mr. MAHON. Could you give to the committee generally an idea of why these negotiations have been taking so long, up until the cure notice incident?

General MILEY. Negotiations have taken a considerable period of time, although from October until April is not an unusually long time for a complicated weapon system like this. Involved in the negotiation were many determinations to be made by both parties as to the economic effects of the delay in executing the production option for a period of 9 months; such things as the escalation of the costs in the areas of material and labor as well as the impact of the delay on the contractor's learning curve. The development contract and the production contract were so structured that the continuity between the development and production phases would be a smooth flow from one into the other. This 9-month delay imposed on the contractor a requirement to essentially slow down his effort and start it up again. In the jargon of the trade, he lost to some extent his learning curve. So these factors of economic escalation, combined with what was the true effect of the loss of learning, have led to very difficult and complicated negotiations.

CURE NOTICE OF APRIL 10, 1969

Mr. MAHON. General Miley, would you submit for the record a copy of the cure notice the Army provided Lockheed under date of April 10, 1969?

General MILEY. Yes, sir.
(The information follows:)

DEPARTMENT OF THE ARMY,
U.S. ARMY AVIATION SYSTEMS COMMAND,
St. Louis, Mo., April 10, 1969.

Subject: Cure notice—contract DAAJ01-68-C-1749(H).

LOCKHEED-CALIFORNIA CO.,
LOCKHEED AIRCRAFT CORP.,
Burbank, Calif.:

1. You are notified that the Government considers your failure to make satisfactory progress toward the production and timely delivery of aircraft which will meet contractual requirements a condition that is endangering performance of the AH-56A production contract DAAJ01-68-C-1749(H) in accordance with its terms. Specifically, it has become apparent that aircraft to be produced and delivered pursuant to the AH-56A production contract DAAJ01-68-C-1749(H) will not meet one or more of the following requirements of "System Description for the Advanced Aerial Fire Support System, System Description No. SS0001," dated January 21, 1966, as amended, and "Major Component Development Description No. CP001," dated January 21, 1966, as amended (these requirements are found in the phase II development contract DAAE11-66-C-3667(H) and have been incorporated into the AH-56A production contract DAAJ01-68-C-1749(H) by reference):

(*a*) SS0001, paragraph 3.1.1.1., "Performance characteristics, operational," subparagraph f.

(*b*) CP0001, paragraph 3.1.1.1.2, "Performance requirements."

(*c*) CP0001, paragraph 3.1.1.1.1, "Flight (mission) performance," and SS0001, paragraph 3.1.1.2, "Missions," subparagraphs a, b, c, and f. (In connection with subparagraphs a, b, and c, the Government recognizes a decrease in expendable ammunition load of 263 lbs. due to substitution of 263 lbs. of special equipment (12.7 mm. armor) for 263 lbs. of ammunition.)

(*d*) CP0001, paragraph 3.1.1.1.3, "Maneuverability characteristics," and its subparagraphs (3.1.1.1.3.1 and 3.1.1.1.3.2).

(*e*) CP0001, paragraph 3.1.1.1.4, "Stability and control," and its subparagraphs (3.1.1.1.4.2 and 3.1.1.1.4.3).

(*f*) CP0001, paragraph 3.1.1.1.5, "Structural capabilities," and its subparagraphs a, c, and e.

(*g*) SS0001, paragraph 3.6.1.2, "Weight" and CP0001, paragraph 3.1.1.1.7, "Weight and balance." (It is recognized that the weight empty requirement of the former paragraph (3.6.1.2) is subject to an upward adjustment of 118 pounds attributable to the Government. Ninety-three pounds, 8 pounds of which represent Government furnished materiel weight variation, have previously been recognized by modification of the contract. The remaining 25 pounds, are being recognized by ECP No. 4, which has been agreed to but not executed. The contractor's response hereto will be evaluated against a weight empty requirement of 11,766 pounds. Additionally, the Government will recognize the provable and direct consequences to other performance requirements of the contract that result from the additional 118 pounds).

(*h*) CP0001, paragraph 3.1.1.2.1.2, "Emergency landing."

(*i*) CP0001, paragraph 3.1.2.8, "Noise and vibration."

(*j*) SS0001, paragraph 3.1.2.5, "Transportability," subparagraph a. It is recognized that by letters dated February 6, 1969, and March 21, 1969, you submitted to Lt. Gen. William B. Bunker, chief negotiator for the Government, two lists of proposed revisions to specifications. These proposed revisions have not been accepted by the Government; accordingly, the specifications referred to above are not considered to reflect such revisions, except to the degree explicitly stated in subparagraph g. In the event that it is later determined that the Government can accept any or all of the proposed revisions to specifications, your prospective and actual performance will be evaluated in the light of revisions accepted by the Government.

2. Your failure to make satisfactory progress toward the production and delivery of aircraft which will meet contractual requirements, a condition endangering performance of the AH-56A production contract DAAJ01-68-C-1749(H) in accordance with its terms, is apparently the result of your failure to find and

effect solutions to one or more of the following technical problems known to the Government:

(*a*) Critical 0.5P unstable rotor oscillations occurring in the aircraft operational flight envelope.

(*b*) 1P and 2P rotor instabilities at certain rotor mast bending moments and rotor r.p.m., that have been experienced in autorotational landings.

(*c*) Inadequate directional control during hover and sideward flight.

(*d*) Excessive lift-roll and pitch-roll coupling during maneuvering flight.

(*e*) Excessive swashplate cyclic travel permitting main rotor-tail boom interference during ground operations and autorotational landings.

(*f*) Cumulative effects of contractor design changes resulting in weight growth and an ensuing degradation in performance, maneuver capability and structural integrity.

(*g*) Deficient level flight speed due to high vehicle drag.

(*h*) Failure to qualitfy the power train as a complete system.

(*i*) Failure to provide a main rotor blade design with satisfactory tracking and interchangeability characteristics.

(*j*) 4P and 8P vibration levels above specification requirements.

(*k*) Excessive lateral stick migration with increasing forward speed.

3. You are hereby notified that you have 15 days after receipt of this notice to satisfactorily demonstrate in writing your ability to cure your failure to make satisfactory progress toward the production and timely delivery of aircraft which will meet contractual requirements. Such demonstration should include your specific plans to effect timely cures for the known technical problems referred to in the previous paragraph, accompanied by sufficient documentation to enable the Government to evaluate the efficacy of such plans. Along with your technical plans, you are requested to provide detailed information concerning the responsibilities and qualifications of key managerial and engineering personnel who will execute any such plans. Unless you provide the required demonstration in writing of your ability to cure your failure to make satisfactory progress within the 15-day period, the Government may terminate contract DAAJ01-68-C-1749(H) for default under the contract clause entitled "Default (June 1964)," which clause is incorporated into the preliminary contractual instrument by reference.

4. In any written response you may make concerning your ability to cure your failure to make satisfactory progress, you may present any facts bearing on the question as to whether your failure to make progress arose out of causes beyond your control and without fault or negligence on your part. Your failure to present any such facts within this 15 day period may be considered as an admission that none exist. Your attention is invited to the respective rights of the parties under the above cited default clause and the liabilities that may be invoked in the event a decision is made to terminate for default of the contractor.

JOSEPH A. MURRAY,
Contracting Officer.

Approved:

WILLIAM B. BUNKER,
Lieutenant General, U.S. Army.
Chief, Government Negotiator.

Mr. MAHON. Would you also provide a copy of Lockheed's answer to the cure notice?

General MILEY. I will do that, sir. I would like to point out that in the case of the Lockheed response received a few days ago by the Army, it is a very bulky document, full of very complicated technical language. It is now in the hands of a large group of people, being evaluated. As I say, I will furnish it to the committee quite willingly, but I advise them that it is a very complicated document, and suggest that maybe you would want to wait until the Army Materiel Command and the Army staff have had a chance to evaluate what it really says. If the committee wants it, we certainly can furnish it.

Mr. MAHON. Then it is too early to tell the committee generally what Lockheed's answer is and what the Army proposes to do?

General MILEY. It is too early for the witnesses present here today to tell you that. The evaluation is going on with a considerable number of legal people, procurement people, and helicopter experts, who are looking at it in depth. As I say, it is a very bulky document, full of complicated formulas and data. I could not tell you, and I don't think General Klingenhagen is prepared to tell you, what it really means or what it says in response to the Army's cure notice.

Mr. MAHON. Does the contractor say anything in his cover letter to that document, summarizing what steps he intends to take to overcome the difficulties experienced with the helicopter?

General MILEY. I am not familiar with the cover letter. Are you?

General KLINGENHAGEN. I have not seen a cover letter submitted on it; however, there is, of course, a summary document.

Mr. MAHON. Then, as soon as the Army has evaluated the contractor's response to the cure notice and made its decision on the matter, provide that to the committee, please?

General KLINGENHAGEN. Yes, sir.

General MILEY. Be happy to; yes, sir.

TRW CONTRACT FOR INTEGRATED TECHNICAL DATA SYSTEM

Mr. MAHON. In October 1965 the Army entered into a contract with TRW Systems, Inc., to develop and operate an integrated technical data system "to provide an in-house data management capability for achieving faster problem solution visibility and for aiding and expediting decisionmaking." This contract is administered by the Cheyenne project manager's office, and a total of over $13 million will have been spent on this contract through fiscal year 1969 directly related to the Cheyenne. Of what assistance has this contract effort been to the Army in problem solution and in expediting decisionmaking with respect to the many problems experienced with the Cheyenne?

General MILEY. I wonder if I can get General Klingenhagen to take that one.

General KLINGENHAGEN. Yes, sir.

This contract was let to really come up with a tool for the project manager to use in tracking the milestones of the development and the production as well as track the costs of both contractors who are providing the Government-furnished equipment as well as the prime contractor in this case, Lockheed.

The Cheyenne was selected as the project to test the system and it was planned that when the system is fully developed it would be used in the acquisition of other types of expensive projects.

One of the principal things that it does, as an example, is to track the delivery of Government-furnished items from the contractors to insure that these items are provided in a timely fashion to the prime contractor. Since this contract is a fixed-price contract with Lockheed, it is most important that Lockheed does not secure any claims for deficient, or Government-furnished equipment not delivered on schedule. This has assisted greatly to insure that we flag at an early date when it appears that we might be slipping in the delivery of Government-furnished equipment. We feel that we have avoided a lot of possible claims on the part of Lockheed because of late delivery.

There are many other things that it provides. As an example, it does have a modern, up-to-date computer which is the repository for all types of data. You asked the question about the delay in the contract negotiations. However, by the use of this repository we are able to extract information very rapidly to assist the Government in presenting its case in the negotiation. Whereas, if we had not had this repository the Government would have probably taken a lot more time in order to establish its case.

I can go into additional detail if you desire.

SERVICES PROVIDED UNDER TRW CONTRACT

Mr. MAHON. Does the TRW provide any engineering services along with this contract?

General KLINGENHAGEN. They do analyze the technical data that is reported to the system. They do have technical people that are capable of analyzing the problems that are reported so that they could, and have the capability of, flagging if there is any technical deficiency that we should be aware of.

General MILEY. I would suspect that their engineering know-how relates to the statistical techniques. I am not aware—and you can correct me if I am wrong—that TRW is providing any helicopter know-how. In other words, when a series of numbers starts to run into a danger area they provide the statistical know-how to flag the fact that this series of numbers indicates a situation that the project manager should look at; but I am not aware that TRW is providing any aircraft or helicopter expertise to the program.

General KLINGENHAGEN. This is correct. As an example, if the Government furnished specifications for a Government furnished piece of equipment is reported not to meet its specifications so that it might have an impact on the Government meeting the terms of the contract with Lockheed, they are able to observe this and bring this to the attention of the project manager. But most of the information would be statistical, such as: Are the number of hours from last month on test vehicles on schedule? Are we on schedule? They would be able to statistically observe the trends as to whether we are slipping, whether the schedule is slipping in its milestones in terms of whether we are flying the number of hours on schedule, and so forth. So that from that standpoint they would provide technical assistance.

MAN-HOURS SPENT UNDER TRW CONTRACT

Mr. MAHON. How many man-hours has the contractor spent under this contract since its inception? Do you have the information available?

General KLINGENHAGEN. I'm afraid I will have to provide that.

(The information follows:)

A total of 573,081 man-hours have been spent under this contract since its inception.

Mr. DAVIS. Might I interrupt, Mr. Chairman?

Mr. MAHON. Mr. Davis.

BACKGROUND OF TRW SYSTEMS, INC.

Mr. DAVIS. What kind of an organization is TRW Systems? What are their general capabilities? Are they an organization used by the Army for purposes other than this particular contract we are talking about?

General MILEY. TRW is a large corporation that has been in the weapons system business for some time. They are participating right now in the development, if we finally go to contract, of a cannon for our new Scout vehicle. So they have a weapons system background. In the case of this particular contract, as I understand it, we are making use of their managerial competence to design this data storage and retrieval system, not necessarily related to hardware but related to the statistical techniques and the use of computers and data files.

I have had two or three briefings on this contract. Think of all the numbers that are involved in the beginning of the R. & D. contract through today on the Cheyenne, not only involving Lockheed's effort but the Government-furnished equipment peoples' effort, numbers that relate to financing, numbers that relate to equipment performance. They are able to respond to Government personnel on questions like: How many dollars did we spend on product improvement of the engine in the period 1967 to 1968? This would mean if we did not have this data storage retrieval system, a long, arduous job of going back over documents would be necessary. They have collected such data, and I use that purely as a hypothetical example—collated it, identified it under various tabs so that we could go into the data bank and say "I want numbers on engine horsepower, I want numbers on costs of engines," and the data will come out, the total data relating to that particular subject. So really it is an attempt by the Government to develop outside of the contractors with whom they are dealing a collection of easily accessible management data to assist the Government in managing this very complex program.

Mr. DAVIS. Is this an independent agency with which the Army entered into a contract relating to this particular project or is it servicewide? Where is it located? Who are we dealing with here and for what purpose and what kind of a contract do we have?

General MILEY. We are dealing with an independent agency in that the TRW organization is independent of the contractor, completely independent of the prime contractor and the subcontractors and the Government-furnished equipment contractors. So that to that extent it is an arm of the Government. As I understand it, and this began in the R. & D. stage—and I am not entirely familiar with the beginning—it was to be a pilot for other kinds of systems which could be applied to other large weapons systems. In other words, we would learn from the TRW contract what to do to provide ourselves with this management bank of information and retrieval system for use in other large complex weapons system developments and procurements. So to that extent it was a pilot project using AAFSS—which happened to come along in the right timeframe—to develop this technique for the Army.

Mr. DAVIS. The Army is its only Government contractor for this type of thing at the present time?

General MILEY. I am not sure of that, sir. I would have to find that out.

Mr. DAVIS. At the present time they are performing, what shall we call it, a watchdog function only with respect to Lockheed?

General MILEY. I understand the TRW contract has been used for some other Army hardware programs but I am not familiar with them right at this moment.

TRW SYSTEMS CONTRACT COMPLETED

Mr. DAVIS. Is this an ongoing annual contract that the Army has with them? What is the nature of the agreement?

General MILEY. This is the last year of funding of the TRW program. Fiscal 1969 is the end of the program. They have now developed the data bank, the retrieval system. We now know how to use it. It is in being. We know how to use this technique for other systems.

Mr. DAVIS. So that henceforth it is contemplated that the operation of the system would be in-house, so to speak?

General MILEY. That is my understanding; yes, sir.

Mr. DAVIS. Thank you.

PERSONNEL ADMINISTERING TRW SYSTEMS CONTRACT

Mr. MAHON. General Klingenhagen, how many Army people have been involved in working with and administering this contract, both military and civilian personnel? Do you have that available?

General KLINGENHAGEN. The actual contracting personnel that are involved in their management of the program?

Mr. MAHON. All military and civilian personnel involved in managing this contract and working with TRW in this area.

General KLINGENHAGEN. I will have to get that information as to who they have been working with. I know we have a contracting officer involved in it. They provide certain information to everyone that is involved in the management of the program. So they do have an interface.

Mr. MAHON. You may supply that answer for the record.

(The information follows:)

There are approximately 10 military and civilian personnel who are involved in working with and administering the TRW contract, each on a part-time basis. Over the course of a year, approximately 17 civilian man-months and 12 military man-months are attributable to this contract.

Mr. MAHON. The committee will recess until 2 o'clock.

AFTERNOON SESSION

Mr. MAHON. We will resume the hearing.

POSSIBLE EXTENSION OF TRW SYSTEMS CONTRACT

Before our adjournment this morning we were discussing the AH-56A Cheyenne helicopter and specifically the TRW systems contract. General Miley, I believe you indicated this is the last year for the TRW contract. Is that right?

General MILEY. I have a feeling that it may not be the last year. I checked during the noon break and I find there is still some more work to be done under the contract to enable transfer to the Army in fiscal year 1970.

EFFORT REQUIRED TO TAKE OVER CONTRACT

Mr. MAHON. How many man-years of effort by Army military and civilian personnel will be involved in the work now done by TRW under the contract?

General KLINGENHAGEN. When the contract is transferred over in-house I have an estimate of the number of spaces required to take over most of the features of the system; 73 people is the estimate that will be required by AVSCOM to take over most of the system.

Mr. MAHON. Do you have an idea of the estimated annual cost in the terms of personnel, and O. & M. involved?

General KLINGENHAGEN. I understand the requirement is about $1,500,000 in fiscal 1970 as it was planned to take over from the contractor. Now, in later years it may increase, depending upon the workload. I am speaking of only the workload as far as Cheyenne is concerned, but obviously as the system was designed to support other projects, as other projects use the same system more manpower would be required.

VALUE OF TRW ASSISTANCE

Mr. MAHON. General Klingenhagen, do you believe that this assistance by TRW has been worth the expenditure of over $13 million?

General KLINGENHAGEN. Since most of the money was really for the purpose of designing a system that has application for other major systems with a high degree of costs, I think it is still to be determined. I have not studied in detail as to what the payoff would be, but as far as the Cheyenne is concerned that portion that was applicable to the Cheyenne I feel is worth the expenditure of funds that have been put into it. As I indicated, primarily from the standpoint of safeguarding the Government's exposure on the Lockheed portion of the contract to assure that claims are kept at a minimum, particularly in the delivery of Government-furnished equipment. I see another big payoff in terms of the system permitting us to better determine what our spare parts requirements will be in the future. In the past, we have had to more or less buy parts on the basis of experience that we derive from aircraft. This system does afford us a better prediction so that we can insure that we do not buy extra parts. As you know, in the early phases of a complicated program you may have parts that become obsolete as a result of buying too many parts. I think this could well pay for itself in minimizing the number of parts that we procure.

FUNDS FOR CHEYENNE MODIFICATION AND IMPROVEMENT

Mr. MAHON. With respect to the Cheyenne itself, why are you requesting $1 million for AH-56A Cheyenne modification, retrofit, and $3 million for component improvement in 1970 when you have not received the first production model of this helicopter?

General KLINGENHAGEN. On the component improvement, the Army's participation in the product improvement of the T–64 engine, the Army is participating I think on the basis of about one-third with the Air Force and the Navy in approving reliability and maintainability of the T–64 engine which is Government furnished. None of this goes to the prime contractor, Lockheed. I believe this is normal practice on engines. This engine has been in our system for several years. This is to try to get the time between overhauls up, which of course will mean that there is a savings in the long run.

Now, on the other item of retrofit, this is also I believe Government-furnished equipment. The ARC–98 (a high frequency radio for voice communication) is a breakout of $240,000, and the APX–72 (an airborne coded transponder) is $7,650. So this is Government-furnished equipment which requires changes. The balance of funds requested is $752,350 for night vision equipment.

Mr. MAHON. Why was that? Wasn't that programed originally for this weapon system?

General KLINGENHAGEN. I will have to ask Colonel Beasley to answer that.

Colonel BEASLEY. The APX–72, the design on this item did not come along in the same time sequence. We could not get it in in time. It is a matter of leadtime. Here we foresaw the first 15 birds being manufactured prior to the availability of the equipment.

Mr. MAHON. Then this $1 million will be for the first 15 aircraft?

General MILEY. The first 15 aircraft; yes, sir.

Colonel BEASLEY. Yes, sir.

CHEYENNE NOT A TOTAL PACKAGE CONTRACT

Mr. MAHON. The Cheyenne contract has been referred to in the past by certain OSD officials as a total package contract. Recently the committee had its investigative staff look into all total package procurement contracts in DOD, and the Army indicated the Cheyenne contract did not meet this criteria. When and how was this contract changed or modified thereby removing it from the total package procurement category of contracts?

General MILEY. The original contract for the Cheyenne was a fixed-price research and development contract. It contained production options that I discussed this morning. As such, when we started out the Cheyenne procurement we weren't using the total package procurement contract because there was no assurance at the time of the R. & D. contract that we would follow on into production. However, technically as soon as we exercised the production option on January 8, 1968, the contract in effect closely resembles a total package procurement. In other words, the same contractor is providing the development services as well as the production services. So even though it did not start out as a total package procurement, by virtue of the fact that we executed the production option with the same contractor, the contract gets to look very much like a total package procurement.

Mr. MAHON. Then this should have been identified as a total package procurement contract because this study by our investigative staff was within the last month.

General MILEY. Well, we are really dealing with semantics. It did not start out to be a total package, but events overtook it and it became a total package procurement.

FISCAL YEAR 1970 CHEYENNE REPAIR PARTS AND SPARES REQUEST

Mr. MAHON. How much is in ground support avionics, repair parts and support materiel, and avionics armament spares in support of the Cheyenne for fiscal year 1970?

General MILEY. In the 1970 program we have $55.3 million for repair parts and support materiel, and $10.4 million for avionics and armament spares, nothing for the other two.

POSSIBILITY OF DELAYING CHEYENNE PROCUREMENT

Mr. MAHON. In view of the fact the AH-56A Cheyenne program is in trouble, do you not think it prudent to delay your proposed fiscal 1970 procurement of this helicopter?

General MILEY. The form of this contract is really a one-time procurement. In other words, when we moved out and exercised the option on January 8, 1968, the Army in effect bought 375 helicopters. It has a financing plan that goes with it and it is the financing plan that we address with the annual fiscal year appropriations. For example, the financing plan essentially financed 15 last year; this year it proposes to finance 121—that is in the coming year. So to the extent we disturb the contract by not financing the contract, we essentially terminate the contract and would then be subject to termination for convenience of the Government and all the termination costs that would relate thereto. So this is different from a multiyear procurement where we buy so many items per year with a cancellation cost, if we do not pick up the succeeding year's quantity; in this case it is a total buy of 375 aircraft with an annual financing plan. Again I say if the Government as a result of its actions with the cure notice or for any other reason elects not to follow the financing plan, unilaterally, we then are in the situation of termination for convenience of the Government with all the accruing termination costs that would flow therefrom.

STATUS OF CHEYENNE PRODUCTION

Mr. MAHON. Pending the resolution of the cure notice, has production stopped on the 15 helicopters at the present time?

General MILEY. No; production is continuing. There would be no reason for the contractor to stop producing because we sent him a cure notice. In fact, the purpose of the cure notice is to get him to go faster and meet his original production schedule. That is the thrust of the cure notice. "We, the Government, don't think you are making progress to meet your production schedule. Please come back and tell us what you are going to do about this."

Mr. MAHON. Aren't there mechanical problems involved with the helicopter?

General MILEY. Yes, there are mechanical problems involved.

Mr. MAHON. That would require retrofit or modification of those in production later on, would it not?

General MILEY. Yes, it would. However, to the extent that the contractor has mechanical problems associated with the things General Klingenhagen is talking about, rotor and rotor control system, presumably, if he is a wise contractor, he is not making a lot of rotors or rotor control systems until he gets the fixes which are necessary for those. Now, on the rest of the airplane which is not in trouble he can fabricate and assemble those parts.

Mr. MAHON. Is the contractor proceeding with the production of the 375 helicopters at the present time?

General MILEY. He is proceeding, but again, as I say, the cure notice is evidence that we are not satisfied that he is making sufficient progress. His contract called for the delivery of the first production aircraft in September. Now, we took a look at his progress back in early April and decided that he wasn't making sufficient progress. Therefore, we issued him a notice.

Mr. MAHON. What is the status of the production of the 15 helicopters planned for fiscal 1969? Are they on schedule or has that slipped?

General MILEY. That is the one I am talking about. The first one of the 15 was due off the line in September. None of them are off the line to date. The first was due in September. But looking at his production schedules and his milestones on the items he has been making to date, we decided that he was not going fast enough. He is not delinquent because he has not missed any production deliveries as yet. He would not be delinquent until September, when he failed to deliver that first aircraft.

Mr. MAHON. But he is behind on his schedule?

General MILEY. In our view, the Government's view, he is behind on his schedule.

REQUIREMENT FOR ADVANCE PROCUREMENT FUNDS

Mr. MAHON. If it becomes necessary to delay or stretch out your AH-56A Cheyenne production program, the $60,800,000 advance procurement funds requested for fiscal year 1970 would not be required; is that right?

General MILEY. I could not answer that until we decide what the stretchout is going to involve. In other words, right now we are waiting. We have, as I said this morning, the response of the contractor and the Government must now determine if it is going to accept whatever he has offered to do. Once we accept that, or some version of it, we then can sit down and decide what is his production schedule, how much advance procurement will he need for 1971 if we continue. This is the sort of thing that we will have to determine in the next 3 or 4 weeks.

Mr. MAHON. Mr. Andrews, do you have any questions on the Cheyenne?

Mr. ANDREWS. Off the record.

(Discussion off the record.)

RELATIONSHIP OF PEMA BUDGET TO SOUTHEAST ASIA

Mr. ANDREWS. General, you are asking for $5,559,100,000 for for PEMA for 1970; is that correct?

General MILEY. Yes, sir.

Mr. ANDREWS. Of that amount, you have earmarked, so to speak, $3,277,300,000 for Southeast Asia?

General MILEY. $3.3 billion is approximately the number; yes, sir.

Mr. ANDREWS. Is this budget predicated on the assumption that the war in Vietnam will last through fiscal year 1970?

General MILEY. The assumption we used is that the war would continue through the end of the funding delivery period of the 1970 budget; yes, sir.

Mr. ANDREWS. So that it is based on the assumption that the war will be with us through the entire fiscal year 1970?

General MILEY. Yes, sir; and for the delivery period of the equipment contained in this budget.

ADEQUACY OF AMMUNITION SUPPLY

Mr. ANDREWS. I am looking at one item here, ammunition. You request a total of $1,732,100,000 for ammunition, of which $1,623 million will be for Southeast Asia. Are you having any problem with supplying enough ammunition? Do you have an adequate supply?

General MILEY. We have an adequate supply. We have a big production base that has been going now for the best part of 2 years. I think our ammunition situation is well in hand.

SOUTHEAST ASIA AIRCRAFT LOSSES

Mr. ANDREWS. For aircraft you are requesting $714,100,000 of which $650,900,000 will be for Southeast Asia. Will that give you enough aircraft to replace all your losses in Southeast Asia?

General MILEY. We based our budget on loss rates available to us as of last October, at the time we put the budget together. In this morning's testimony we showed that our aircraft losses through the first three quarters of this fiscal year are within five helicopters of what we had estimated. Now, if the rate continues at the rate which we experienced for the first 9 months of this fiscal year, we will be in pretty good condition.

Mr. ANDREWS. Is your loss rate of choppers increasing, leveling off, or decreasing?

General MILEY. It varies by type. The UH–1 losses have been a little higher than we estimated. The Chinook losses are a little bit higher. The light observation helicopter has been a little over. But overall we are within five of the rate we used to put the budget together. So far, so good, you might say.

Mr. ANDREWS. Then your loss rates have been about what you had predicted last October?

General MILEY. That is correct; through the end of March.

ADEQUACY OF 1970 BUDGET

Mr. ANDREWS. Are you satisfied with this budget for Southeast Asia?

General MILEY. Based on the assumption that we used, that the war will continue at the rates that we visualized last October and if the helicopter attrition rate continues in hand, we will be all right.

Mr. ANDREWS. Are you satisfied that the request made by the Vietnam commanders will be met with this budget? Will our people in Southeast Asia be given all they need to prosecute the war in whatever way they are directed to do so by the present administration?

General MILEY. There is no question that their requests will be honored even to the sacrifice of the rest of the Army, but, as I said, depending on the progress of the war and nothing unusual happening, I think we will have no difficulty meeting their requirements.

Mr. ANDREWS. Thank you. That is all, Mr. Chairman.

Mr. MAHON. Mr. Minshall.

CHEYENNE CURE NOTICE

Mr. MINSHALL. Did you outline your cure notice in this morning's hearings? Basically, was it outlined as is shown in the Aerospace Daily of April 15, 1969?

General MILEY. I think their extract was verbatim, if I remember correctly. Now, we are going to furnish that notice.

Mr. MINSHALL. You ought to digest it. If you get into all this minuscule detail, nobody is going to read it.

General MILEY. It is not a very big document. As I say, we are going to furnish it.

Mr. MINSHALL. You are going to put the whole thing in the record?

General MILEY. Yes.

Mr. MINSHALL. I noticed in the Aerospace Daily of April 15 that your cure notice came out on April 10. Is that right?

General MILEY. Yes, sir.

LOCKHEED RESPONSE TO CURE NOTICE

Mr. MINSHALL. On April 15 Lockheed said that they expected to make a satisfactory reply within 15 days. Now, that period has expired. Have they met that date?

General MILEY. They asked for a 3-day extension and then met it. In other words, it was due back on the 25th. They asked for an extension to the 28th. It was furnished to the Government on the 28th. It is now being reviewed by the Government.

Mr. MINSHALL. Now, it is being evaluated by the Army?

General MILEY. Yes.

Mr. MINSHALL. This is the report you said you were going to have an answer to within 2 to 3 weeks?

General MILEY. We finally settled on June 1, I thought.

Mr. MINSHALL. All right. I will give you a couple of days.

We have been through this exercise in other programs, with the Navy on the F–111, with the Air Force on the BOMARC, and all the rest, and it is also the same, always "Mañana".

I hope this isn't another one of those, because on the 1st of June—I am going to circle that on my calendar—and then I will see what you have got.

General MILEY. All right, sir.

Mr. MINSHALL. That is all I have. Thank you.

Mr. RHODES. I have no questions, Mr. Chairman.

GOVERNMENT LIABILITY IN EVENT OF CHEYENNE CONTRACT STRETCHOUT

Mr. MAHON. If the Army decides to delay or stretch out Cheyenne production until the contractor is able to correct certain deficiencies in the aircraft, would this have the effect of changing the contract, making the Government liable for any costs attendant thereto?

General MILEY. I think to the extent that we renegotiate any of the terms of the contract we certainly should take a hard position that he is not meeting his contractual terms. The general practice is when you give a contractor a stretched out delivery schedule the Government is entitled to consideration. In most cases we collect some consideration for giving him an easier schedule. So I think this would be our going-in position with this contractor.

U–21A UTILITY AIRCRAFT

Mr. MAHON. With respect to the U–21A, you are requesting $22.5 million for 72 U–21A utility aircraft and your projected losses in fiscal year 1970 total only ———. What is the urgency of the requirement for 72 of these aircraft?

General MILEY. This is an aircraft that we have been short of for a considerable amount of time. It is a very useful aircraft to transport high priority cargo or people over distances that are more efficiently travelled by air than on the ground. Now, the U–21, because it is fixed wing, low maintenance aircraft, is considerably more economical to operate than a helicopter for the same kind of mission. So our proposal here is to acquire 72 and fill up the Army's units around the world with these effective, efficient, economical fixed-wing aircraft and get around the use of helicopters, for one thing, in their stead.

Mr. MAHON. How many do we have in the Army inventory at the present time?

General MILEY. With the 1969 buy and assuming that our loss rates were approximately correct, we would end up with an asset position of ———.

Mr. MAHON. Does this include the aircraft under contract and not yet delivered?

General MILEY. It includes the quantity in 1969; yes, sir.

Mr. MAHON. How many U–21A have been sent to Southeast Asia and how many have you lost in that area?

General MILEY. As of January 1, 1969, we had ——— U–21's in Southeast Asia. In fiscal 1968 we lost a total of ———.

AIRCRAFT LOSSES IN VIETNAM

Mr. MAHON. General, in previous hearings we have been given information as to the total number of aircraft lost in Vietnam as a result of enemy action or otherwise. Have you presented that testimony here today?

General MILEY. Yes, we have.

Mr. MAHON. And did you break it down with respect to the helicopters and fixed-wing aircraft?

General MILEY. Yes, sir; we broke it down that way and also operational versus combat.

Mr. MAHON. Off the record.

(Discussion off the record.)

Mr. MAHON. I wish you would supply for the record—and a representative of the Department of Defense is present in the room to be of assistance—the all inclusive figures for the Department of Defense.

General MILEY. For the same period of time?

Mr. MAHON. Yes, sir.

General MILEY. Yes, sir.

(The information provided to the committee is classified.)

VULNERABILITY OF HELICOPTERS

Mr. ANDREWS. Tell us, if you can, how most of your choppers are lost in combat. What kind of ground fire is used to destroy them?

General MILEY. Now, I have lots of flyers around me here, but I suspect it is mostly from small arms fire.

Colonel THOMPSON. Yes, sir. About half of our helicopters are lost due to small arms ground fire.

Mr. ANDREWS. You mean by that, a rifle?

Colonel THOMPSON. Yes, sir; rifle, machinegun.

Mr. ANDREWS. Pistol?

Colonel THOMPSON. Not a pistol; no, sir.

Mr. ANDREWS. A shotgun?

Colonel THOMPSON. Shotgun? No.

Mr. ANDREWS. I thought I had read somewhere that one had been shot down by a shotgun.

Colonel THOMPSON. We have heard that there have been such allegations. However, there is no evidence of any helicopters being shot down by shotguns.

Mr. ANDREWS. They are very vulnerable, though, are they not?

Colonel THOMPSON. No, sir.

Mr. ANDREWS. That is, when they come in low?

Colonel THOMPSON. Actually, our helicopters in Vietnam have proven to be extremely invulnerable, according to our statistics. For example, if you relate it to the number of sorties flown, the total sorties flown by helicopters in Vietnam from January 1, 1962, through March 31, there was one helicopter lost to ground fire in 25,168 sorties. Another statistic that might be of interest: Of these helicopters that are hit, only about ——— percent are actually lost. Of those that are actually shot down, about 60 percent average are recovered, repaired, and returned to service.

So the helicopter differs from the fixed wing in that if the engine is hit or some other vital part, it still has the capability of autorotating to the ground without further damage. As I say, well over half of those that are shot down are recovered and repaired and returned to service. So based upon these figures, the helicopter is really quite invulnerable.

Mr. ANDREWS. Except when it is hit in the proper place.

Colonel THOMPSON. Yes, sir; like any vehicle or aircraft, if it is hit in an extremely vital spot and there is nowhere to land, in trees, something of that sort, the helicopter is really no more or less vulnerable than any other aircraft.

VULNERABILITY OF FIXED-WING AIRCRAFT

Mr. ANDREWS. What about your fixed-wing planes? Have you lost any of them to small arms fire?

Colonel THOMPSON. We have lost a few. I do not have a separate breakout on fixed-wing aircraft with me. However, there are very few because our fixed-wing planes we normally fly at an altitude where we have relatively few helicopters. We have relatively few fixed wings with respect to helicopters, besides. So there are relatively few fixed-wing aircraft lost to ground fire.

FIRE-RESISTANT FUEL SYSTEM FOR HELICOPTER

Mr. ANDREWS. What do you do, if anything, to protect your fuel tanks which I presume is the most vulnerable part of the chopper?

Colonel THOMPSON. Yes, sir.

Mr. ANDREWS. If you hit the fuel tank it could cause an explosion and then that chopper has had it; is that right?

Colonel THOMPSON. Yes, sir.

Mr. ANDREWS. Have you done anything to try to insulate or protect the tank against gunfire?

Colonel THOMPSON. Yes, sir. We have quite an extensive program in the UH–1 and the Cobra, which are our most numerous aircraft. We have money in this budget to provide for a fire-resistant fuel system which includes not only the tank, but also all the fixtures and the plumbing that carry the fuel to and from the tank and the engine. These rupture upon hard contact with the ground and causes the gas to spill out, fumes to accumulate and oftentimes a fire will result. We feel that if these modifications we have in this budget are approved and we install this new system we have just developed it will improve the resistance to postcrash fires in the UH–1's by 72 percent.

Mr. ANDREWS. Have you installed that system in any of the planes used in combat in South Vietnam?

Colonel THOMPSON. No, sir. The system has just now become available, and we have just finished development.

Mr. ANDREWS. When do you propose to install this fire-resistant fuel system in choppers that are now in Vietnam?

Colonel THOMPSON. We will start retrofitting the aircraft, as we can, according to the schedule and the availability of the new parts and equipment that will be manufactured and install them in production line aircraft as we can.

ARMOR FOR HELICOPTERS

Mr. ANDREWS. What have you done about putting armor on the choppers?

Colonel THOMPSON. Quite a bit of work has been done in the past on the armor. For instance, probably the most vulnerable part on the helicopter is the pilot. His entire seat and the covering around him is armor protected against small arms fire and fragmentation shells. He also has a ballistic helmet. He wears armor protective vests, all of which protects the pilot. There is some armor protection around some of the vital parts which have been determined to be the most frequent cause of loss.

Mr. ANDREWS. What experience have you had with that armor? I assume you have had your choppers in Vietnam equipped with this armor.

Colonel THOMPSON. Yes, sir; all the UH–1's.

Mr. ANDREWS. What is the experience to date? Has that cut down on your loss rate?

Colonel THOMPSON. We feel it has cut down, sir. Over the years this loss rate per sortie that I quoted you has continued to improve. During the first years of the war the loss rate was twice what it is now. I would say per sortie, we have improved considerably.

Mr. ANDREWS. What size shell will that armor protect against?

Colonel THOMPSON. Just small arms fire, sir, rifles and machineguns.

Mr. ANDREWS. Then what is your next most serious threat from the ground to your choppers? Machineguns?

Colonel THOMPSON. Yes, sir.

Mr. ANDREWS. You do not consider that small arms fire, do you?

Colonel THOMPSON. Yes, sir. If it is a caliber the same as a rifle—for instance, .30 caliber is considered small arms. Now, .50 caliber is a little bit beyond the small arms category.

Mr. ANDREWS. Will your armor on the chopper protect it from a .50 caliber machinegun shell?

Colonel THOMPSON. No, sir. The .50 caliber-type shell would require so much additional weight on the chopper that we feel it is not warranted and our threat over there from this type of weapon is not that great.

Mr. ANDREWS. Is it true to say, then, that since 1962, when you first started using choppers over there, through to the present you have greatly increased the safety of your choppers and the pilots who man them?

Colonel THOMPSON. No doubt about that, sir.

Mr. ANDREWS. And in the future, very shortly I hope, you will be able to install in those choppers in Vietnam certain fuel safety features that will cut down on gas explosions when they are hit by small arms fire?

Colonel THOMPSON. Absolutely; yes, that is correct.

Mr. ANDREWS. Thank you.

CHEYENNE SAFETY FEATURES

Mr. MAHON. I assume that this fire resistant fuel system is being installed in the Cheyenne?

General KLINGENHAGEN. Yes, sir. That is one point that I wanted to make, in addition. In addition to the improved fuel system to eliminate fires, we are increasing the armor protection against .50-caliber ammunition as compared with the .30-caliber protection that we now have in Vietnam. In addition to that, we did a lot of design to reduce the vulnerable areas.

The vulnerable area on the Cheyenne, although it is considerably larger than the Cobra, which is the present gunship in Vietnam, is reduced by 50 percent. We feel we are making great improvements in improving the survivability of the helicopter.

Mr. ANDREWS. What are you doing to the belly of those Cheyenne choppers? Are you putting armor on the underside of them?

General KLINGENHAGEN. Yes, sir. We have armor protecting all of the vital parts. For instance, the transmission which is one of your most vulnerable areas, we have .50-caliber protection for that area as well as we have protection for the pilot and the copilot from .50-caliber ammunition.

WEIGHT PROBLEMS CAUSED BY ARMOR

Mr. ANDREWS. Have you run into a weight problem, General, since you have added that armor?

General KLINGENHAGEN. We do have a weight problem with the Cheyenne. One of the reasons we have issued the cure notice is because the contractor has increased the weight by 5 percent.

Mr. ANDREWS. Is that due to the armor?

General KLINGENHAGEN. The armor has contributed to it, sir.

Mr. ANDREWS. Is there a point where you can add so much armor as to interfere with the maneuverability or the speed of the chopper?

General KLINGENHAGEN. Yes, sir. The weight will reduce the speed of the Cheyenne from 220 to 212 knots.

Mr. ANDREWS. I would think that you could sacrifice that relatively small speed for the additional safety.

General KLINGENHAGEN. Yes, sir. In making this estimate we are evaluating this area and certainly, although the weight increase is not completely attributable to the armor protection, I would have to agree with you. I would think we would want the .50-caliber protection. To go much beyond .50-caliber protection, increases the weight considerably.

Mr. ANDREWS. You can't hope to achieve any more protection than that?

General KLINGENHAGEN. No, sir; not within the present state of the art.

USE OF MISSILES AGAINST HELICOPTERS

Mr. ANDREWS. Do you know whether any of your choppers have been hit by SAM missiles?

General KLINGENHAGEN. Not in South Vietnam. I don't know whether the Air Force, in going in with their Jolly Green Giants into North Vietnam, have encountered any missiles, but I don't know.

Mr. ANDREWS. For the record, what do you mean by "Jolly Green Giant"?

General KLINGENHAGEN. These are the rescue ships that go in to pick up the downed crews. The Army does not go into North Vietnam.

Mr. ANDREWS. Off the record.

(Discussion off the record.)

Mr. RHODES. Mr. Chairman, may I ask a question?

Mr. MAHON. Mr. Rhodes.

ENEMY TECHNIQUE FOR ATTACKING AIRCRAFT

Mr. RHODES. General, do you have any report as to the technique that the North Vietnamese and Vietcong use in attacking aircraft? Is it controlled fire or is it a fire-at-will situation? How are they trained, in other words? It seems to me they have been amazingly successful, from the statistics which we have now. We have tried for

years to teach American troops to bring down aircraft with small arms fire. I don't recall that we were ever wildly successful at it. Maybe they have some sort of a technique we ought to know something about.

General KLINGENHAGEN. In my 2½ years over there, from 1963 to 1965—and, of course, tactics may have changed since—they have used all types of ruses, of course, in disciplining their people to wait until the helicopters are actually on the ground, hovering, discharging their troops. As an example, they will withhold fire until they get in there, hovering, discharging troops, and then they let loose. There is no question they have done an awful lot to teach their people the techniques, to take the maximum advantage of catching us, particularly in the crucial area of hovering, discharging troops. They are getting more sophisticated with their weapons, getting good lead sights, optical sights that are relatively simple and lightweight, but rather accurate. In teaching them how to properly lead a helicopter and get relatively good accuracy, they are successful. We might learn something about optical sights if we ever get into the business of having to shoot at the enemy's helicopters, no question about that.

Mr. RHODES. Has any missile fire been directed at helicopters?

General KLINGENHAGEN. During my time frame, I have not heard of any while I was there.

Colonel THOMPSON. Sir, there is no evidence of any missile fire at any helicopters in South Vietnam.

Mr. RHODES. They do not have a Redeye-type of missile?

Colonel THOMPSON. No, sir.

General KLINGENHAGEN. Not that we are aware of.

Mr. MINSHALL. Mr. Chairman.

Mr. MAHON. Mr. Minshall.

EFFECT OF INCREASED CHEYENNE ARMOR

Mr. MINSHALL. You are talking about a weight problem, increasing the armorplate protection against .50-caliber weapons vis-a-vis .30-caliber weapon. What are you talking about in terms of weight, cost differential, and so forth?

General KLINGENHAGEN. The aircraft originally was guaranteed by the contractor at a certain empty weight, about 11,000 pounds. Included in this guarantee was a protection against .50 caliber for the crews and the vulnerable area. This was part of the contract, as well as the contract also requiring him to meet certain performance specifications, such as 220 knots—speed, also to be able to hover on a hot day out of ground effects and carry a certain load.

As I indicated, the contractor in trying to resolve some of his technical problems, such as you have heard here of the rotor instability problem and the flight characteristics, as an example he had to add a larger wing, twice the wing area, in order to get a better flying helicopter at higher speeds. This caused additional weight. The weight has increased approximately 500 pounds.

Mr. MINSHALL. How much of that, though, is caused by the armor; that is my question?

General KLINGENHAGEN. Actually, the armor did not contribute to the aircraft becoming overweight. The contractor was scheduled to put a certain amount of armor into it. I was trying to indicate in the case

of the armor that it does add weight to the aircraft and to go from .30-caliber protection to .50-caliber protection, we have 263 pounds of armor in there, as an example.

Mr. MINSHALL. More?

General KLINGENHAGEN. No; total.

Mr. MINSHALL. Total weight?

General KLINGENHAGEN. Yes.

Mr. MINSHALL. What is required for .30-caliber?

General KLINGENHAGEN. With .30 caliber, probably you could get by with one-third of that, so I would say 75 pounds if you only required .30-caliber protection.

Mr. MINSHALL. You have to beef it up considerably, then, to get protection against a .50 caliber?

General KLINGENHAGEN. That is right, sir.

Mr. MINSHALL. There was considerable publicity about a week ago in the public press about some choppers that were lost over in Cambodia. Was that all because of small arms fire?

General KLINGENHAGEN. Did we get a report on those losses? I heard about it over the weekend, but I just read it in the press.

Colonel THOMPSON. I do not have any information.

Mr. MINSHALL. All right. Thank you.

RU–21 AIRCRAFT

Mr. MAHON. You are requesting $7.5 million for seven RU–21 aircraft. This is a reconnaissance version of the U–21. The P–1 book does not indicate any previous procurement of RU–21 aircraft for the last 3 fiscal years. Were the U–21 aircraft funded last year converted to the RU–21 configuration? And was Congress fully advised of this?

General MILEY. Yes, sir; they were.

Mr. MAHON. Was this the plan? During our budget hearings last year was this indicated?

General MILEY. I am not sure. I would have to go back and research the record at the time of the budget hearings, but certainly some time before the end of the fiscal year the black boxes that go into these surveillance aircraft became available and we modified the aircraft to accept the black boxes and converted the U–21's into RU–21's. I am not sure whether or not I used that information during the budget hearings. I would have to go back and check.

Mr. MAHON. Was this done through a reprograming action?

General MILEY. Yes, sir; it was.

COST OF U–21 VERSUS THE RU–21

Mr. MAHON. The unit price of the RU–21 is three times the price of the U–21, $1,071,400 as compared with $312,500. Sensors are carried by the RU–21. Are the cost of these sensors included in the price of the RU–21 aircraft?

General MILEY. The price of the sensors is included in the total price of the aircraft. I am looking now for a list of the sensors. It is a pretty classified piece of equipment. I could find out and furnish it to you.

Mr. MAHON. All right.

(The information provided to the committee is classified.)

Mr. MAHON. Were the sensors developed specifically for this aircraft?

General MILEY. Yes.

USE OF RU-21 IN SOUTHEAST ASIA

Mr. MAHON. Has the RU-21 been sent to Southeast Asia yet and if so have they been successful in combat operations?

General MILEY. The first of the new RU-21's have not arrived over there yet, but the kind of equipment we are talking about and the mission, the surveillance mission, has been performed, using older aircraft with jury-rig kits put into them and the mission has been successful. We think with this new specially designed aircraft we will really do a good job.

Mr. MAHON. Do you plan to convert any of the 72 U-21A's requested in 1970 to the RU-21 configuration?

General MILEY. No, sir. Our plan is to leave them alone as U-21's.

MODIFICATION OF U-21A AIRCRAFT

Mr. MAHON. You are requesting $2.5 million for modification of the U-21A aircraft. What modifications are proposed?

General MILEY. The modification kits, the first one I see, is some electronic thermal deicing system kits which we are buying for ——— aircraft. Overhead cockpit escape hatch kit, for ——— aircraft, the cost of that is $823,000. We are updating the avionics system on ——— prior-produced aircraft for a cost of $2.8 million. There are some other smaller ones. The next large one—I am sorry, I gave you $2.8 million. That is a unit cost of $2,868.

Mr. MAHON. Put the remainder into the record, if you will.

(The information follows:)

U-21 MODIFICATION/RETROFIT, FISCAL YEAR 1970 BUDGET, LINE ITEM 20

Modification	Aircraft quantity	Cost
Airframe:		
1. Electrothermal deicing systems	———	$44,000
2. Overhead cockpit escape hatch	———	18,000
3. Avionics systems update	———	350,000
Engine:		
4. Oil sight gage	———	75,000
5. Compressor wash ring	———	50,000
6. Particle separator	———	250,000
Avionics: 7. TACAN navigation system	———	1,754,000
Total	———	2,541,000

COMPONENT IMPROVEMENT FOR THE U-21A

Mr. MAHON. Under "Component improvement," you are requesting $500,000 for the U-21A. What component improvements are required?

General MILEY. That is a component improvement program of the U-21, T-74 engine. Essentially, all our component improvement programs relate to the engine in a particular aircraft. The purpose is generally the same, to increase the life of the engine and extend the time between removals from the aircraft.

AH–1G HUEYCOBRA HELICOPTERS

Mr. MAHON. With respect to the AH–1G Hueycobra helicopter, you have not requested funds for the procurement of the AH–1G Hueycobra helicopter since fiscal 1968. How many AH–1G's are in the Army inventory and how many are in South Vietnam?

General MILEY. Our total inventory at the present time, as of February 28, was ———, and of that total ——— were in Vietnam.

Mr. MAHON. What is our combat loss experience for this helicopter this past year?

General MILEY. Since the aircraft was introduced into the theater in August 1967, which was early in fiscal 1968, we have had a total of ——— losses, ——— combat and ——— operational.

Mr. MAHON. Does that include up through February?

General MILEY. Through April 30, 1969.

Mr. MAHON. How many AH–1G's are under contract at the present time?

General MILEY. We have ——— aircraft under contract for fiscal 1968 funding.

EFFECT OF CHEYENNE DELAY ON HUEYCOBRA REQUIREMENTS

Mr. MAHON. What effect will probable delays in the availability of the AH–56A Cheyenne helicopter, the replacement for the Hueycobra, have on your Hueycobra requirements for South Vietnam?

General MILEY. That is one of the aspects of our difficulties with Cheyenne that we are studying in great detail at the present time. We did have a quantity of ——— Cobras in the 1969 budget, original budget submission of the Army. We gave these up in favor of the Cheyenne. In fact, that was part of the Cheyenne tradeoff.

The Army's answer to this question will be largely determined by the amount of delay we are talking about.

Mr. MAHON. When will the last of the Hueycobras now under contract be delivered?

General MILEY. As I recall, it is April 1970.

Mr. MAHON. Do your Hueycobra inventory assets include those being repaired, overhauled, and modified?

General MILEY. We count all our assets as long as they have not been washed out of the inventory; yes, sir.

Mr. MAHON. What do you plan to do if production of the Cheyenne is delayed for an extended period of time or if it becomes necessary to terminate the contract for nonperformance? I believe you answered part of that question earlier.

General MILEY. I think our first reaction would be if the thing looks really in bad shape and looks as though it is going to be a long time before we get any Cheyenne, to give serious thought to adding on a quanity of Cobras to keep the Cobra line going, as I said, which will go down in April. So very shortly, about the first of the fiscal year, we have to make a decision as to whether to buy some more Cobras to keep the line going.

MODIFICATION OF HUEYCOBRAS IN PRODUCTION

Mr. MAHON. In the fiscal year 1969 supplemental the Army requested funds for modification and retrofit of the AH–1G. Will these modifications be made to those Hueycobras now in production?

General MILEY. To the extent we can catch the Hueycobras in production the same modification will be made. Our estimate is we can catch the last 38 on the line and apply them at the factory. The remainder will have to be applied in the field.

EFFECT OF CANCELING CHEYENNE PRODUCTION

Mr. ANDREWS. If you had to terminate, for some reason, the Cheyenne program how much of it could you salvage?

General MILEY. How many aircraft?

Mr. ANDREWS. How much of the R. & D., and all the rest of the costs?

General MILEY. Of course, the R. & D. contract delivered 10 pilot aircraft. We lost one in a crash so we have nine pilot aircraft of the new sophisticated weapons platform. How many we would salvage out of the production contract is difficult to determine.

Mr. ANDREWS. I don't mean how many planes. How much of the money you planned to spend could be recovered percentagewise? Have you bought any of the long leadtime items?

General MILEY. Yes, sir; we have bought long leadtime items. It is questionable that we can recover much of the money that has already been obligated and, in fact, it probably would cost us more money than has been obligated, to terminate and get out of the contract.

Mr. ANDREWS. You might be able to get another contractor to finish out the contract. That is my question.

General MILEY. This occurred to us.

Mr. ANDREWS. How much can you save of what you have spent, if you went to another contractor? Put something in the record, unless you want to keep it out until you get through the negotiations with Lockheed.

General MILEY. It is sort of a tough question to answer.

Mr. ANDREWS. It would not be a total loss?

General MILEY. No, sir. I think we could salvage something.

Mr. ANDREWS. All right.

MODIFICATION OF AIRCRAFT

Mr. MAHON. You are requesting over $66 million for aircraft modification.

CH–47 CHINOOK HELICOPTER

What modifications are proposed to the CH–47 Chinook helicopter for which you are requesting $15.9 million?

General MILEY. Colonel Thompson is our modification expert. I would like to have him talk about that.

Colonel THOMPSON. On the CH–47 Chinook there are a number of modifications in our continuing improvement program. Some of the major items are: $2.7 million pertaining to the conversion of the L–7B engine to the L–7C. That gives us more horsepower, and this is a buy-

out to convert all of the engines of the CH–47A and B to the more powerful engines. $1.6 million is required to improve the cargo hook which will increase the capacity by 4,000 pounds and gives the pilot a read-out as to exactly what weight he has hanging underneath him which enables him to fly better. We have $4.5 million required for the L–11 engine which is a buy-out to equip all our CH–47C models with an improved L–11 engine which brings them up to their full C model capacity. There were a number of CH–47's that came off the line which we could not equip with that engine. This now goes back and equips them with this engine.

Mr. MAHON. Put the remainder of that information into the record.

(The information follows:)

CH–47 MODIFICATION/RETROFIT, FISCAL YEAR 1970 BUDGET LINE ITEM 17

Modification	Aircraft quantity	Cost
AIRFRAME		
1. Emergency exit lights	——	$168,000
2. Reinforce aft pylon	——	272,000
3. Replace cargo hook	——	1,609,000
4. Reroute auxiliary power unit fuel line	——	6,000
5. Add dust cover to engine quadrant	——	65,000
6. Integral refueling system	——	1,103,000
7. Modify parking brake assembly	——	63,000
8. Modify upper boost actuator support	——	67,000
9. RVN modification at New Cumberland Army Depot	——	280,000
10. Modify self-tuning vibration absorber controls	——	56,000
11. Stiffen hinged fairing aft pylon	——	218,000
12. Modify tunnel covers	——	402,000
13. Provide added drains for fuselage	——	152,000
14. Modify fuel access panels	——	16,000
15. Strengthen stringer at station 120	——	24,000
16. Install new stability augmentation system extensible link feedback transducer	——	291,000
17. Revise AN/APX–72 computer wiring	——	88,000
18. Provide switch in N_2 emergency control system	——	63,000
19. Incorporate hermetically sealed battery and emergency relays	——	50,000
20. Retrofit AN/APX–72 wiring harness	——	97,000
21. Modify synchronizing shaft lord mount	——	131,000
22. Install cruise guide indicating system	——	473,000
23. Install static discharge system on rotor blades	——	65,000
24. Increase strength of CH–47A lag damper rod ends	——	250,000
25. Replace droop stops	——	22,000
26. Increase diameter of upper pivoting actuator bolt	——	73,000
27. Eliminate utility hydraulic system accumulator bleedoff	——	30,000
28. Replace upper control system bearing	——	30,000
29. Replace lower control system bearing	——	276,000
30. Modify component armor to facilitate access	——	110,000
31. Install additional pilot and copilot protection	——	34,000
32. Install critical component armor	——	308,000
33. Install M–41 suppressive fire system	——	7,000
34. Replace internal components of T–62 auxiliary power unit (APU)	——	248,000
35. Replace APU control system	——	250,000
36. Modify ground support equipment to CH–47C requirements	——	350,000
ENGINE		
37. T–55 L–7C modification	——	2,723,000
38. Install T–55–L–11 engines on initial CH–47C aircraft	——	4,533,000
AVIONICS		
39. Install AN/APX–72	——	319,000
40. Install AN/ARC–114	——	567,000
Total	——	15,889,000

UH–1 IROQUOIS HELICOPTER

Mr. MAHON. You are requesting $23.6 million for modification of the UH–1 Iroquois helicopter. What modifications are planned?

Colonel THOMPSON. The UH–1, approximately $8.6 million is required to install this fire-resistant fuel system, which we talked about

earlier, to reduce the probability of post-accident fires. The $2.4 million is required for avionics kits to standardize our fleet worldwide. So that when they are shifted from one theater to the other they can communicate adequately in any theater to which they might be sent. It also gives us better reliability, maintainability and longer life on the avionics.

We have $4.2 million required for the conversion kits to change the T–53–L–11 engine to the T–53–L–11D engine thereby increasing time between inspections from 300 to 600 hours and increase the time between overhaul from 1,200 to 1,800 hours.

Mr. MAHON. Put the remainder of the information into the record.

(The information follows:)

UH-1 MODIFICATION/RETROFIT, FISCAL YEAR 1970 BUDGET LINE ITEM 19

Modification	Aircraft quantity	Cost
Airframe:		
1. Install particle separator filter screen	——	$427,000
2. Install crashworthy fuel system	——	8,589,000
3. Update avionics configuration	——	2,381,000
4. Install special project avionics equipment	——	600,000
5. Convert UH-1D to UH-1H	——	300,000
Engine:		
6. Modify T-53 L-11 to L-11D	——	4,200,000
7. Modify T-53 L-11A to L-11D	——	100,000
8. Modify T-53 L-13 to L-13A	——	1,005,000
Avionics:		
9. Install AN/APX-72	——	2,104,000
10. Install AN/APX-72 test set	——	803,000
11. Install AN/ARC-114	——	3,042,000
Total	——	23,551,000

Mr. MAHON. Will this work be done at the contractor's plant or will it be done in the field?

Colonel THOMPSON. Most of these conversions that we are talking about here will be done at the time the helicopter comes in for depot overhaul. For instance, the fire-resistant fuel systems will be installed at the time they are coming in for depot overhaul, as will the conversion of the UH–1D's to the H configuration.

Mr. MAHON. Under what kind of a contract will these modifications be performed? What type of contract do you use?

Colonel THOMPSON. Refer to the UH–1 because they are the largest number. On that, about 50 percent is done in-house in our facilities at Corpus Christi, Tex. They will be done by our in-house facility there and the other 50 percent are split up between a Bell overhaul facility at Amarillo, Tex. and a Lockheed overhaul facility at Lake Charles, La. They would be doing some of this. This is a normal depot overhaul contract.

Mr. MAHON. Will you buy these modification kits from Bell? Does Bell manufacture them or do they buy them?

Colonel THOMPSON. The fire-resistant fuel system was developed by Bell, but all the components of it are made by subcontractors and would be delivered from the subcontractors.

AVERAGE NUMBER OF HELICOPTERS RETURNED TO U.S. FOR OVERHAUL

Mr. MAHON. Based on the total helicopter fleet in Vietnam, what is the average number being returned to the United States for overhaul?

General MILEY. Out of our total fleet as of December 31 of ——— helicopters in-country, a reasonably good average is ——— aircraft per month are being returned to the United States for overhaul.

AIRCRAFT PRODUCTION BASE SUPPORT

Mr. MAHON. Would you provide for the record a listing of the items making up the requirement for $2.7 million for aircaft Production Base Support?

(The information requested appears at page 1157.)

AIRCRAFT SPARES AND REPAIR PARTS

Mr. MAHON. You are requesting $227.4 million for aircraft spares and repair parts, an increase of $32 million over your fiscal 1969 program. How much of your $227.4 million request for aircraft spares and repair parts is for provisioning which is to provide an initial float of parts behind new major items as they are added to the inventory? The only new major aircraft you propose to introduce into the inventory is the AH–56A Cheyenne Helicopter.

General MILEY. I would like to break your number out and actually address the repair parts and support material of $201.3 million because that line truly reflects spare parts. The $26.1 million avionics and armaments spares are not repair parts, they are extra guns, extra avionics items.

Of the total of the $201.3 million, $136.2 million is for replenishment and $65.1 million for initial spares.

Mr. MAHON. Can you provide for the record a list of aircraft involved in this regard, please?

General MILEY. Of the initial spares?

Mr. MAHON. Spares and repair parts.

General MILEY. Yes, sir.

(The information follows:)

The aircraft systems and the replenishment dollars estimated to be expended in support of them in fiscal year 1970 are as follows:

	Millions		*Millions*
OH–13	$0.2	AH–1G	$5.9
OH–23	2.0	OH–6	3.9
CH–34	3.3	OH–54	6.6
CH–37	.1	T–63 Engine	6.4
CH–47	25.5	T–53 Engine	43.0
O–1	.2	OV–1	2.8
OV–1	1.8	T–55	18.3
U–1	.8	SK5	.2
U–6	.5		
U8/9	.3	Total	[1] 149.2
U–21	.2		–13.0
Tools and Ground Handling	1.0		
OH–58	1.4	Total	136.2
UH–1	24.8		

[1] Of this amount $13,000,000 is customer program leaving $136,200,000 for the direct Army program.

Detail replenishment line item data for estimates for funding requirements in support of individual aircraft systems is not readily available. The estimates are furnished based on summarization of the stock position of all aircraft repair parts and a percentage breakout of the total dollars being requested.

The aircraft systems, the principal items to be provisioned for them in fiscal year 1970 with the associated costs are as follows:

	Millions
RU-21: T-74 engine	$0.4
AH-1G: Engineering change—proposal items	.5
U-21A	1.3
Engine	1.1
Miscellaneous	.2
AH-56	55.3
Engine	15.0
Main rotor blade	9.0
Transmission	10.0
Main rotor hub	3.0
Fuel control	1.2
4 Servo actuators	1.3
Hub and gear box	.3
Tail rotor spindle assembly	.2
Avionics	1.9
Weapons	$0.9
Auxiliary power unit	.1
Miscellaneous	12.4
LOH	7.6
Engine T-63	3.4
Tail rotor drive shaft	.1
Main rotor transmission	1.7
Main rotor hub	.6
Main rotor blade	.5
Main rotor mast	.1
Main rotor clutch	.3
Tail rotor transmission	.4
Main rotor swash plate	.2
Engine drive shaft	.2
Tail rotor drive shaft	.1
Total	65.1

Mr. MAHON. Generally speaking, what is the reason for the increase in this budget activity this year?

General MILEY. The largest single reason, I would say, is the requirement for the Cheyenne spares. In the initial spares line of $65.1 million, $55.3 million are for Cheyenne initial spares.

COMPETITIVE PROCUREMENT FOR SPARE PARTS

Mr. MAHON. Last year the committee report on the fiscal 1969 Department of Defense appropriation bill criticized the military departments on the lack of competition in the procurement of replenishment spare parts. The Army was singled out as being far below the Navy and Air Force in the competitive procurement of aeronautical spare parts. What progress have you made in this respect during fiscal year 1969?

General MILEY. I will have to furnish that for the record.

(The information follows:)

ACTIONS INITIATED TO IMPROVE COMPETITIVE PROCUREMENT

Actions initiated to improve competitive procurement in fiscal year 1969 were:

(a) AAVSCOM established control points to monitor the procurement of aircraft spares from sources other than the prime contractor;

(b) Action has been taken to coordinate engineering technical data and procurement which facilitates competitive procurement;

(c) AAVSCOM has prepared and placed on file 725 new procurement packages that permit full competitive procurement; and

(d) Internal procedures have been reviewed and reissued to effect compliance with the Army regulation that established a program to obtain contractor assistance in the development of competitive procurement.

Despite these efforts, competitive procurement decreased from 7.7 percent in fiscal year 1968 to 4.8 percent in fiscal year 1969. Even though AAVSCOM has complied with OSD screening procedures in the development of competitive packages, the majority of new procurements under this procedure have not yet materialized. The majority of procurement dollars spent have gone for complex components for which there is only one source capable of delivering in the time

available. The demand for components such as helicopter rotor blades, transmissions, gear boxes, and other aircraft repair parts become so critical due to battle damage and wearout that time and money constraints do not allow for the development of new sources.

It is anticipated that the procedure touched on here, and the decreasing criticality of aircraft parts will allow increased competitive procurement during fiscal year 1970.

UNDERESTIMATE OF ROCKET LAUNCHER WEAROUT RATES

Mr. MAHON. The committee received "Army Reprograming Action FY 69–19" to increase by $6 million the fiscal year 1969 buy of two types of 2.75-inch rocket launchers for Army helicopters because actual combat experience indicated a wearout factor of one tube for every 30 rounds fired. Did this involve procuring and deploying large quantities of weapons before they are fully developed or was this designed to be a throwaway-type item.

General MILEY. Actually, this was a case of underestimating the wearout rate of these tubes. The item was fully developed but we found out that our estimated combat rate of 60 rounds per tube in actual experience turned out to be more like 30 rounds per tube. We found, for example, that we fired more of the 17-pound warheads, a larger one than the 10-pound warhead. We fired more of the 17-pound than we anticipated. We found that we had combat losses, such as, bulletholes through the tubes, at a higher rate. So it was not a question of an underdeveloped item, it was a question of us not estimating properly on the combat attrition.

Mr. MAHON. Couldn't this wearout rate have been determined through engineering and service tests of this rocket launcher?

General MILEY. I suppose we could have gotten some more information, but to really achieve the combat environment we have found over a time in Southeast Asia that we have to actually get field experience to know what we are really doing.

Mr. MAHON. How much have we spent through fiscal 1969 in the procurement of XM–158A1 and XM–159C rocket launchers?

General MILEY. I will have to furnish that for the record.

(The information follows:)

Contracts have been awarded to date amounting to $2.1 million for the XM–158A1 and $3.6 million for the XM–159C rocket launchers.

Mr. MAHON. Would you also provide how much is in the 1970 budget for these items and in what quantities?

General MILEY. Yes, sir.

(The information follows:)

A sum of $1.180 million is requested for the XM–158 launchers. There is no request for XM–159 launchers in the fiscal year 1970 budget.

Mr. ANDREWS. Mr. Lipscomb, do you have any questions?

Mr. LIPSCOMB. Not at this point, Mr. Chairman.

Mr. ANDREWS. Mr. Minshall?

Mr. MINSHALL. I have no questions.

Mr. ANDREWS. Mr. Rhodes?

INCREASE IN AIRCRAFT PROCUREMENT COST

Mr. RHODES. General, how are the projected prices for aircraft this year compared with last year? Are you showing an abnormal increase because of increasing costs?

General MILEY. There are two factors which impinge on our pricing. One is the escalation in our economy. Then, as I testified this morning, in many cases our production rates are lower. Even though we have an established production line, you have fewer aircraft to share the overhead of the plant. This is particularly true in the case of the UH–1 where we are coming down to a ——— per month rate. So the prices generally have gone up for those two reasons.

Mr. RHODES. Why is the production rate lower? Is this by design, or is it a stretchout?

General MILEY. No. Our procurement program is generally addressed to meeting losses. It is essentially a loss budget except in the case of the Cheyenne and the U–21 where we are actually increasing our inventory.

Mr. RHODES. So your production lines are not really operating at the optimum level in many instances?

General MILEY. When we reduce them to the rates of 1970 we will start to get down to more expensive rates, no doubt about it.

Mr. RHODES. That is all, Mr. Chairman.

TRAINER AIRCRAFT

Mr. MINSHALL. What is the situation with regard to trainer aircraft? How much money is in this budget, if any?

General MILEY. We have no money in this budget for trainer aircraft.

Mr. MINSHALL. How many training aircraft do you have in your inventory? Are they off-the-shelf aircraft?

General MILEY. Generally, they are off-the-shelf items with modifications to make them a little more airworthy. I think our safety standards are a little higher in the service than commercially, but in the case of helicopter trainers we will have with the end of our 1969 procurement 1,060 trainers, and in the case of fixed-wing aircraft, 311.

Mr. MINSHALL. That is sufficient to take care of your needs at the present time, your present training program?

General MILEY. At the present time it is taking care of us quite well.

Mr. MINSHALL. What kind of off-the-shelf items are you procuring for fixed-wing aircraft?

General MILEY. We actually have bought in the past, a T–41 and T–42. Now, what are they, Colonel Thompson?

Colonel THOMPSON. The T–41 is a small single-engine Cessna aircraft primarily used for proficiency training for aviators. The T–42 is a primary instrument trainer, twin-engine Beech aircraft that is used to qualify individuals in fixed-wing instrument qualification.

Mr. MINSHALL. Are these all used for training and not used for any side trips of any kind?

General MILEY. I have never had a ride in a T–41 or T–42, but that is only a very small sample.

Mr. MINSHALL. You keep a good accurate log on these? They are not being used as flying club items?

General MILEY. I am not aware of it. I think we make good use of them in the training base.

Mr. MINSHALL. I think you have flying clubs at your bases, if these fellows are so disposed, do you not?

General MILEY. I am not a flyer. Do we have any flying clubs?

Colonel THOMPSON. It is normal practice to have flying clubs on the base. In fact, we provide parking space. Primarily, they are aircraft purchased by the flying club, or if they have become excess to some military service there is some arrangement that they can be used by them. However, primarily they are purchased by the flying clubs and the cost of operation is maintained by the club, at no cost to the Government.

Mr. MINSHALL. But your present inventory of all trainer aircraft, choppers, fixed wing, is adequate and you have no plans for a future buy?

General MILEY. We had no requirement as we put the 1970 budget together, so I am sure that if we had a requirement I would have heard about it.

Mr. MINSHALL. Thank you.

MISSILES

Mr. MAHON. The total request for missiles is $916 million. We will defer at this time consideration of the Army request for the Safeguard ABM system because the committee plans to conduct separate hearings on this subject at a later date.

REDEYE MISSILE

With respect to other missile requirements, why are we continuing to buy large quantities of the Redeye missile?

General MILEY. Sir, this year's budget, as in the case of last year's budget, contains ——— Redeye missiles which operates the production line at the manufacturer's plant at ——— a month. This must be referred to as the minimum sustaining rate for this line. Our purpose in this case is to keep the line going to build up a small inventory of Redeye missiles for training consumption before we shut the line down.

Our present plan for the last procurement is fiscal ———, but this is not a large quantity. This is really the minimum sustaining rate.

Mr. MAHON. Are we producing them at that rate for training purposes?

General MILEY. No. We are using them at approximately a rate of about ——— a year so the additional ——— is this buildup in inventory so that when we cut off we will have 4 or 5 years of consumption ahead of us.

Mr. MAHON. Are these missiles deployed in Vietnam?

General MILEY. They are not.

Mr. MAHON. What is the reliability of this weapon as well as its accuracy against various targets?

General MILEY. General LeVan is our air defense expert on the Army staff.

General LEVAN. The verified reliability for missile verification tests is ———. As far as the hit probability, our firings at both the Marine range and the Army training range, we have been getting between ——— hits. We call a hit anything that comes within ——— of a little target that we tow. This does not include gunner acquisition problems.

Mr. LIPSCOMB. May I ask some questions on the Redeye?

Mr. MAHON. Yes.

(Discussion off the record.)

General MILEY. We would like to keep the line going and build a training backlog without shutting it down.

Mr. LIPSCOMB. In other words, you are buying Redeye missiles at the present time just to keep the line open?

General MILEY. To keep the line open and to build an inventory for future training. We know we cannot keep this line going forever. I am sure that in the R. & D. community there is a follow-on item to this one. The question is how soon will this then be available for procurement? I don't know. Do you know?

General LEVAN. Yes. What we are doing is, as General Miley indicated, building up a backlog so that when we stop the line we have enough missiles in our inventory to cover our known losses until a follow-on system might become available in the ———.

(Discussion off the record.)

REDEYE INVENTORY REQUIREMENTS

Mr. LIPSCOMB. Have you changed your requirements or projected inventory in any way since the begining of the program on the Redeye?

General MILEY. We have what we call our Army acquisition objective. This is a finite number of missiles that we would like to have in our inventory at any given time to fight a war. What we are trying to do here is to protect that inventory until the new item comes along. So we will build up a few thousand for training consumption requirement missiles and then shut the line down and wait for the new item to come along. Now, if the new item is delayed over time, we will start to get short.

Mr. LIPSCOMB. Who determined this minimum sustaining rate?

General MILEY. This was determined essentially by the Missile Command. We asked them what was the minimum rate we could operate that line and their answer last year when we put the 1969 budget together was ——— per year, or ——— per month.

Mr. LIPSCOMB. If the rate of procurement were lowered would this postpone the date the line would shut down?

General MILEY. Well, the decision to shut down the line must be conditioned by many other factors, but if the rate were lowered it would have two effects: One, it would increase the unit cost of the missile. In fact, it is my impression, having been out there about a year ago, that at ——— a month you are awfully close to a job shop operation. It is just barely a production line at ——— per month. So I think the price would significantly increase. Also, it would do, as you suggest, delay the time until we had our training consumption inventory.

Mr. LIPSCOMB. What is now the planned shutdown date?

General MILEY. The last year we have it in the 5-year defense plan I believe is ——— that is the approved Defense Department plan.

(Discussion off the record.)

Mr. LIPSCOMB. The fact is, it should not be scattered any place; isn't that correct?

General LEVAN. That has been the Army position, Mr. Lipscomb. Our tactical deployments of Redeye are well secure.

Mr. RHODES. Would you yield at that point?

Mr. LIPSCOMB. Yes.

(Discussion off the record.)

Mr. RHODES. If you do not buy enough to keep the line going can the contractor sell Redeye to a foreign country?

General MILEY. I do not think in this kind of item that he could sell to a foreign country.

General LEVAN. No; he is controlled.

Mr. MINSHALL. You say your tactical dispositions of Redeye missiles are well protected. Where are these distributed? You can go off the record if you wish.

(Discussion off the record.)

ENEMY ANTI-AIRCRAFT MISSILES

Mr. LIPSCOMB. Has there been any indication that the enemy at any location has or may be about to use heat-seeking anti-air missiles such as the Redeye?

General MILEY. I am not aware of it. Maybe General LeVan knows more about it than I do.

General LEVAN. To my knowledge, we have seen no evidence of any weapon system such as this in Vietnam. The intelligence community believes, however, that the Soviets are capable of developing such a weapon system if they choose. But as of the time, we have no evidence of it.

Mr. LIPSCOMB. In a recent story about 17 U.S. helicopters being shot down in 1 week, April 30, 1969, one helicopter pilot said that the reason for the success of the North Vietnamese was that it is just that they are getting more sophisticated equipment. Have you any idea what more sophisticated equipment he is talking about?

General LEVAN. I do not, sir, but it was not IR seeker missiles, air defense seeker missiles. I am sure I would have heard about it had it been air defense missiles.

(Discussion off the record.)

COST OF REDEYE MISSILE PROGRAM

Mr. MINSHALL. How much in dollars have we put into the entire Redeye program and how does this break out as to the unit cost for one Redeye missile?

General MILEY. I will have to assemble that information and put it in the record.

Mr. MINSHALL. Will you, please.

General MILEY. Yes, sir.

(The information follows:)

The PEMA investment through the fiscal year 1969 buy is $148.1 million. Average unit cost is ——— based on procurement of ——— missiles through fiscal year 1969.

Mr. MINSHALL. Off the record.
(Discussion off the record.)

SALE OF MILITARY WEAPONS TO FOREIGN COUNTRIES

Mr. MAHON. What is the custom in foreign countries buying our equipment? Do they necessarily go through the Army if it is an Army-type weapon?

General MILEY. It varies, Mr. Chairman. In the case of some countries, they like to use our procurement mechanism and come through what we call a country-to-country deal. They deposit the money with us, we go out and let a contract, use our inspection services and deliver. In other cases there is a direct exchange between a foreign government and the private contractor, but the private contractor, when he makes a private deal like this, must come to the State Department and get an export license which is reviewed by the Department of Defense.

Mr. MAHON. Will you prepare a memorandum for the committee and see that we get it in the next few days, explaining all of this operation.

Mr. MINSHALL. The entire operation?

Mr. MAHON. The whole operation, from beginning to end, and the procedures to be followed, as you were explaining.

General MILEY. Yes, sir.

CHAPARRAL MISSILE

Mr. MAHON. What is the status of the Chaparral missile? Last year we discussed problems the contractor was having with the guidance packages.

General MILEY. As far as I know, we have two contractors—actually, the Navy has two contracts going with Raytheon and General Electric. As far as I can determine, Raytheon is right on schedule, is having no trouble. General Electric has had trouble in the past. We think they are coming out of it. Even though they are slightly behind schedule I think the get-well date is in the foreseeable future. Do you want to add to that?

General LEVAN. No. I think that is generally correct. I think we are meeting our delivery schedules. We still have some residual problems.

Mr. MAHON. You have had no additional problems?

General LEVAN. None. It has been going quite well.

Mr. MAHON. Were you able to procure the expanded number of missiles in fiscal year 1969, including the large buy of ground equipment?

General MILEY. I am not sure I understand the question completely, but the fact that we did have two producers going gave us the capacity to expand our production of the missile.

Mr. MAHON. How do you arrive at a total cost of $99.5 million for ——— of these missiles?

General MILEY. There is quite a detailed breakout that I have here.

Mr. MAHON. Supply it for the record, please.

(The information follows:)

COST BREAKOUT, FY 1970 CHAPARRAL PROGRAM

Item	Quantity	Unit cost	Amount
Chaparral missile	———	———	$40,500,000
Fire units	———	———	33,300,000
Forward area alerting radar (FAAR)	———	———	13,500,000
Rapid alerting and identification display (RAID)	———	———	3,300,000
Training, test, and maintenance equipment	———	———	8,900,000
Total	———	———	99,500,000

COST OF CHAPARRAL FIRE UNIT

Mr. MAHON. Why should the Chaparral fire unit cost ——— each? It seems a rather high price. Is this a very complex piece of equipment?

General MILEY. I would like to have General LeVan discuss this, if he will.

General LEVAN. Yes; it is a relatively complex piece of equipment. First of all, it has to be sealed in. It is a cockpit, in effect. It is similar to the cockpit on the delivery aircraft. It has to be sealed in, it has to have air pumped into it, it must have means of cooling the missiles, revving up the gyros; it must have the means of telling the gunners when the IR seeker is locked on and when the aircraft target is in a performance envelope. So it is not a simple piece of equipment.

Mr. MAHON. How does the cost of this Chaparral fire unit compare with the cost of Sidewinder fire unit in an aircraft?

General MILEY. We have asked the Navy to compare these two things. Of course, the Navy responds by saying that their airplane is the equivalent of our fire unit. The airplane supplies the power and the heating and the cooling, and they refused to—they could not break out for us an equivalent package to compare to our fire unit. Their simple answer was "Our aircraft is a fire unit."

Mr. MAHON. That is a little oversimplified.

General MILEY. I think it is, but that is about the best I can do with the Navy on fairly short notice.

VALIDITY OF INITIAL COST ESTIMATES

Mr. MAHON. But it does seem that this cost is exorbitant. Of course, when you started out estimating it, it was probably set at about $99,000. The way cost escalations have come about has been just about unbelievable. The Defense Department asks for certain weapons systems and the estimated cost is relatively low compared to the final cost. Once the program is off and going, then we are requested to supply additional funds. There seemingly is very little reliability to be attributed to DOD original cost estimates.

General MILEY. When we started this program out, when I first came in contact several years ago, the story was that they were going to take three off-the-shelf items, the Sidewinder missile, the old M–55 quad–50 pedestal mount and the 113 carrier chassis, put them together and come up with a very inexpensive antiaircraft missile.

Mr. MAHON. That, unfortunately perhaps, sounds like the same old story.

We get that in many instances. It is not surprising that confidence is sagging in the testimony of Defense witnesses, both civilian and uniformed witnesses. You are all good people, but if we had had to stake our lives on the estimates we have been given in the pastI have serious doubts as to whether or not we would be here now.

General MILEY. Sir, even at the time, as an old antiaircraft gunner I wondered about the utility of the M-55 pedestal mounts since I used these back in New Guinea in 1945. As it turned out, my feeling was pretty right.

1970 REQUIREMENT FOR CHAPARRAL SYSTEM COMPONENTS

Mr. MAHON. You propose to buy in fiscal year 1970 a total of ——— fire units, ——— forward area alerting radar, and ——— rapid alerting and identification display units. How many of these items do we have on hand and on order?

General MILEY. On hand, ——— fire units; undelivered prior years, ——— missile trainer, on hand, 130; undelivered prior year, 87.

Forward alert, forward air alerting radar, we ——— on hand. We have ——— from prior year programs and with respect to the RAID system, again ——— on hand; ——— on order in prior years.

Mr. MAHON. What is the requirement for the fiscal year 1970 buy of these units? Why do we need these additional items?

General MILEY. The requirement for the Chaparral system components and the Chaparral system in total is in keeping with the activation schedule of the Chaparral/Vulcan battalions that the Army is in the process of training and activating. This will exactly match the activation schedule of the battalions.

Mr. MAHON. Are these items contracted for separately or obtained through the Chaparral prime contractor?

General MILEY. The RAID and FAAR are contracted for separately. The Chaparral missile is contracted through the Navy. Ground equipment is contracted directly by the Army with its producer.

1970 REQUIREMENT FOR VULCAN AND CHAPARRAL CHASSIS

Mr. MAHON. You were funded ——— Vulcan chassis and ——— Chaparral chassis in fiscal year 1969 at a total cost of $17.2 million. In fiscal year 1970 you are requesting funds for an additional ——— Vulcan and ——— Chaparral chassis at a total cost of $9 million. These chassis are still type classified limited production, as are the Vulcan gun and the Chaparral missile. Are you duplicating the experience you had with the Sheridan and M-60A1E1 and E2 tanks?

General MILEY. I certainly hope we are not duplicating that experience. I think we forecast type classification this fiscal year for both units. Of course, I might say that the chassis for these two items is considerably simpler than the M60A1E2 tank. We plan standard A for the Vulcan chassis in the second quarter, fiscal 1970, and fourth quarter 1971 for the Chaparral carrier.

VULCAN/CHAPARRAL PRODUCTION PROBLEMS

Mr. MAHON. What are the problems with the Vulcan/Chaparral weapons system and where do they stand as far as engineering and service tests are concerned?

General LeVan. There are no major problems with the Chaparral weapon system at this time. In the case of the Vulcan the residual technical problem we have is that we are not achieving the desired slow rate for the gun turret. This will degrade our capability somewhat on close-in courses right at the crossing or midpoint. We do not think it will be significant.

Mr. Mahon. Have deliveries of the carrier for the Vulcan gun and Chaparral missile met the schedule provided to the committee last year?

General Miley. As far as I know, we have had no trouble with the chassis deliveries. I can verify that for the record. FMC makes both chassis and I am not aware of any problem.

Mr. Lipscomb. Are the production problems for Chaparral all cleaned up now?

General Miley. As far as I can gather from the procurement people, although GE is still a little behind our original hopes for their production, the production problems have been solved and the Rayethon production schedule has been good for some time. So I am not aware of any significant production problem.

SLIPPAGES IN THE CHAPARRAL SYSTEM

Mr. Mahon. From the information which we have—and it is a little inconclusive at this point—the indication is that there have been slippages in this weapon system. I would like for the record to be absolutely clear on this problem.

General Miley. I am not aware of any current production slippages due to technical problems.

Mr. Mahon. I did not say what they might be due to, but will you please doublecheck that and report to us tomorrow when you come back?

General Miley. Yes, sir, I will.

Mr. Mahon. And possible slippages in development, if it is not in production. You distinguish between the two.

General LeVan. We had earlier problems in the producibility of the Chaparral and that did slip us somewhat. We are activating the Vulcan batteries ahead of the Chaparral batteries and marrying them up. I was talking about technical problems falling out of the service test, for example. I have been quite pleased that we have not encountered any new ones outside of these producibility problems we had some time ago.

Mr. Mahon. How about the slow rate problem with the Vulcan gun turret, will that cause a slippage in the schedule?

General LeVan. No. ———, in fact.

General Miley. I may have a clue to this question. I have an answer here that my expert on production furnished to me a week ago. My question was: Have we slowed down the deliveries on the carriers for the Vulcan gun and Chaparral because of production problems?

His answer is: No; the production schedules furnished the committee last year have been adjusted to reflect a reduction in procurement due to a decrease in the number, authorization of weapons for a battalion from ———. Carrier deliveries are meeting the revised production schedule.

This reminds me now that back at budget time last fall a decision was made to reduce the number of fire units per battalion from ———. So we then adjusted our delivery schedules downward so that the actual deliveries met the activation schedules.

Mr. MAHON. So they are different than that furnished the committee last year?

General MILEY. Yes; because of the difference in the mix of the fire units.

COST OF CHAPARRAL/VULCAN PROGRAM

Mr. MAHON. From fiscal year 1966 through the first half of fiscal 1969 the Army experienced cost overruns in its Chaparral/Vulcan R.D.T. & E. program totaling $26.5 million. These cost overruns were caused by changes in scope, expansion of the test program, and contractual cost overruns. What effect, if any, has this had in your Chaparral/Vulcan procurement program?

General MILEY. I know of no slippage that we have experienced as a result of this.

Mr. MAHON. Has it increased the cost of the weapon system at all, the production models?

General MILEY. I do not have the actual analysis of it.

Mr. MAHON. Would you provide a tabulation for the record showing how much the Army has committed or plans to commit to this program through fiscal year 1970, by fiscal year and appropriation account?

(The information follows:)

PEMA FUNDS COMMITTED OR TO BE COMMITTED TO THE CHAPARRAL/VULCAN PROGRAM

	Chaparral			Vulcan		
	Missile: P4200	Ground equipment: P4200	Carrier XM730: P4440	Gun (SP) XM163: P4440	Carrier XM741: P4440	Gun (towed) XM167: P4410
Fiscal year:						
1966	14.2	12.4	[1] 0.9	10.3	[2] 1.7	0
1967	22.5	43.7	[1] 3.1	35.4	[2] 2.9	8.7
1968	2.0	6.0	0	19.9	[2] 3.5	17.0
1969	33.0	62.8	10.8	24.6	6.4	21.4
1970 [3]	40.5	59.0	7.3	8.1	1.7	0

[1] Value shown for these years were predicted on unit cost of the M548. Cost of modification to XM730 configuration are included in the Chaparral ground equipment line.
[2] Value shown for these years were predicted on unit cost of the M113A1. Costs of modification to XM741 configuration are included in the Vulcan gun line.
[3] President's budget.

IMPROVED HAWK SURFACE-TO-AIR MISSILE SYSTEM

Mr. MAHON. What is the latest information on the status of the improved Hawk SAM system?

General MILEY. We had hoped to place our first procurement contract for the improved Hawk system this spring. As of the reading I took just before these hearings began, we are testing the improved Hawk system. We have had some difficulties, but the feeling of the procuring agency is one of optimism that we still will be able to place our first production contract in the near future. General LeVan is closer to the testing program on this. I would like to have him respond.

General LEVAN. The temperate zone engineering service tests started in December of 1968 and will be completed in October of 1969 so they are just underway. Our developmental, early R. & D. firings, we have been getting about ——— percent successes. We know another ——— percent we have identified as engineering cause of failure. This is quite good for the early stage of a program for a new missile.

Mr. MAHON. Are you satisfied with the results of the tests to date, particularly from a reliability standpoint?

General LEVAN. I would like to see better results, of course, but I think the results are good for this stage of the program.

Mr. MAHON. Have we backed off in our specifications in any way in order to place these weapons into production?

General LEVAN. Not to my knowledge.

Mr. MAHON. Would you provide for the record, please, how you arrive at the total of $98.7 million for ——— Hawk missiles?

General MILEY. Yes, sir.

(The information follows:)

The following cost breakout is furnished for the fiscal year 1970 improved Hawk program.

[Dollars in millions]

Item	Fiscal year 1970	
	Quantity	Amount
Improved missile	———	$52.6
Improved warhead	———	2.0
Ground support equipment modification retrofit	———	32.8
Information coordination central (ICC)	———	8.4
Theatre readiness monitoring equipment (TRME)	———	2.9
Total	———	98.7

Mr. MAHON. Also for the record how many information coordination central systems and theater readiness monitoring equipment items do we have on hand and on order?

(The information furnished to the committee is classified.)

COSTLINESS OF IMPROVED HAWK SYSTEM

Mr. MAHON. Why are these items of equipment so expensive?

General LEVAN. The information coordination central is really a computer that we are adding to the basic Hawk battery to automate it. As with all computers, it is relatively expensive.

The theater readiness monitoring facility is a central maintenance facility that has sophisticated test gear, among other things. With the improved Hawk we have the certified round, where we do no checking out at the battery; instead, we bring part of the missiles back to the theater readiness monitoring facility and check them on a sample basis annually. We bring the wooden rounds or certified rounds back and test them in this facility.

Mr. MAHON. Do we buy these two items through the prime contractor or direct from the subcontractor?

General MILEY. Through the prime.

Mr. MAHON. Do we have complete data packages on them in order to permit us later to compete these, or why shouldn't we buy these direct?

General MILEY. It has been our experience with these sophisticated and complicated missile systems that we are never really able to buy the whole system competitively but the Missile Command, as soon as the technical data becomes available, in almost every case that I can think of, engages in a breakout program and breaks out pieces of the system to buy competitively. I am sure their plan is to do the same for this system.

SHILLELAGH MISSILE

Mr. MAHON. How is the second source proceeding in the building of the production rate of the Shillelagh missile?

General MILEY. Martin Marietta is at ——— per month and has been at that rate since January and will stay at that rate until ——— when their contract ends.

Mr. MAHON. Why have you maintained such a large yearly procurement of this missile? You are asking for funds to purchase ——— more in fiscal year 1970.

General MILEY. Our plan for Shillelagh is to buy the missiles to a total authorized inventory level of ———. In the case of 1969, 1970 and 1971, this represents a multiyear contract which was the result of a very intense competition between our two sources. This competition resulted in a savings of $5.2 million in fiscal year 1970 over the noncompetitive price paid in fiscal year 1968. Through 1970 we will buy the Shillelagh requirements for the Sheridan, and in ——— the remaining ——— is associated with the E–2 tank. So by the end of ——— we will have our total inventory objective for the two Shillelagh firing systems in our inventory.

Mr. MAHON. These missiles are not being used in Vietnam. How many are we using for training purposes per year?

General MILEY. During fiscal 1970 procurement production program we will consume a total of ——— missiles of both the training and tactical type.

PLANNING RESEARCH CONTRACT CONCERNING SHILLELAGH

Mr. MAHON. A recent news article indicated that Planning Research Corp. has been awarded a follow-on contract to perform a 1-year supplemental reliability and quality assurance study on the Shillelagh antitank missile. Does this indicate you are still having problems with the reliability of this weapon and, if so, why do we insist on buying them in such large quantities? Why don't we wait until such problems are resolved?

General MILEY. The PRC contract is a contract which has been placed by the Missile Command and they utilized the services of this contractor to collect all the firing data and performance data worldwide on the Shillelagh missile, to analyze this data and develop it for management purposes down at Huntsville to keep a continuing check on the performance of the missile in the field, training sites, by tactical units. It does not indicate that we are having quality assurance

problems or reliability problems. It is just to develop the data bank and the continuing surveillance of this program as the missiles are used in the field.

RELIABILITY OF SHILLELAGH MISSILE SYSTEM

Mr. MAHON. What is the reliability of this missile itself and the overall system? Has it met contract specifications in that regard?

General MILEY. It is reaching an approximately ——— hardware reliability. I think our target in the early days of this program was ———. So it is pretty close to meeting our earliest expectations.

Mr. MAHON. How about the accuracy or kill rate?

General MILEY. I do not have it. I can furnish it for the record. It seems to me we are in the neighborhood of ——— of first rounds hit at a ——— range, but I can verify those numbers.

(The information follows:)

The hit probability of a Shillelagh missile at ——— meters has been confirmed to be ———.

TOW MISSILE SYSTEM

Mr. MAHON. How far has the TOW missile system program slipped and what is the reason for this?

General MILEY. Actually, the slippage in this program was a deferral from 1968 to 1969 at budget time.

Mr. MAHON. What was the reason for the deferral?

General MILEY. We deferred this program because we needed the funds for higher priority South Vietnam war requirements.

Mr. MAHON. What is the status of your efforts to get a second source for TOW production?

General MILEY. We have already acquired a second source. The Chrysler Corp. is our second source.

Mr. MAHON. Why do you want to procure almost ——— TOW missiles when it is not type classified as a standard A item?

General MILEY. We intend to type classify this missile standard A in October 1970 and, as far as I know, we are having no technical problems with the missile at this time. It seems to be performing very well.

Mr. MAHON. Under the contract will you be able to discontinue or stretch out production of the TOW without penalty to the Government in the event it does not pass production acceptance tests and the in-process review, a review that is scheduled in the near future?

General MILEY. If the missile fails to meet its specification, in the case of this missile we have an unusual feature in the contract which is known as "fly before you buy." In other words, we take a lot of the missiles from the contractor and test them. If they meet the performance specifications we pay for them. If not, we return the lot to the contractor. At his expense, he must modify the missiles or correct the missiles and then resubmit them for a "fly before you buy" test.

Mr. MAHON. General, we will continue the hearing at 10 a.m. tomorrow.

TUESDAY, MAY 6, 1969.

Mr. MAHON. The committee will come to order.

Mr. EVANS. When we adjourned yesterday, we were discussing the missile procurement request of the Department of the Army.

PERSHING MISSILE SYSTEM

During hearings last year, Army officials testified that fiscal year 1969 funds would complete the Pershing program. In fiscal year 1969 the Army funded $57.8 million for Pershing XMGM-31A, and $5.9 million for Pershing modifications.

In fiscal year 1970 the Army is requesting another $4.5 million for Pershing XMGM-31A and $13.5 million for Pershing modifications. What is the status of the Pershing program and why are these additional funds required this year?

General MILEY. The Pershing program to procure improved wheeled vehicle mounted equipment (P1a) is on schedule ———. The requirement for additional funds in fiscal 1970 is divided into two categories, $4.5 million associated with the ground support equipment and $13.5 million for systems modifications. Of the $4.5 million there is $3.6 million for essential engineering support, quality assurance and documentation associated with the final 3 months deliveries of fiscal year 1969 funded production and $0.9 million for one additional test status for guided missile system components for use by a general support ordnance unit. This latter requirement developed after the fiscal year 1969 program was submitted. The requirement for $13.5 million is for modifications resulting from testing and field deployment of the P1a system.

This is an estimate of the amount of modification and fixing based upon our experience in other missiles systems deployed over the years.

Mr. EVANS. What problems were experienced during the testing?

General MILEY. The 1-A problems have been nominal, primarily in the area of component reliability where we had to change components because they failed in test; put in a harder or longer life piece of equipment; no significant problems.

Mr. EVANS. What is the amount of cost overruns, or cost increases experienced with the Pershing XMGM-31A to date?

General MILEY. I will have to furnish that for the record. I don't have that with me.

(The information follows:)

To date Pershing has not experienced any cost overruns. There have been additional costs associated with shifting the Pershing missile system into the quick reaction alert (QRA) role in Europe which required new and additional equipment. The QRA role for Pershing has cost us $148.3 million.

Mr. EVANS. How much has been appropriated over the years for modification of the Pershing missile system?

General MILEY. The cost of the Pershing before modifications was $679,400,000, including $57.8 million in 1969. The appropriation for modifications over the years through 1969 has been $36.1 million and the amount actually obligated has been $32.3 million which includes a forecasted $5.9 million for fiscal year 1969. The difference, $3.8 million, was reprogramed to other programs.

PRODUCTION BASE SUPPORT, OTHER MISSILES

Mr. EVANS. Provide for the record a breakdown of the line items for "Production base support, other missiles," for which you are requesting $18.5 million in fiscal year 1970.

(The information requested appears at p. 1158.)

MISSILE SPARES AND REPAIR PARTS

Mr. EVANS. You are requesting $56.7 million for missile spares and repair parts, a slight increase over your fiscal year 1969 program. Generally to what areas do you attribute the increase for this budget activity?

General MILEY. The total dollar breakdown, $14.7 for replenishment and $38 million for initial spares, and the two largest components of the initial spares, or the provisioning, as we call it, is $10 million for the Chaparral system which is currently being deployed and the improved Hawk system which we talked about yesterday and for which we forecast a contract this spring.

Mr. EVANS. Provide for the record a breakdown of the $52.7 million for repairs parts for "All other missiles," line item 95, page 7 of your P-1.

General MILEY. I will furnish that breakdown.

(The information follows:)

Missiles, spares and repair parts fiscal year 1970 program includes $14.7 million replenishment; $38 million initial spares.

Initial spares support is programed for the following end items:

	Thousands
Air defense fire distribution	$263
CHAPARRAL	10,064
HAWK improved	10,515
Land combat support system	3,125
NIKE-HERCULES improved	1,064
PERSHING	110
REDEYE	161
SERGEANT	450
SHILLELAGH	5,262
TOW (p6BGM-71A, OXTM-71A)	7,000
Total	38,014

Missiles, spares and repair parts fiscal year 1970 program includes $14.7 million replenishment.

	Millions
PERSHING	$2.3
SERGEANT	.8
CHAPARRAL	1.4
NIKE-HERCULES improved	2.2
HAWK improved	6.1
REDEYE	.2
Air defense coordination system	.2
SHILLELAGH	1.3
Calibration equipment	.2
Total	14.7

Detail replenishment line item data for estimates for funding requirements in support of individual missile systems is not readily available. The estimates are furnished based on summarization of the stock position of all missile repair parts and a percentage breakout of the total dollars being requested.

SAFEGUARD ABM SYSTEM

Mr. ANDREWS. What about the Safeguard ABM system?

General MILEY. There is money in this program for the ABM system. I gave the figures in my opening statement, $360.5 million total.

Mr. ANDREWS. We will have a special hearing on ABM, but I was a little disturbed this morning that we missed the initial cost estimate by a billion and a half dollars.

The early morning news said they had not figured——

General MILEY. Apparently they had not included the nuclear warheads in the estimate.

Mr. ANDREWS. That was $1.5 billion.

TRACKED COMBAT VEHICLES

Mr. MAHON. We shall now discuss tracked combat vehicles. I believe Mr. Slack would like to ask some questions at this point on the M–113 armored personnel carrier.

M–113 ARMORED PERSONNEL CARRIER

Mr. SLACK. Thank you, Mr. Chairman. General Miley, the original M–113 armored personnel carrier was equipped with a Chrysler gasoline engine and an Allison transmission. Several thousand of these vehicles were built for the U.S. Government between 1960 and 1965. The U.S. 7th Army in Europe and many other Army and Reserve units are equipped with these vehicles. Approximately every 5,000 miles these vehicles undergo a major rebuild which involves replacement of the engines, transmissions, tracks, and other components with new or rebuilt units. Due to the age of these vehicles probably will reach the rebuild stage in fiscal year 1970. Since 1965, the Army has been buying M–113–A1 armored personnel carriers which are equipped with General Motors diesel engines and Allison transmissions to match the diesel engine.

How many M–113 armored personnel carriers is the Army planning to rebuild during fiscal year 1970?

General MILEY. I will have to furnish that for the record, sir.

(The information follows:)

Number of M–113's (armored personnel carriers) Army plans to rebuild during fiscal year 1970.

M–113	663
M–113–A1	1,115
Total (Army worldwide)	1,778

Mr. SLACK. What is the cost per vehicle for these rebuilds?

General MILEY. I will have to furnish that.

(The information follows:)

COST FOR REBUILD OF M-113'S (ARMORED PERSONNEL CARRIERS)

	Unit cost	
	M-113A1	M-113
CONUS	$10,410	$10,689
USARPAC	7,276	6,559
USAREUR	(1)	3,943

[1] Not available.

Note: The variances in unit costs is due to the difference in labor and transportation costs in the 3 areas involved as well as nearness of operating forces to the overhaul depots.

CONVERSION OF M113 TO M113A1 CONFIGURATION

Mr. SLACK. The Army at present has a contract for the design of a kit which would allow the M113 armored personnel carriers to be rebuilt into the M113A1 configuration. This design could be completed in the next 2 months. The Army has made an economic study which shows that it would be slightly cheaper in the long run to rebuild the M113 vehicles into the M113A1 configuration. In addition to the small cost saving, a great deal of advantage would be gained by having the more up-to-date vehicles in service, which has, among other advantages, a greater radius of operation, and it is much safer in case of fire because the gasoline is replaced by diesel fuel.

The M113A1 has greater power at low speeds. Since no Army rebuild stations in the United States or foreign countries has ever converted an M113 into an A1, it would be best for the original part of this program to be done at the factory where the vehicles are manufactured.

Would it not be more advisable to update these vehicles at the same time they are being rebuilt by returning them to the original manufacturer and having them rebuilt to M113A1 diesel configuration?

General MILEY. The Army agrees with your conclusion that it would be better to have a completely diesel fleet in the M113 family. We asked the Army Materiel Command several months ago to make a cost-effectiveness study of the conversion. The study was received last month and is currently being evaluated.

We will have to make a decision as to whether we will convert the vehicles or wear them out in their present gasoline configuration.

Mr. EVANS. Where did the report come from upon which this last question was based?

General MILEY. The information has been gathered at a subordinate level in the Army Materiel Command, and was forwarded to the Army Staff with the recommendation of the commanding general of the Army Materiel Command.

Mr. EVANS. The total request for tracked combat vehicles is $305.8 million, which is $22.2 million more than your fiscal year 1969 program.

The General Accounting Office recently completed a review of the M551 Sheridan weapon system, the XM35 conduct-of-fire trainer for the Sheridan, and the M60A1E1/E2 tank program. The Sheridan, which will replace the M41 light tank series and the M56 airborne assault weapon, is currently estimated to cost, through fiscal year 1972, about $1.3 billion, of which some $200 million is for research and development. The GAO review disclosed that the Army authorized for production and purchased large quantities of the above tanks and trainers despite known uncorrected deficiencies and the lack of acceptable conventional ammunition. According to GAO, the foregoing Army actions resulted in the following:

(*a*) A total of the ——— of the ——— Sheridan weapon systems produced thus far are stored in depots and at the production site.

(*b*) The third year (fiscal year 1968) buy was only reduced from ——— to ——— units.

(*c*) Approximately $44 million worth of M60A1E1 tank turrets have been placed in storage and the M60A1E1 retrofit program has been canceled.

(*d*) This action also caused a cancellation of the retrofit program for the M48 tank, which was to receive the turrets and 105-millimeter guns removed from the M60A1 tanks.

(*e*) The fiscal year 1967 procurement (first buy) of 300 M60A1E2 tanks are being stored at the tank plant.

(*f*) The fiscal year 1968 program for ——— additional M60A1E2 tanks was canceled.

Current program costs of the M60A1E2 tank system, including only quantities delivered and those authorized for procurement to date are estimated at about $250 million.

A total of 194 XM35 conduct-of-fire trainers for the Sheridan weapon were procured at a cost of approximately $7.4 million, and they will require modification at a cost of $5,000 each before they can be issued for training use.

I would like to go into this matter in greater detail in order to obtain explanations from Army officials to these allegations.

M551 SHERIDAN WEAPON SYSTEM

The M551 Sheridan weapon system development, initiated in 1959, was originally scheduled for type classification in January 1963, and for availability to the troops in early 1964. General, why was the Sheridan type classified standard A for mass production in May 1966 when it was known that acceptable conventional ammunition had not been developed for the weapon, rendering it unsuitable for its intended operational use?

Generally MILEY. At the time that the Sheridan was type classified standard A, it had completed one of the most extensive development programs that the Army has ever applied to one of its vehicles.

The vehicle itself was performing in good shape. The Shillelagh system was working; it was well along and completely acceptable, and the Army, although it recognized at that time that it had some problems with the combustible conventional ammunition, believed that the correction of the difficulties was well in hand and could be accomplished by the time the vehicles were fielded. Consequently, in 1966 the Army awarded a multiyear contract to Allison Division and initiated production of the vehicles.

In 1967, as a result of additional testing of the combustible cased ammunition, test results disclosed we were experiencing an actual condition of flaming residue in the breech of the gun after firing a combustible cartridge case.

The Army took immediate action in several directions.

First of all, it determined that one of the problems was the absorption by the combustible case of moisture which led to or accentuated the flaming residue situation. In this connection, the Army took action to improve the chemical composition of the case and to strengthen the quality assurance program to insure that the quality of the case met the specifications. In addition, a neoprene bag was provided which encloses the combustible round while it is in the rack in the vehicle. As a matter of fact, the neoprene bag is supplied at the time of manufacture and travels with the ammunition throughout.

After testing this improved ammunition, and the neoprene bag solution, the Army took one more step to insure itself that flaming residue would not remain in the breech after firing, and developed the bore scavenger system. This system sends a blast of compressed air through the tube immediately after firing before the breech is opened.

Subequent to these actions, the Army proceeded to test in great detail the combination of the improved cartridge case, the neoprene bag, and the bore scavenger system and made a determination that the safety and reliability of the round was acceptable. In 1968, the Chief of Staff made the decision to field the vehicle, and as a matter of fact in January of this year the first overseas deployment to Vietnam occured. Over 60 vehicles are now in that country and have been fighting the enemy for the past 3 or 4 months with great success. We plan to deploy a total of ——— vehicles between now and the end of the year.

CONTINUED PROBLEMS WITH COMBUSTIBLE AMMUNITION

Mr. EVANS. Is it not true, however, that the bore scavenger system and the neoprene bag for the ammunition are merely interim fixes? The Army still hasn't developed a safe round for this gun, have they?

General MILEY. The round in the neoprene bag and with the bore scavenger are safe according to the standards established by the user. The Army is continuing to explore a second generation combustible cartridge case. There is evidence now that with improved case composition we will have an even safer round.

In addition, the Army is exploring other materials for this case. These show some promise, but the Army is satisfied now that it has fielded a useful, satisfactory, dependable safe system which provides to its troops in the field a capability which they have never had before.

TYPE CLASSIFICATION BASED ON BUDGETARY CONSIDERATIONS

Mr. EVANS. Then, General Miley, according to the GAO report, on March 15, 1966, the Army Test and Evaluation Command reported that the XM-409-E1 and XM-411 combustible cartridge ammunition were unsuitable for Army use. On March 28, 1966, the Deputy Commanding General, Army Materiel Command (AMC), disapproved a recommendation to type classify the M-60-A1E1/E2 tanks as limited production because of insufficient affirmative testing on the vehicle and experience with the same conventional ammunition.

Seven days later, however, on April 4, 1966, the Deputy Commanding General, AMC, informed the Army Staff that it was the position of AMC that the status of the Sheridan conventional ammunition should not be allowed to delay standard A classification of the Sheridan weapon and the Shillelagh missile, and "that delay of standard A type classification of the Sheridan weapon and Shillelagh missile would have both adverse political and budgetary impacts." In addition, a statement from the Office of the Deputy Chief of Staff for Logistics indicated "that to continue type classification as limited production on the Sheridan would cause an unfavorable position going into apportionment in May 1966.

Further, that this position would reflect a lack of confidence in the system which could generate reexamination by the Bureau of the Budget and the Department of Defense, and could influence them to cut the quantity of the second year buy." Are we to understand that budgetary considerations are a major factor in making decisions to authorize type classification of weapons for mass production even though they have not been sufficiently developed and tested? This appears to subvert the system and purpose of the type classification procedure.

General MILEY. One of the problems we face in programing major weapons systems is the leadtime involved. At the time that the document you described was being prepared and the discussions were being conducted, the Army Materiel Command's technical people were confident that the resolution of the combustible cartridge case was in hand; that we could achieve a solution to this problem.

We then were confronted with the leadtime situation which involves the time from the approval of a budget or an apportionment request to the production and final fielding of the first vehicle. The people who work in the programing and budgeting system must satisfy themselves at the time that a budget or apportionment decision is made that there is reasonable assurance that the system can be produced. It was in this framework at the time of the fiscal year 1967 apportionment that the Army staff made the decision, based on the best expert opinion they had, that the solution to the combustible cartridge case was in hand, proceeded to support type classification and to include the continued procurement of the Sheridan vehicle in the apportionment request.

POTENTIAL OF COMBUSTIBLE CARTRIDGES

Mr. SIKES. Does the Army feel it would be justified in proceeding in the area of combustible cartridge cases? In other words, General, how do you expect to make use of the decision on combustible cases?

General MILEY. The Army has looked at combustible cartridge cases for many years. In fact, the development of the combustible cartridge case we are talking about here was originated in Picatinny in 1958. I was aware when I was in Frankford Arsenal in the early fifties that we were giving serious consideration to combustible cases in the small arms and we still have studies going on in the small arms area and small cannon area.

Mr. SIKES. The word "study" doesn't tell us very much. Do you think it is going to be practical to expand the use of combustible cases as far as small arms are concerned in the foreseeable future?

General MILEY. I have reason to believe that in the forthcoming design evaluations of the cannon for our Scout vehicle and our armored fighting infantry vehicle, some of the contenders may submit combustible cartridge case design.

Interest has been high in this and we may extend it even to small arms. I can't give you any feel for ultimate success, but I know we are seriously looking at it and we have studies going on in it.

Mr. SIKES. We will be getting away from one of the time honored customs of the service of policing the area and picking up the brass.

General MILEY. That is one of the payoffs.

NO PLAN FOR EXPANDED USE OF COMBUSTIBLE CARTRIDGES

Mr. SIKES. Would you say that for the immediate future, in the next 2 or 3 years, that you have no plans to expand the use of combustible cases beyond that where it is being used.

General MILEY. I know of no firm plans, Mr. Sikes, but I certainly can look into it and see if there is something more than that.

Mr. SIKES. I know this has been under consideration for a long, long time. It has progressed slowly. The same is true in supporting weapons. In supporting weapons there isn't the compulsion for getting rid of weight and casings that you have in a mass military activity. It hasn't taken hold to any appreciable extent. Studies have not been equally productive apparently, but it is an interesting field. If there is anything else to add, you might do it for the record.

(The information follows:)

EXPANDING USE OF COMBUSTIBLE CARTRIDGE CASE FOR SMALL ARMS AMMUNITION

Adaption of combustible cartridge case for small arms ammunition is in the early stages of research and development; however, it will not be advanced sufficiently to procure in the next 3 years.

STANDARD A FOR SHERIDAN BUT LP FOR M60A1E2

Mr. EVANS. General Miley, going back to your answer on type classification of the Sheridan weapons system, why would the Army Materiel Command, within a period of 7 days, disapprove recommendation of type classification for the M60A1E2 tank because of experience with conventional ammunition and at the same time recommend standard A for the Sheridan weapons system?

General MILEY. The two vehicles were in considerably different situations. The Sheridan vehicle had been in production for a considerable number of months and automotively, and as far as the Shille-

lagh missile system was concerned, the vehicle was performing in accordance with expectations. We had difficulties with the combustible case ammunition which I indicated earlier we thought we had in hand.

In the case of the tank, however, the M60A1E2 tank represented significant modifications of the older M60A1 tank. A principal modification or improvement had to do with the stabilization system. The stabilization system is a system which provides to the tanker the ability to fire on the move. The gun and sights remain stabilized on the target no matter what maneuvers the tank itself may go through.

Because of the earlier difficulties with ammunition, the stabilization system and other features, the new tank had not been tested to the extent that the Army Materiel Command thought it should be tested to qualify for type classification.

The vehicles were in two different conditions. One was a proven vehicle, was in production, had gone through its automotive tests and its missile tests, whereas the tank was still at an earlier stage of testing and had not done as much testing because of the ammunition problem. We went LP on the tank and standard A on the Sheridan.

DECISION NOT TO DELAY SHERIDAN PRODUCTION

Mr. EVANS. As late as August 1967, the Armor Agency and the Combat Developments Command concurred in the conclusion that combustible case ammunition might never be acceptable in the current tank environment. When problems with the ammunition continued to persist, why wasn't production of the Sheridan canceled until the problems were completely solved?

General MILEY. Again, as I stated earlier, at the time that decisions were made to continue to procure and produce the Sheridan, the solutions to the ammunition problem seemed close at hand. The improved chemical composition of the case itself, the improved quality of an assurance program at the manufacturer's plant, the introduction of the neoprene bagging, and, finally, the bore scavenger system, all seemed to hold promise. These were carefully reviewed at the highest levels of the Army Staff, and the decision was made to continue to produce the Sheridan.

Mr. EVANS. The highest levels of the Army Staff apparently ignored the conclusions of the Armor Agency and the Combat Developments Command in making that decision.

General MILEY. I don't think the word "ignored" is quite the proper term. Actually they were considered at the time the successive decisions were made. The Armor Agency and the CDC recommendations were fully explored. Representatives of those agencies were present at the time the decisions were made, and all sides were heard and a final decision was made by the Vice Chief of Staff, as I remember, to continue with the program.

RETROFITTING WITH SCAVENGER SYSTEM

Mr. EVANS. How many of these Sheridans have been produced that are going to have to be taken back to the factory or retrofitted with the bore scavenger system, and what costs are in this budget for such retrofitting as may have to be done?

Major AMEEL. We have produced to date approximately ——— vehicles with the closed breech scavenger system. We have got assets of approximately ——— vehicles. Some of these vehicles have a different type of scavenger on it than the one you have discussed here. This is called an open breech scavenger. We have about ——— of those vehicles issued to troops so that they can train with them. There is a difference between the two scavenger systems. The one that we prefer, the closed breech scavenger system is the one we are deploying around the world today, and it is more efficient.

Mr. EVANS. While you have been developing the closed breech scavenger system, how many Sheridans have been produced that are now going to have to be taken back and retrofitted with this particular system?

Major AMEEL. We have about ——— vehicles stored in depots that still have to be retrofitted from the open breech scavenger system to the closed breech scavenger system.

Mr. EVANS. How much of that is being programed for fiscal year 1970?

General MILEY. There is no money in 1970 for that retrofit. We have money in the 1970 program to apply the scavenger to the ——— vehicles in production.

COST OF RETROFITTING SHERIDANS IN STORAGE

Mr. EVANS. Do you have any cost estimates of what it is going to take to retrofit?

General MILEY. The average cost of the retrofit program is ——— a vehicle. Those funds are included in the 1968 and 1969 programs.

Mr. EVANS. You have none planned for fiscal year 1970?

General MILEY. That will take care of all the prior-produced vehicles.

Mr. EVANS. What was the quantity of money again?

General MILEY. ——— per vehicle.

Mr. EVANS. For how many vehicles?

Major AMEEL. About ——— vehicles in depots.

Mr. EVAN. Does this include the costs of bringing vehicles back or will this be done in the field?

Major AMEEL. Some of these vehicles are at Anniston Depot, Letterkenny Depot, and the plant facility in Cleveland, Ohio.

General MILEY. They are at the location where the modification will be accomplished.

Mr. EVANS. How long have they been in storage?

Major AMEEL. The average time is about 14 months.

Mr. EVANS. That would be the longest period of time they have been in storage?

Major AMEEL. Yes, sir, and we will have completed the retrofit program for overseas deployment in December of this year.

USE OF SHERIDANS WITHOUT IMPROVED AMMUNITION

Mr. EVANS. The Army ultimately cut back the third year buy of Sheridans from ——— units with the total number of Sheridans to be delivered under the contract remaining the same, as production

was stretched out into fiscal year 1970. What are you going to do with the Sheridans if you are unable to develop safe and completely acceptable combustible case ammunition? By that I mean being able to do away with the interim fix, utilizing the bagging situations and the bore scavenger system.

General MILEY. We believe the system, as presently fielded with the bag, and the scavenger, is an acceptable and effective system. We will continue to explore a second generation cartridge case and it may be that we can do away with the baggie and the scavenger but if we don't—and we will effect some improvements in the case, I am sure—even if we have to continue to live with the neoprene bag and the scavenger system, we feel that the vehicle, as presently fielded in Vietnam, is giving us a capability that we never had before.

Mr. SIKES. You are using the combustible case in Vietnam?

General MILEY. That is right.

Mr. SIKES. It is satisfactory?

General MILEY. That is right. So we feel we have added a new capability to the Army, even with the bag and the scavenger.

INVENTORY OF COMBUSTIBLE CARTRIDGE AMMUNITION

Mr. EVANS. The XM–409 and XM–411 ammunition rounds were originally type classified limited production in December 1964 and this type classification has been extended three times, resulting in the authorized production of more than ——— rounds at a cost of $90 million. What is the present inventory of this ammunition?

Major AMEEL. I am sorry, I don't have that data with me.

Mr. EVANS. Supply it for the record.

(The information furnished the committee is classified.)

Mr. EVANS. You canceled the request for an additional ——— rounds of the XM–409–E1 ammunition in fiscal year 1970 at a proposed cost of $24.5 million.

General MILEY. Apparently a reexamination of our requirement for our deployment resulted in a reduction in the requirement to produce this ammunition with fiscal 1970 funds.

Mr. EVANS. Why are you now requesting $9 million in 1970 when no procurement quantity is indicated?

General MILEY. We can get that on the record for you this afternoon.

URGENCY OF REQUIREMENT FOR SHERIDAN

Mr. EVANS. General, getting back to the Sheridan, you estimate the unit cost for refitting at ——— I also believe you stated you have about ——— vehicles to be retrofitted?

General MILEY. Yes.

Mr. EVANS. This would be then a total of roughly $2,400,000 to retrofit these vehicles?

General MILEY. Yes.

Mr. EVANS. Could this sum have been saved had there been a delay in production, until you had the ammunition fix you wanted and the closed breech scavenger system you needed? What was the hurry here to get the vehicles out that are now going to have to be retrofitted at a cost of ——— per vehicle?

General MILEY. We have always faced the armor threat in Europe and with the introduction into the Soviet Pact Armor Force of the T–62 tank with its 115-millimeter gun and the fact that we faced in Europe ———.

The two weapons systems we are talking about today, the Sheridan vehicle, with its Shillelagh missile, and the M60–A1–E2 tank also firing the Shillelagh, represented the two systems we intended to field ———.

Mr. EVANS. Have any been deployed to Europe for this purpose.

Major AMEEL. We deployed ——— vehicles in January.

We sent ——— vehicles last month for a total of ——— in Europe.

COMPARABLE SOVIET WEAPONS

Mr. SIKES. What equivalent weapons do the Communists have, presumably the Soviets first, and then any of the satellite countries? Something comparable to this one?

General MILEY. ———.

Mr. SIKES. None have been identified as yet.

General MILEY. ———.

Mr. SIKES. ———. Is that what you said?

General MILEY. ———. We have had the Shillelagh in the inventory for 2 or 3 years now, ———.

SUPERIORITY OF WARSAW PACT TANK FORCE

Mr. MINSHALL. As of today, General, how would you stand up against the Russians in the conventional tank battle with the equipment we have in Europe?

General MILEY. We think our M–60–A1 tank, which is our tank in Europe, is qualitatively superior to the Russian tank.

Mr. MINSHALL. Armorwise and weaponrywise?

General MILEY. Armor and gunwise we feel it is qualitatively superior.

Mr. SIKES How about numbers?

General MILEY. The numbers are against us.

Mr. MINSHALL. That is what I am asking you. How are you going to stand up in a conventional tank battle if one started tomorrow? How would you fare?

General MILEY. I think on a tank basis we would win the tank battles.

Mr. MINSHALL. That is not the point. Who is going to win.

Mr. SIKES. What are the comparative numbers?

General MILEY. Comparing NATO versus the pact countries, the tank fleets are estimated ——— in the case of the Warsaw Pact and approximately ——— in the case of NATO. There is about a ——— superiority.

Mr. SIKES. Is that the most modern tank the Russians have in the field?

General MILEY. ———.

Major AMEEL. We expect they will have ——— by 1970.

Mr. SIKES. Are you speaking of this tank as the tank which is still somewhat inferior to our best tank?

General MILEY. ———.

Mr. SIKES. I am getting a little ahead of the subject but we have to go to another meeting very soon. What do we know about the development of an advanced or more modern Russian tank? Do you have any information on it?

General MILEY. ———.

MAIN BATTLE TANK

Mr. SIKES. When at the present time do we anticipate that the main battle tank joint venture with Germany is going to produce a tank that is operable and in the field, or have we given up on that one?

General MILEY. No, sir. The latest forecast that I have seen in the production plan calls for a production contract in the ——— time frame with deliveries in ———.

Mr. MINSHALL. I wouldn't bet on that, and don't hold your breath, either.

General MILEY. We used to call it MBT–70. We still do.

Mr. ANDREWS. What is the delay, General? Why the delay?

General MILEY. I have a feeling that the principal delay has been caused by the tremendous complications arising out of a joint venture. I listened to briefings by the American project manager, General Luczak, and he and his people have to spend a lot of their time negotiating with the Germans on various aspects of the development and the production planning.

Mr. SIKES. Why don't you let them go ahead and develop the tank? Then we can adapt it. We adapt everything anybody else builds anyway that looks good.

General MILEY. A goal of this program is to have a standard tank for the Germans and the United States and eventually all of NATO.

Mr. SIKES. We will get into that more in detail.

General MILEY. We have difficulties with the tank. We finally had to give up on the American engine we thought would give us 1,500 horsepower. The early pilots will use the German engine. The automatic loader, which gives us a three-man crew, is a technical problem area.

Mr. MINSHALL. We are going more into the MBT–70 in R. & D.

General MILEY. That is right.

Mr. MINSHALL. I look forward to it.

Mr. LIPSCOMB. General, you said something about a date ——— on the MBT–70. What do you know about it? What happened in ———?

General MILEY. The latest document which lays out the program and which is updated periodically is now forecasting the award of the production contract in ——— with hardware deliveries in ———. We go through another stage of pilot fabrication, pilot testing, followed by the initiation of mass production.

Mr. LIPSCOMB. And when do you project the first tanks to go into operational units?

General MILEY. ——— they would be in the hands of the operational units.

Mr. LIPSCOMB. Is a review now going on in regard to these dates?

General MILEY. A review has just been completed and we have established the dates I just gave you. There will be another review in December. The program is reviewed very intensively at all levels of the Defense Department.

Mr. LIPSCOMB. Are there any indications now that as a result of the latest review, which is going on, that the dates that you have given the committee will be further postponed?

General MILEY. I believe the review that you refer to has been completed and the dates that I have given you are the ones that are established as a result of that review. Is that right?

Colonel BOOSE. Yes.

Mr. LIPSCOMB. Regardless of what review we are talking about, are there indications now that these dates will be postponed further and efforts will be made to draw up a more realistic schedule?

General MILEY. I am not aware of any further slippage. I believe that the schedule that I have just talked about is considered to be a realistic schedule.

CANCELLATION OF METAL CARTRIDGE CASE

Mr. EVANS. With respect to the Sheridan and the conventional ammunition therefor, why did the Army terminate in October 1968 the backup development of a metal cartridge case for the 152-millimeter conventional ammunition for the Sheridan weapon?

General MILEY. The Army Materiel Command did some studies on the backup metal case but, after looking at the development time involved and the considerable number of dollars involved and the fact that the metal cartridge case would introduce new problems into the vehicle—notably we would need a new gun tube and mount—taking all the factors into consideration the decision was made to terminate that backup program.

NEED FOR FURTHER AMMUNITION DEVELOPMENT

Mr. LIPSCOMB. Does the Army feel it has completely solved all the problems involved with the 152-millimeter gun system used on the Sheridan and M60A1E2 tank, or have you just employed interim fixes?

General MILEY. We feel that the fixes we have applied to the combustible cartridge case have made the Sheridan a useful fighting vehicle and will also do so for the M60A1E2. As I said earlier, we will continue to explore a second generation combustible cartridge case but we feel the vehicle now, with its present combustible cartridge case and its neoprene bag and its scavenger, is a fully effective fighting system.

Mr. EVANS. Are Army users convinced that conventional ammunition for the Sheridan is fully developed, tested, and completely safe for operation in that weapon system?

General MILEY. The user wants us to continue to explore improvements in the cartridge case, but the reports that we have back from Vietnam, where the combustible cartridge case is being used—as a matter of fact, a missile is not deployed at all; all they use is a combustible cartridge case—seems to indicate the user is satisfied with the performance of the weapon.

OPEN BREECH SCAVENGER

Mr. EVANS. Initial deployment to Southeast Asia of Sheridan weapon systems with closed breech scavengers for the 152-millimeter gun was scheduled for January 1969. What was your experience with the open breech scavenger and what was the cost of its development?

General MILEY. I am not familiar with the cost of developing the open breech scavenger. It did scavenge the gun but not in the manner that we wanted. We terminated that program for the closed breech scavenger after a few vehicles had the open breech scavenger mounted on them. I will have to furnish for the record the cost of developing the open breech scavenger.

Mr. EVANS. Please do so.

(The information follows:)

Because the development of the open breech scavenger system was undertaken as part of a much larger effort to develop the total weapons system, it is not possible to identify developmental costs peculiar to the scavenger system alone. A description of the scavenger, however, should provide some appreciation of the effort required.

The open breech scavenger employed commercially-available cylinders of carbon dioxide connected to orifices adjacent to the breech. The system was activated as the breech opened and directed a blast of carbon dioxide into the breech. No modifications to the gun/launcher were necessary. Cylinders of carbon dioxide were replaced when exhausted. The system was simple, parts were readily available, and only a minor developmental effort was involved. When testing revealed unsatisfactory results, the "open breech" approach was discarded in favor of a more complex higher performance "closed breech" system.

SHERIDAN OPERATING RESTRICTIONS

Mr. EVANS. The GAO report pointed out that the restrictions placed on the use of the XM409 and XM411 ammunition seriously limit its potential effectiveness for use in combat and could represent a serious safety hazard.

Do you believe we may have deployed these Sheridans to an operational theater prematurely?

General MILEY. No, sir. We feel the so-called restrictions which the vehicle has been deployed with are by and large merely standard operating procedures. The vehicle, as deployed, and even with the operating procedures which we are talking about, is fully effective and does not burden or limit the user in the field.

Mr. EVANS. Could the General tell us what he considers the most serious restriction?

General MILEY. Let me ask Major Ameel.

Major AMEEL. As far as we know, there are no major operational restrictions with the vehicle in Vietnam. There are safety limitations with the vehicle, some of which are common with every one of the combat vehicles that we use. There are differences with this vehicle

in the way the ammunition is handled. A neoprene bag and a nylon ballistic bag are placed over the ammunition. We have no operational limitations imposed upon this vehicle as we have deployed it in Southeast Asia.

Mr. EVANS. Is the same thing true in regard to those that have been deployed to Europe?

Major AMEEL. That is correct, sir.

The bags that we use for the combustible round are the major differences we have in using this ammunition as opposed to conventional ammunition in other tanks. We have accepted this. It causes no problem and our reports from Vietnam have been most encouraging. I talked to them last night and they confirmed this.

Mr. LIPSCOMB. Major, it is confusing, when we have all read of the Sheridan's 25 pages of operating restrictions, and then you tell us you have no operating restrictions in Vietnam.

General MILEY. There are differences in operating limitations versus standard operating procedures and safety practices. In other words, the user of the vehicle can employ it in any way he sees fit. He can attack the enemy, he can fire at the enemy, he can go cross country at high speeds; he can do all the things the vehicle was intended to do when we first thought of it years ago. There are certain safety instructions that go along with the vehicle. It does have a combustible cartridge case and for that we provide these two covers. They fit over the case while it is in the rack. The gunner pulls the nylon ballistic bag off the top. As he inserts it into the breech, he strips off the neoprene bag. Now, he doesn't like that. The people who work in these tanks are not used to this because this is new. A combustible cartridge case will burn, and also absorb moisture if it is left uncovered in a humid environment.

But the advantages of the combustible cartridge case, lighter ammunition and no brass case, in our view more than outweigh the problem of taking off the bags.

EFFECT OF RESTRICTIONS ON FIRING RATE

Mr. MINSHALL. How much does this slow down the firing of the gun?

General MILEY. Let us ask Major Ameel.

Major AMEEL. We can fire this gun at about ——— rounds a minute. It is the scavenger we have in the vehicle which has two compressed air bottles which affects the rate of fire. In using the air out of these bottles as we fire, we can, before we expend our complete basic load of ammunition, run out of air in these bottles. We can fire rapidly about ——— rounds before we are out of air. There are ——— rounds in the vehicle as the basic load. For this reason our firing rate is slowed down to about ——— rounds a minute so that we don't expend all of the air before we fire our basic load. However, when we get into an operational situation where we are firing the gun that fast, we are in deep trouble, tactically.

Mr. MINSHALL. In combat doesn't that frequently happen, that you would fire more than ——— rounds a minute?

Major AMEEL. We have fired for short bursts at a rate of up to ——— rounds a minute from one vehicle. This was accomplished by a vehicle in the 4th Cavalry. It can be done for a short period but we can't fire the ——— that way.

DESIGN FIRING RATE

Mr. MINSHALL. How much does this slow down the firing rate as against what this gun and tank were designed originally to fire, and these safety restrictions that you speak of, how much did that hinder the operation and slow down the combat operation of this tank?

General MILEY. If he has fired at a rate as high as ——— rounds in a minute, that is about as fast as you can fire a tank gun. So this combination of bags hasn't materially slowed down his rate. One thing that the combustible cartridge case gives him is the fact that he doesn't have to police up his firing compartment with the metal case. This has always been a great chore to the tanker, to keep these metal cartridge cases out from under his feet and get them over the side of the tank.

Mr. MINSHALL. You say you have fired as high as ——— rounds a minute, but because of restrictions you are only recommending, so to speak, ——— of these rounds a minute because of the compressed air supply and other things?

General MILEY. It is a balance between the compressed air supply and your total basic load.

Mr. MINSHALL. You wouldn't have this problem if you hadn't had the trouble with the combustible ammunition, the scavenger, and all that, would you? That is the point.

General MILEY. You could discharge your basic load faster, I agree.

Mr. MINSHALL. What is your basic load?

General MILEY. ——— rounds. Once you have exhausted your basic load, you are not very useful on the battlefield. You have lost your main armament. You have to go back and get more ammunition.

Mr. MINSHALL. Or have it brought up to you?

General MILEY. You have to open up your vehicle somewhere and get more ammunition.

Mr. MINSHALL. But these are the main restrictions on the tank, then, in Vietnam?

General MILEY. I think this is the one that you would label the main restriction.

OTHER SAFETY RESTRICTIONS

Mr. MINSHALL. What are some of the other safety restrictions?

Major AMEEL. One restriction that we see in this report is that you can't fire the main gun with the driver's hatch open. You should have the driver's hatch closed. Sir, I am a tanker and this is a common procedure on any tank. You should keep the hatch closed, but yet, as the Congressman pointed out, this is one of the items that is in this 25 pages of safety restrictions.

Mr. MINSHALL. Why was that put in?

Major AMEEL. It is a common thing that you must do so that when the gun is fired the driver doesn't get this flash in his face. You can burn yourself. This happens on any tank. The driver sits up in the front of the vehicle. The gun is just above his head and in front of his face. The blast from that gun going off could burn him, so we tell him to keep the driver's hatch closed.

General MILEY. Isn't it true we close the hatch in all our armored vehicles?

Major AMEEL. Yes, sir.

SAFETY RESTRICTIONS PECULIAR TO SHERIDAN

General MILEY. This is included in the list, but it is not peculiar to the Sheridan.

Mr. MINSHALL. What is peculiar to the Sheridan?

General MILEY. The baggies.

Mr. MINSHALL. What else, though? That is what I am trying to get at.

Major AMEEL. For instance, when you are in the water, you can't fire with the water barrier up, when you are swimming. But this is the only vehicle we have at this time—we don't like to use the word "tank," but let's call it one for this purpose—that gets in the water and swims. You don't fire the main gun while this vehicle is swimming. To answer your question, this is one particular instance of a Sheridan-peculiar safety restriction.

Mr. MINSHALL. Would you list the rest of them for the record, please? What is peculiar to the Sheridan?

General MILEY. We will.

(The information appears on page 94.)

Mr. MINSHALL. Was this gun designed to fire in the water?

Major AMEEL. No, sir.

Mr. MINSHALL. Why would it be listed as a restriction?

Major AMEEL. If fired accidentally, you would tip your vehicle.

General MILEY. When you examine the list which I will furnish for the record, you will realize as you read through them that most of them are cautionary notes. For example, there is one that I read the other day where it says "clean up any spilled oil inside the vehicle." I think I cleaned up spilled oil in a 2½-ton truck. I would not want spilled oil on the floor of my vehicle. There are a series of good things to do with the Sheridan and some notes that relate to the baggies, and to the scavenger system. These are peculiar to the Sheridan. The swimming capability the Sheridan has, which no other similar vehicle has, makes for a peculiar——

Mr. MINSHALL. I am not talking about the routine housekeeping chores that you have to do in any kind of combat vehicle. I am talking about design limitations that have caused these so-called safety limitations.

General MILEY. That is what I am trying to point out. Most of this large document has to do with routine things:

Hull access plugs and bilge pumps should be checked to be sure they are properly secured and be sure the bilge pumps function properly.

Mr. MINSHALL. That is a routine check, isn't it? That wouldn't be peculiar because of the design. I mean that would be the normal operating checklist?

General MILEY. Here is another one: "Frequent checks for spilled fuels should be made to prevent "fires."

Mr. MINSHALL. You still are not getting to the thrust of my question.

General MILEY. I know what the thrust is, sir, and I will extract from this collection of notes the things that are peculiar to the Sheridan in its design and furnish those for the record.

Mr. EVANS. Could we have the whole list? You are speaking of the enclosure to the letter signed by Major General Isenour.

General MILEY. Yes.
Mr. EVANS. Have the whole list put in.
(The information follows:)

Pertinent portions of a letter, Headquarters USATECOM, dated November 17, 1968, subject: Suitability for Conditional Release to Troops of Sheridan Weapon System, M551, are extracted below, followed by copies of enclosures 2 and 3 to the same letter.

* * * * * * *

5. (U) *Safety.*—Safety problems and precautions, which are at enclosure 2, are provided to emphasize significant safety considerations and to supplement manuals. Troop units receiving the M551 should be provided this information.
6. (U) *Performance limitations for troop information.*—Performance limitations and other information that should be known by troop units are at enclosure 3. This information should be disseminated to troop units receiving the M551.

* * * * * * *

8. (C) USATECOM position—
(*a*) HQ, USATECOM concurs in conditional release of the M551 for issue to troops subject to the following conditions:
(1) The troop units receiving the M551 be informed of safety and performance information contained in enclosures 2 and 3.
(2) M551's released to troop units be equipped with the following:
(*a*) Closed breech scavenger.
(*b*) Recoil system with latest modifications.
(*c*) Improved grenade launcher racks.
(*d*) Nine-ply nylon protective bags for all stowed ammunition.
(*e*) Improved escape hatch cover.
(3) Appropriate firing tables be provided prior to actual combat usage.
(4) All 152 millimeter ammunition will be issued with neoprene moisture barrier bags installed ———.

* * * * * * *

SAFETY

(U) AUTOMOTIVE (U)

1. Hull access plugs and bilge pumps should be carefully checked before swimming operations to assure that hull plugs are properly secured and to determine that the bilge pumps all function properly.
2. With standard track, the M551 is difficult to control on snow and ice.
3. Due to a problem with fuel tank leaks, frequent checks for spilled fuel should be made to prevent fires.

SAFETY

(U) SHILLELAGH (U)

1. The following safety problems pertain only to M551's not equipped with the closed breech scavenger system:
(*a*) *Carbon monoxide.*—Due to a high concentration of carbon monoxide in the crew compartment that results from missile firing, it is recommended that crew members not be exposed to more than four missile firings per day. The turret blower must be on during missile firing to remove the toxic gases.
(*b*) *Flareback.*—Flarebacks have occurred from missile firing. To reduce the hazard from flarebacks, all conventional ammunition stowed in the vehicle must have protective nylon and neoprene bags installed. The bags of a round which is to be fired following a missile firing should not be removed until it is evident that a flareback did not occur.
2. The driver's hatch should be closed for all missile firings. All crew members should be within the confines of the vehicle for live warhead firing to prevent possible fragment spray from early ground impacts.
3. Shillelagh missile should not be fired over friendly troops in training due to the hazard from early ground impacts.

4. Care must be exercised in handling, transportation, and loading missiles to prevent damage to nose cones. Warhead missiles with dented nose cones should not be fired.

5. Because of possible eye damage, personnel must not look directly into the transmitter when the door is open and the system is operating.

6. In operation of the missile test set rocket motor activations have occurred; therefore, the safety procedure specified in the test set manual must be rigidly followed.

SAFETY

(U) 152 MILLIMETER AMMUNITION (U)

1. The cartridge case of all 152 millimeter ammunition is highly flammable. Extreme caution must be exercised to keep this ammunition away from ignition sources, such as open flames, cigarettes, electric arcs, and smoldering residue.

2. Very small pieces of smoldering residue left from firing conventional ammunition can ignite the case of a subsequently loaded round. By protecting the cartridge from moisture and contaminants, the frequency of occurrence of smoldering residue is low. The purpose of the neoprene bag is to provide this type protection; therefore, the bag should be left on the ammunition until immediately prior to firing.

3. The nylon bag provides protection against most ignition sources and decreases the vulnerability of the case to fragments from penetrating projectiles. The nylon bag must be retained on the ammunition while stowed in the M551 and removed just prior to loading.

4. For all firing with M551's equipped with the open breech scavenger, thorough inspection of the rear part of the tube, especially around the forcing cone, and the breech cavity must be conducted. Smoldering residue, no matter how small, must be removed from the weapon before the next round is loaded.

5. The closed breech scavenger system has been developed to remove smoldering residue for the 152 millimeter gun/launcher. However, when M551's are equipped with the closed breech scavenger, these precautions should be followed:

(*a*) When maximum firing rate is not required.—Perform a thorough inspection of the rear part of the tube especially around the forcing cone and the breech cavity. Smoldering residue, no matter how small, must be removed before the next round is loaded.

(*b*) When near maximum firing rate is required.—Inspect the rear part of the tube only. If smoldering residue is observed, it should be removed and the breech cavity also inspected and cleared of smoldering residue prior to loading the next round.

(*c*) When maximum firing rate is essential.—Inspection for residue is not required.

6. 152 millimeter cartridges of all types should not be fired at ammunition temperatures exceeding +125° F..

7. 152 millimeter ammunition is safe to transport and store within temperatures from —65° F. to +145° F.

8. Extra care should be exercised in handling of 152 millimeter to avoid rupturing of the case and spilling propellant.

9. Cartridges which have been damaged in handling should not be fired. This includes creased or split cartridge cases, dented projectiles, and loose nose caps.

10. The driver's hatch must be closed during all main gun firings to prevent injury from the muzzle blast.

11. Turret blower should be on for all firings to remove toxic fumes.

12. Strict adherance to safety and general precautions outlined in TM 9-1300-203 and in technical bulletins for 152 millimeter ammunition is required.

SAFETY

(U) GUN/LAUNCHER (CBSS, OBS) (U)

1. Gun tube, breech chamber, and coupling for the M81E1 gun/launcher have safe life limits of 600 rounds. (M81E1 gun/launcher has shallow keyway tube and is modified for the closed breech scavenger application.)

2. The gun tube for the M81 gun/launcher which has the deep keyway tube has a safe life limit of 200 rounds. The breech chamber and coupling have 600 round safe life limits.

3. The check valve assembly in the closed breech scavenger system must be replaced at 100 to 120 round intervals. Used check valves, when thoroughly cleaned and inspected by qualified maintenance personnel, can be reused to a total life of 1,100 rounds.
4. Obturator seal must be checked frequently to assure that it is securely in place. Continued firing without the seal results in gas leakage, tube erosion, and an unsafe weapon.
5. Occasionally the detent pin assembly fails to properly secure the round in the gun chamber resulting in possible jamming of the breech mechanism during the closing cycle. Frequent inspection and cleaning of the detent assembly will minimize this malfunction.

Safety

(U) LAUNCHER AND GRENADES, SMOKE: HC AND WP, XM176 (U)

1. Since the launch vehicle is within the range of fragments from the M34, WP grenade, the crew should be within the confines of the M551 during firing.
2. Launchers cracked during handling should not be used as these may result in short ranges.
3. Grenades can be damaged by attacking projectiles and shell fragments and result in white phosphorous leaking onto the hull.

Safety

(U) AIR FILTER UNIT, M8A3 (U)

The air filter unit, M8A3, should not be used to supply air to masks when vehicle interior temperature is below 5° F., due to possible injury to the user's lungs.

Performance Limitations for Troop Information

(U) AUTOMOTIVE (U)

1. During operation under extremely dusty conditions, the air cleaner may clog within 1 hour reducing engine performance. Air cleaners should be frequently checked and replaced as necessary.
2. The noise from the engine turbocharger, and the "roster tail" of exhaust smoke which occurs during vehicle acceleration are M551 signatures that allow identification.
3. Speed of Sheridan in still water is approximately 3.8 miles/hour; maneuverability and control are good. In moving water where the water speed approaches vehicle maximum speed (3.8 m.p.h.), maneuverability and control are substantially affected.
4. The main gun, coaxial machinegun, and grenade launchers should not be fired with the swimming barrier erected.
5. The numerous turret electrical components impose a heavy electrical load on the batteries of Sheridan. In addition, hot air from the engine compartment flows around the batteries resulting in a more rapid loss of battery water than is normal for most vehicles. For this reason, battery fluid level should be frequently checked.
6. When operating in jungle or heavy underbrush, vegetation will clog air intake grilles and the radiator, requiring frequent cleaning to avoid overheating.

Performance Limitations for Troop Information

(C) NIGHT FIGHTING (U)

1. [Security information deleted.]
2. (U) Tracers from .50 caliber and main gun firing temporarily saturate the gunner's periscope, XM44, resulting in the loss of vision.
3. (U) Frequent failures of the gunner's periscope, XM44, can be expected. Therefore, a high stockage level of spares is recommended.

PERFORMANCE LIMITATIONS FOR TROOP INFORMATION

(C) SHILLELAGH (U)

4, 5. [Security information deleted.]

6. (U) The missile must not be fired when the launch vehicle is in motion.

7. (U) There is no emergency firing device for missile firing. The emergency firing device for 152-millimeter conventional ammunition should not be used in attempting to fire a missile.

PERFORMANCE LIMITATIONS FOR TROOP INFORMATION

(U) 152-MILLIMETER AMMUNITION (U)

1. The combustible cartridge case is highly flammable, easily damaged and ruptured, and sensitive to moisture, oil, and other contaminants. Extreme care must be taken in the handling and use of this type ammunition.

2. At first indication of moisture absorption or other contaminants of the combustible cartridge case, the cartridges with cases so affected should be turned in.

3. If smoldering residue is observed in the 152-millimeter weapon, the following actions are recommended:

(*a*) Recheck the closed breech scavenger system for proper functioning.

(*b*) Examine basic load of ammunition for moisture absorption (softness) or other contamination of the combustible cartridge case. Soft or contaminated rounds should be turned in.

(*c*) Inspect carefully the breech area for smoldering residue on subsequent rounds. Should smoldering residue again occur, the basic load should be turned in for further detailed inspection.

4. The best estimate of emergency zero for the M119 telescope is +5 mils elevation and +2 mils deflection.

5. Sensing at ranges less than 1,000 meters is difficult due to firing shock, vehicle displacement, and smoke obscuration. Assistance from companion vehicle or other sources is recommended.

6. The cartridge, TP-T, XM4-11E3 is not ballistically matched with the cartridge, HEAT-MP-T, XM409E5 and, therefore, should not be used to zero the weapon for firing the XM409E5 ammunition.

7. Recommended bag removal and firing procedure:

Step 1: Remove the ballistic cover from the round while it is in the rack; position the round on the loading tray; and visually inspect the gun tube for hazardous residue.

Step 2: Grasp the lip of the black neoprene barrier bag in left hand and, with the right against the base of the cartridge, simultaneously remove the barrier bag and chamber the round.

Step 3: (When other than maximum firing rate is used.) Inspect the breech cavity for hazardous residue prior to closing. (When time permits, the danger of ignition of a subsequently loaded round from smoldering residue will be significantly reduced by visual inspection of the breech cavity.)

Step 4: Close the breech, provided no burning or smoldering residue exists, activate the ready-to-fire switch and, if ready light is on, announce "UP."

PERFORMANCE LIMITATIONS FOR TROOP INFORMATION

(U) GUN/LAUNCHER, RECOIL, CBSS, OBS (U)

1. Starting with full bottles of compressed air and with air compressor on, there is sufficient compressed air for 22 rounds when firing at the maximum rate.

2. Clean detent assembly at 200-round intervals.

3. Remove and clean the obturator seal at the conclusion of each day's firing.

PERFORMANCE LIMITATIONS FOR TROOP INFORMATION

(U) MAINTENANCE, DURABILITY, RELIABILITY (U)

The M551 has basic hardware differences from previous turrets (such as Shillelagh guidance and control components and an electrical turret control system) which requires skills peculiar to this turret. Supplemental technical assistance may be required.

PERFORMANCE LIMITATIONS FOR TROOP INFORMATION

(U) CONDUCT OF FIRE TRAINER (U)

1. Training with the conduct of fire trainer (COFT) is not in itself completely sufficient for Shillelagh gunner training; that is, following training with the COFT, actual missiles should be fired at both stationary and moving targets.

2. For current configuration of the trainer, frequent maintenance will be required. Redundancy of spare parts and technical maintenance assistance are recommended.

SHERIDAN DESIGNED FOR USE IN EUROPE

Mr. MINSHALL. How about your general comments about how the tank has performed in South Vietnam?

General MILEY. Major Ameel is in almost daily contact with these people.

Mr. MINSHALL. There has been so much criticism in the public press and news media that it might be well to get your thoughts on it now.

Basically this tank was originally designed for the Europoan theater if I am correct, wasn't it?

Major AMEEL. That is correct, sir. Basically the vehicle, the Sheridan, was designed to provide reconnaissance units; a vehicle optimized for use in the European theater.

Now, we use the Sheridan as an assault or close support weapon for the cavalry platoon. ———.

The Sheridan fits in as the vehicle that keeps these scouts alive while they are out roaming well in advance of this platoon.

The Sheridans provide direct fire support and long-range antitank protection, which established the requirement for the Shillelagh missile. If we can keep our scouts alive longer, we will get the reconnaissance mission done.

USE OF THE SHERIDAN IN VIETNAM

When we went to Vietnam with this vehicle, we found that the Sheridan hadn't come along yet. It wasn't ready to go, so we deployed to Vietnam cavalry units without the Sheridan. In some cases we substituted M113's for the ——— Sheridans that would have normally gone into each one of these platoons. In other cases, we went ahead and deployed the squadron with the M–48 tank, which has been used in lieu of the Sheridan.

The vehicle was later assigned to Vietnam, over 60 vehicles, as General Miley pointed out, went in January.

We assigned them to the 25th Infantry Division and to the First Squadron of the 11th Cavalry Regiment. When they went into the latter, they replaced M113's that had been modified to do the role of the Sheridan. When they went into the 25th Infantry Division, they replaced M–48 tanks.

These two units have been conducting this evaluation since the 8th of February. As a result of my conversation with them last night and we have killed 600 VC's that have been credited to these Sheridan-equipped units. We have ———. One crewman was killed as a result of the vehicle hitting a mine. The hull cracked, a fire started and the man was burned and died about 8 days later. ———.

The vehicle that hit a mine yesterday morning struck an 80-pound mine. ———. All four crewmen got out of the vehicle and today we think the Sheridan is the best vehicle for reconnaissance units the Army ever had. These four crewmen believe that.

We put belly armor on the Sheridan and this has been a tremendous success in keeping our soldiers alive. We have ———. There is not just very much we can do to defend against the RPG because it will cut through an M–48 tank just as well as it will cut through a Sheridan. ———.

TANKER'S OPINION OF SHERIDAN

To answer your question, Mr. Minshall, what the soldiers are saying to us in Vietnam now is, that they are tremendously impressed with the Sheridan. They are extremely happy that they have got it and it has proven to be one of the best casualty-producing weapons that we have got in Vietnam, both by day and certainly the best one we have by far at night, as a ground weapon. We have a capability in night fighting that we have never had before.

Mr. MINSHALL. I presume that is the reflection of the tankers over there who are running the tank. Do you share that view then?

Major AMEEL. Soldiers like me, sir, who use that thing and have to get out in it, are tremendously impressed with it. Other people, frequently, who are observers——

CRITICISM OF SHERIDAN

Mr. MINSHALL. Are you familiar with the criticism in the press? How do you answer such criticism?

Major AMEEL. The criticism in the press, sir, greatly derives from investigations that have been held here in Washington and I don't think they can be attributable——

Mr. MINSHALL. What can you say about those investigations? You have a chance to acquaint yourself with them. What can you say?

Major AMEEL. I think the investigations that were conducted, sir, here in Washington, served a purpose. Had those investigations been conducted a year and a half ago, we would not have been able to defend the Sheridan and say that what we have today is a good vehicle. We could not have said it a year and a half ago, because we had problems a year and a half ago, that we didn't know how to get at. But the Army, through a great deal of concentrated effort, has come up with a good solution that the operator can live with and be proud of the weapon system.

SHERIDANS IN VIETNAM NOT EQUIPPED WITH SHILLELAGH

Mr. EVANS. I believe earlier, General Miley, we established the fact that over 60 vehicles had been deployed to South Vietnam in January?

General MILEY. Yes, sir.

Mr. EVANS. And none are deployed with the Shillelagh missiles?

General MILEY. We did not deploy the Shillelagh missile to Vietnam.

PROJECTED SHERIDAN LOSSES

Mr. EVANS. According to your statement, you expect to lose ——— of these vehicles during fiscal year 1970, is that correct?

General MILEY. That is during fiscal year 1970 funded delivery period. This is an estimate. We will have to adjust that estimate as we get experience.

Mr. LIPSCOMB. How do you expect to lose them?

General MILEY. Primarily the losses ———.

Mr. MINSHALL. I must have misunderstood. How many Sheridans have been deployed to South Vietnam?

General MILEY. A total of 60 are there now.

Major AMEEL. We have sent over an additional ——— vehicles. We have ——— in the country.

Mr. LIPSCOMB. All told you have deployed ———.

Major AMEEL. Yes, sir, 54 will be used by troops.

Mr. LIPSCOMB. How long have they been deployed in South Vietnam?

Major AMEEL. The first vehicles started to arrive the 14th of January, sir, and they were all closed in on the 7th of February. That is the first increment of 60 vehicles. Since mid-February we have deployed an additional ——— vehicles, to ———.

Mr. LIPSCOMB. You have ———?

Major AMEEL. We have what I would call ———.

Mr. LIPSCOMB. What does that mean? ———.

Major AMEEL. To me it means that I ———.

General MILEY. They are ———.

Mr. LIPSCOMB. I understood the major to say earlier that you had ——— vehicles.

Major AMEEL. Yes, sir.

Mr. LIPSCOMB. But now you say you have a ———.

Major AMEEL. Yes, sir. I mentioned we ———.

General MILEY. That last forecast that you mentioned is based on the losses we anticipate through June 1971. The end of fiscal 1971, which is the end of the 1970 funded delivery period, and we base our computations on ——— percent of the T.O. & E. vehicles, the actual operational vehicles per month. And we expect to have a population in-country at the end of this year. December 1969, of about ——— vehicles.

Mr. EVANS. In South Vietnam?

Mr. LIPSCOMB. All U.S. Army?

General MILEY. That is right. You see, this vehicle will replace some of the tanks and M113's used by the cavalry and reconnaissance elements in the ——— squadrons of cavalry that are there now.

Mr. LIPSCOMB. How many were damaged in this period that you ———?

Major AMEEL. ———.

PLANNED DEPLOYMENT OF SHERIDAN

Mr. LIPSCOMB. You plan to deploy by end of fiscal year ———?

General MILEY. By the end of this calendar year our plans calls for ——— total, Mr. Lipscomb, T.O. & E., and then there will be a maintenance float and a pipeline on top of that. The T.O. & E. requirement is ———.

Mr. LIPSCOMB. By what day?

General MILEY. By the end of December.

Mr. LIPSCOMB. What are you going to return in place of this?

General MILEY. We will replace the M–113 carriers.

Mr. LIPSCOMB. How many of those?

General MILEY. This will be on a one for one basis, and the tanks. Do you have the exact mix——

Mr. LIPSCOMB. All on a one to one basis?

General MILEY. ——— tanks and the remainder would be ——— M113's.

Mr. LIPSCOMB. What is the significance of this statement that was made in March? It says:

Several hundred other Sheridans are stored in the U.S. while Army researchers figure out what modifications might make them available for normal deployment.

Are all these ——— going to have the 25 pages of operating restrictions corrected no matter how minor or major?

General MILEY. Again, the operating restrictions with the vehicle tell you what to do and what not to do when you use the vehicle. The statement you quote there apparently was made before we finally decided to proceed with the scavenger system and the two bags.

Mr. LIPSCOMB. This was March 26, 1969.

General MILEY. Of the vehicles we have stored at Cleveland and depots enough will have been modified with the scavenger system to support deployment planned for later this year. We have other deployment plans to Europe and to Korea.

DEPLOYMENT OF SHERIDAN TO EUROPE AND KOREA

Major AMEEL. In Korea we have ——— vehicles. The ——— there will be an additional ——— giving us a total of ———. In ——— we will deploy an additional ——— vehicles modified as the general pointed out, giving us a total inventory of ——— vehicles.

Mr. EVANS. In that same time frame how many do you plan to deploy to Europe?

Major AMEEL. Up to ——— or up to the end of the year?

Mr. EVANS. December of this year?

Major AMEEL. We will have—our total deployments to Europe will be ——— T.O. & E. vehicles. We won't complete that until ———. That means that we will deploy approximately ——— vehicles by the end of this year. That is just T.O. & E. and you will have to add to that——

SHERIDANS IN STORAGE

Mr. LIPSCOMB. According to this same statement, it says that Lt. Gen. William Bunker, Deputy U.S. Army Material Command says:

It is embarrassing to have yards full of these things which we can't deliver.

This is March 26, 1969. How many did you have in the yard?

General MILEY. We have about ——— vehicles stored or in transit today. These are the ones that will be retrofitted and issued ———. The vehicles coming off the line now have the scavenger system on them and are fully deployable.

Mr. EVANS. Then we would have to correct the former estimate I made for the cost of retrofitting. I initially thought we were talking

about ——— vehicles. For ——— vehicles the total cost of retrofitting will be about $4.5 million. Would that be correct?

General MILEY. Yes, sir. In that number, sir, are ——— vehicles in storage awaiting retrofit of the closed breech scavenger system. Additionally some ——— vehicles presently equipped with open breech scavenger systems that are in troop test or training units must be converted.

REPLACEMENT OF M–113'S AND M–48'S WITH SHERIDANS

Mr. EVANS. General Miley, you indicated you were going to replace how many M–113's and M–48's in South Vietnam with Sheridans?

General MILEY. ——— M–113's and ——— tanks.

Mr. EVANS. Why do we have a requirement for an additional 645 M–113 armored personnel carriers in the 1970 budget?

General MILEY. The M–113 carriers in the fiscal year 1970 budget are all for the ARVN as part of the modernization program.

SHERIDAN FAILURE TO MEET SPECIFICATIONS

Mr. EVANS. The Sheridan is designated the M–551 armored reconnaissance airborne assault vehicle. Is it not still unsuitable as a reconnaissance vehicle, particularly when its engine noise can be heard 3 miles away, the "rooster tail" from the exhaust system can be seen even farther away, and as of November 1968 the M–551 in its present configuration had not been airdrop tested?

General MILEY. The vehicle has a diesel engine which is noisy and produces smoke. However, it is performing in the reconnaissance role in South Vietnam today. It is finding the enemy.

We will try to improve it and reduce the noise level and eliminate the smoking, but all I can say is, it is doing the job today.

Mr. EVANS. That is, it is either finding the enemy or the enemy is finding it.

Could you provide for the record a table indicating the original specifications for the Sheridan weapons systems, and how these specifications were or were not met?

General MILEY. I will do that.

(The information follows:)

SHERIDAN PERFORMANCE

General area	Number of specific requirements	Met	Waived	Approved waivers
Configuration	4	3	1	Width.
Automotive	17	15	2	Water speed; extreme quietness.
Armament	17	14	3	Rate of fire; internal replacement of optics; significant improvement in gun tube life.
Protection	8	8	0	
Durability and reliability	6	5	1	Original reliability requirements rewritten.
Transportability	5	5	0	
Associated equipment	12	12	0	
Miscellaneous	3	2	1	Gun tube change time.
Total	72	64	8	

Note: This chart represents achievement in specific areas of military characteristic requirements and list of waivers officially authorized by the Army. The user approved all waivers.

USE OF SHERIDAN FOR CONVOY ESCORT

Mr. EVANS. During fiscal year 1969 supplemental hearings, General Miley, you discussed the need for commando armored cars for convoy escort duty in order to save the wear of the tracked M–113 armored personnel carriers used for this purpose. Why are we now using these expensive Sheridans for convoy escort in South Vietnam, especially when they can be heard 3 miles away?

General MILEY. I am not aware of their use as a convoy vehicle.

Mr. EVANS. According to newspaper reports, a number of them were destroyed while on convoy escort duty.

Major AMEEL. Frequently we will use the largest vehicle we have to move a convoy. We have used tanks for this role and we have used M–113's for it. If the unit that's in the area happens to be equipped with Sheridans and it is the heaviest armored unit that you have there, that unit will be assigned the mission to move critical supply columns and the Sheridan has been used for this, but this is discouraged; it is preferred not to be used for this purpose because it is more suitable to take it out across country than to run it up and down roads. We do recognize there have been occasions when it has been used to move convoys, but this is kept to the minimum wherever possible.

Mr. EVANS. Could you provide for the record the number of instances Sheridans were used for this purpose?

Major AMEEL. Yes, sir; we can.

General MILEY. I suppose it would be the decision of the local commander depending on the tactical situation. I can't imagine anyone in the rear area using Sheridans for a convoy vehicle. We would use commando cars, but I can well imagine up in the forward area where the heavy concentration of the enemy is, this vehicle would be used for convoying a collection of trucks into a dangerous area.

We will furnish information for the record.

(The information follows:)

Out of 454 missions conducted between January 27 and April 27, 1969, 72 or 15.0 percent were road clearing operations.

PROCUREMENT OF ADDITIONAL SHERIDANS

Mr. EVANS. Why are you proposing to buy additional ——— Sheridans in fiscal year 1970 when at the present time we have so many in storage?

General MILEY. We will get some of them out of storage by December and the vehicles we are procuring with the 1970 funds will not start to be delivered until July 1970. We will continue to fill our inventory for reconnaissance vehicles with the new production.

Mr. EVANS. Would it be economically sound to delay further production of these vehicles until the problems with the conventional ammunition have been solved, or new ammunition developed?

General MILEY. We feel we have solved the problem to the degree necessary to field the vehicle. The vehicle is a successful vehicle and is performing in the intended role.

Mr. EVANS. If you come up with safe ammunition in the future that they are working on now, wouldn't it require an expensive retrofit program to accommodate the new ammunition?

General MILEY. If we come up with safer ammunition, we just use it in place of ammunition we have now.

Mr. EVANS. Would you provide for the record, please, a breakdown showing how you arrive at the cost of $72.8 million for the ——— Sheridans? Does this cost include complete units with all necessary armament and equipment?

General MILEY. That is the complete unit cost included there. I will furnish for the record a detailed breakdown.

(The information follows:)

FISCAL YEAR 1970 UNIT COST ANALYSIS—ARMORED RECONNAISSANCE AIRBORNE ASSAULT VEHICLE, M551 (GENERAL SHERIDAN)

Major Component	Estimated quantity cost	Estimated program cost (in millions of dollars)
Vehicle Production	———	$30.132
Engineering	———	3.996
Government furnished equipment (GFE):		
Engine	———	1.512
Transmission	———	3.276
Gun launcher	———	6.696
Fire control	———	4.500
Guidance and control (G. & C.) sets	———	18.482
On equipment materiel (OEM)	———	.540
Forward area contact support sets (FACSS)	(1)	.535
All other [2]	———	3.132
Average unit price [3]	———	———
Total		72.801

[1] Buyout of requirement.
[2] Includes quality assurance, documentation, PEMA, financed acceptance testing, and care, and preservation performed at depot.
[3] Because of impact of prior year procurements and some components being purchased on other than a 1-per-vehicle basis, average unit prices cannot be determined by adding unit costs shown.

REQUIREMENT FOR M–60 MEDIUM TANKS

Mr. MINSHALL. General, you have already started replacing these Sheridans on a 1-for-1 basis, I assume, over in South Vietnam? What is the necessity then, or what did you do about the reprograming where you had a shortage of combatworthy medium tank assets over there and you had to have a reprograming action in the amount of $26.6 million? According to the reprograming document: "This action reprogramed $31.1 million for Army fiscal year 1969 tank program in order to improve operational readiness, provide for essential modifications, and assure continuity with planned follow-on procurement."

General MILEY. In the case of our tank fleet, we are procuring M60A1 vehicles to improve our position worldwide. The replacement of the M–113, or the tank, with the Sheridan, does not affect our inventory position for medium tanks. The tank we are replacing in South Vietnam, is the 90-millimeter gun tank, and we are continuing to improve our asset position with the M60A1, 105-millimeter tank for the worldwide requirement.

Mr. MINSHALL. Listen to this, the document goes on to state, "This increase provides ——— M60A1 tanks within the minimum sustaining rate of ——— per year for common chassis, M60 series track vehicles. The remaining 243 chassis will be used for M60A1E2 production. All of the common chassis track vehicle production is applied

to tank production because of the shortage of combatworthy medium tank assets."

Now, that is worldwide.

General MILEY. That is worldwide, sir. Our original 1969 program contained a quantity of 300 M60A1E2 tanks. At the time we submitted this reprograming action, we made the decision not to buy any more M60A1E2 tanks but to make use of the 243 turrets we bought with 1966 funds. We changed our program by this reprograming action to buy only 243 of the M60A1E2 tanks and ——— M60A1 tanks. But the M60A1 tanks are additional inventory assets against our worldwide requirement. Our total tank AAO is ——— of which at the present we have approximately ——— 105-millimeter tanks. The others are substitute assets we are trying to replace with firstline tanks, the M60A1.

Mr. LIPSCOMB. The testimony this morning, doesn't seem to present a very clear picture of our tank situation as it is today.

SHERIDAN NOT A TANK

General MILEY. I think one of our problems this morning is that we have been talking about the Sheridan vehicle as a tank. The Sheridan vehicle is not a tank. It is not a vehicle that can stand up and slug it out nor does it have the staying power to fight tank to tank. The Sheridan vehicle was designed to outfit our reconnaissance elements.

Mr. LIPSCOMB. How are you using them in Vietnam? Are you using them as a reconnaissance vehicle?

General MILEY. Yes, sir, in the two cavalry squadrons in Vietnam. The total requirement of the Army for reconnaissance vehicles is approximately ———.

In addition and separately we have a worldwide army requirement for approximately ——— medium tanks, of which at the present time we have about ——— 105-millimeter first line tanks. The remainder of our tank fleet are M–48 series tanks that have a 90-millimeter gun. So what we have done over the years is keep the tank line going at ——— chassis a month while slowly building toward the inventory position we would like to achieve. So I am afraid—and I am sure it is my fault—we have confused the two vehicles as tanks, but the only tanks we are talking about there are the M60 tanks, to replace the substitute M48 tanks that we now have on hand, which were produced around the Korean wartime.

APPROVED OBJECTIVE FOR TANK INVENTORY

Mr. LIPSCOMB. I refer you to the figure on your chart No. 7, for tracked combat vehicles, and in the column "Approved objective current." Is this the total number authorized by T.O. & E. which would, therefore, now be in the hands of troops assigned to the 27 and two-thirds Army division force equivalents?

General MILEY. You see ——— the current approved objective. Is that the number you are talking about, sir?

Mr. LIPSCOMB. Yes.

General MILEY. That represents the T.O. & E. requirement of the 27 and two-thirds divisions plus maintenance float, plus the combat consumption reserve that we try to buy in peacetime to have on hand

on M-day. Those are the three factors that make up the AAO, as we call it, authorized acquisition objective.

Now, at the present time, as you will see, through the fiscal year 1969 funded delivery period, we will have a total of ——— tanks——

Mr. LIPSCOMB. You are talking to just one. I am talking to your whole inventory.

General MILEY. I am talking about the medium tank ———.

Mr. LIPSCOMB. What was that figure you just gave?

General MILEY. Through the 1969 procurement period, we will have ——— medium tanks in the inventory. With our 1970 buy, at the end of the 1970 funded delivery period, we will have ——— against a requirement of ———. But, as I pointed out earlier, only about ——— of those tank assets will be the M60 version with the 105-millimeter gun or better. The remainder will be these other tanks you see on the left of the chart, the M48A1, the M48A2C, and the M48A3.

Our purpose is to keep a tank line going at an economical rate of ——— chassis a month and build toward that inventory of ———. That is the tank program in a nutshell.

Mr. LIPSCOMB. Do these figures include all the tanks that are in storage yards or being retrofitted or having the bugs taken out of them?

General MILEY. The only tanks in that category that you find—and they are included in the asset figures—are the ——— M60A1E2 tanks procured in 1967, and the turrets that we procured in 1966. Those assets are included in the asset figure.

Now, those numbers have nothing to do with the Sheridan which is a reconnaissance vehicle and the numbers for that vehicle are immediately above it on the chart. We show a total requirement of ——— and assets through 1969 of ———. We are trying to fill two distinctly different inventory objectives.

XM35 CONDUCT-OF-FIRE TRAINER

Mr. EVANS. I would like to turn to the XM35 conduct-of-fire trainers.

TYPE CLASSIFICATION PRIOR TO ENGINEERING TEST

The XM35 conduct-of-fire trainers for the Shillelagh missile was first type classified limited production in October 1965, about 3 months before it was subjected to engineering tests, and a production contract for 67 units at a cost of about $3.2 million was awarded in February 1966. Why was this done?

General MILEY. We proceeded on the procurement of these trainers because we tried to match their availability with the Sheridan vehicle.

This trainer, as you probably know, simulates the firing of a Shillelagh missile without firing the missile and since the missile at that time cost something on the order of $3,000 apiece—we have now brought the price down—it is very economical to simulate the missile flight with these electronic devices.

PROCUREMENT WHILE UNSUITABLE FOR ARMY USE

Mr. EVANS. The Army Test and Evaluation Command in November 1966, reported that based on testing to date, the trainer did not meet required durability and reliability characteristics, did not meet required maintainability characteristics, and in its present state of development was unsuitable for Army use. In late November 1966, the Sheridan project manager terminated the check test because of technical difficulties which required extensive troubleshooting and repairs.

Nevertheless, 6 days later, the project manager requested extension of the limited production type classification to cover procurement of 127 additional trainers at a cost of approximately $4 million. Why have a Test and Evaluation Command if its test findings and recommendations are ignored?

General MILEY. The Test and Evaluation Command tests our equipment and finds out what is wrong with it. Then we move out to correct it. In this case, we did develop the corrections for the initial procurement of the trainers and these trainers, to the extent they were deployed with the troops, were recalled. The modifications have been applied and they are back in the hands of troops again.

Now, as far as the second contract goes, the performance of it was stopped until the fixes were applied to the first procurement, after which the contractor was allowed to proceed with the procurement of a second batch of 127.

Mr. EVANS. When was that established?

General MILEY. In December 1967 the contractor agreed to hold up production until the Government was satisfied it had an acceptable trainer. None of the second batch was scheduled for delivery until the fixes were applied to the first quantity and checked out and deployed to the field.

PRODUCTION BASED ON POSSIBLE LOSS OF FUNDS

Mr. EVANS. According to a GAO report, it was indicated that the Sheridan project manager in January 1967 stated that failure to approve the limited production action authorizing the additional 127 trainers would probably cause the Army staff to reprogram the funds, resulting in a loss of fiscal year 1967 program quantities. The approval was received, and a letter contract was awarded on January 25, 1967 for the additional 127 trainers and related items at a cost of about $4.2 million.

The armor and engineering board tests, completed in March 1967, showed that the trainer was unacceptable from a durability and reliability standpoint, and in April 1967 the armor school concluded that procurement of the trainer should be stopped. Also, a joint armor community position was forwarded in April 1967 stating that the XM-35 trainer was completely unacceptable, production should be halted, and the basis of issue of those on hand should be limited to training centers and schools. Here again we have budgetary considerations affecting a decision to procure in significant quantities equipment not yet acceptable for operational use.

Why, in light of the above facts reported in March and April 1967, was the contact definitized on June 30, 1967, and the additional quantity procured?

General MILEY. We had the leadtime problem facing us. We felt we could make the fixes on the first batch procured, and apply them to the second quantity without interrupting our production program. As a matter of fact, this is what happened. We did get the modifications applied to the second batch and they should be completely acceptable to the troops.

REQUIREMENT OF FURTHER MODIFICATION

Mr. EVANS. Then the 127 trainers will not have to be modified in any way?

General MILEY. I wouldn't want to answer that categorically. We seem to modify our equipment when we find we can improve its performance.

Mr. EVANS. I mean on the basis of the tests that have been conducted so far.

General MILEY. The modifications that we applied for the first batch will be applied to the second batch. I can answer it that way.

Mr. EVANS. Then the 127 will have to be modified?

General MILEY. As were the original ones.

Mr. EVANS. Are they modified on the production line as they are produced?

General MILEY. They are being applied on the production line. The actual technical data package has been modified.

COST OF MODIFYING TRAINERS

Mr. EVANS. What is the total estimated cost to modify and retest these trainers to correct the deficiencies before they are suitable for crew training, and where will the funds be obtained to accomplish this modification?

General MILEY. The cost of modifying the first 67 is now estimated at approximately $262,000 or roughly $3,900 apiece.

I will have to furnish for the record where the funds for the second modification are included.

Mr. EVANS. For the 127?

General MILEY. That is right.

(The information follows:)

Modification of the 127 XM-35 trainers is being accomplished with fiscal year 1967 PEMA funds appropriated for this item.

MODIFICATION TO MEET REVISED SPECIFICATIONS

Mr. EVANS. What portion of this cost will be borne by the contractor?

General MILEY. The Government will bear the cost of this modification because the contractor delivered hardware in accordance with the terms of the contract.

Mr. EVANS. How about the 127?

General MILEY. The 127 will also be produced in accordance with an Army specification package.

Mr. EVANS. What you are saying then is that you didn't produce the right specification initially and this was an Army mistake instead of it being a contractor mistake? Originally, it appeared as though these trainers did not live up to the specifications the Army initially set forth for this vehicle, according to the GAO report.

Now it would appear, since we are going to have to bear the cost, that our specifications weren't good enough in the first instance. Is this a correct conclusion?

General MILEY. We developed a set of specifications and drawings and furnished them to the contractor and he built the 67 trainers in accordance with those specifications. We accepted them, put them out for test, issued them to troops and subsequently determined that their reliability and maintainability did not meet our requirements. We changed our specifications and drawings and issued a modification to the contractor. We will pay the contractor to modify the hardware to meet our new specifications and drawings so you might say our original specifications were incorrect.

Mr. EVANS. Are you sufficiently familiar with the specifications and problems involved to be able to say whether or not we should have foreseen those deficiencies when the original specifications were written and reviewed? That is a considerable modification cost per unit.

General MILEY. In hindsight undoubtedly we should have tested the device longer than we did, but we did go into the production phase in order, as I said earlier, to have the trainers when the Sheridans were delivered. We possibly didn't do enough to determine all the maintainability and reliability problems that we encountered later on.

NEED FOR MORE TESTING PRIOR TO PRODUCTION

Mr. RHODES. In hindsight, General, would you say somebody should have realized something like the bore scavenger would be needed before we built several hundred Sheridan tanks? I mean a modification of this is sort of beyond belief to me. I don't know how you can develop a weapon and ammunition and get the weapon and ammunition married to a tank and suddenly realize that the whole concept doesn't work, which is exactly what happened.

General MILEY. I think in answer to your original question, that hindsight, the great teacher that it is, might well have dictated a different course of action.

Mr. RHODES. Would you also go so far as to say that a little more foresight, or maybe a little more testing or a little better appraisal of the results of testing would have indicated prior to the time that the tanks were built that some such modification was needed?

General MILEY. At the time the several decisions were made in connection with the Sheridan program and the trainer program, I think it is fair to say that great attention was given to the facts at hand. I think the element that led us to do what we did was optimism based

on engineering advice and technical judgment, that things would go better than they really did.

Mr. RHODES. A lack of testing?

General MILEY. We did a considerable amount of testing. I think it is an evaluation of the test results and the optimism that we could clean up what the test results showed. We did an awful lot of testing in this program. When we looked at the test results we said, "We can fix that," and it turned out it took us longer to fix that than we originally estimated.

Mr. RHODES. As a matter of fact, we never did fix it until you put the scavenger system in.

General MILEY. That was the final solution.

Mr. RHODES. The original concept doesn't work, of getting an artillery shell with a case which completely destroys itself. That didn't work, did it?

General MILEY. It completely destroys itself, but leaves a residue that we didn't anticipate, and finally we had to go to the scavenger system.

NEED TO LEARN FROM THE PAST EXPERIENCES

Mr. EVANS. May inquiry be made further on the same subject: We have had similar experiences with separate systems now, going back I don't know how many years. The Sheridan, the Shillelagh, the M–16 rifle, and item after item. Wouldn't you think that a better test and evaluation system could be undertaken for these various purchases you make and more attention given to the criticisms that arise out of a test and evaluation, because that happens time after time?

I am not speaking just of a follow-on development. I am talking about the usefulness of the original item that's purchased. It seems to me that this is happening in weapons system after weapons system.

General MILEY. I think our test and evaluation systems do what they are supposed to do. They do test equipment and disclose the problems, if any, with the equipment. I think our attitude is that unless we press forward with some risk-taking, we will continue to have an Army that is equipped with obsolete equipment. I think we have to continually press the state of the art because we know that our enemies in the world are pressing the state of the art.

Mr. EVANS. I would concur with that, but it would seem also that within our capability, and within the same state of mind of getting the best equipment in the field as fast as we can, to originally produce and place in the field better equipment, better weapons, without having to reprogram, without having to refit or retrofit. Just simply to make the original product work like it is supposed to work.

If you go from these items we are talking about now, to other items not in your field, such as the C–5A, et cetera, et cetera, the cost alarms me.

CONTINUAL UNDERESTIMATING OF COSTS

General MILEY. As far as the cost of these things goes, I think we again allow optimism to enter into our forecasting. I think we continually—not continually, but in many cases underestimate the real ultimate price of the new systems we are trying to field.

Mr. EVANS. Why? We have the engineering ability. We have had the tests. We have an idea of what has to be done to bring it up to standard. Why, time after time, does our optimism lead us into this same pitfall?

General MILEY. One factor that affects the cost of these items is, as soon as we introduce any delay, as soon as we run into technical problems and have to do something over again, or slow down something, we immediately are confronted with the continual escalation of cost in the industries that we deal with.

If the thing goes off on time and on schedule, generally our cost estimates stand up pretty well, but as soon as we start to introduce any kind of slippage, we are hitting that 4- to 5-percent escalation in labor and materials that our economy has.

Mr. EVANS. Do you get slippages when you have to keep Sheridans in storage and retrofit them with new devices?

General MILEY. Yes, sir.

Mr. EVANS. You will require ——— per unit to do that. Not only from a business point of view, but from a practical point of view—you can see what is developing in the country today in terms of the public mind and military spending, and it is catching on fire.

Now, if this happens time after time and the public sees what has happened time after time, you are going to get, or you are beginning to get an anti-Republic. I catch it every time I go home.

That is just a gratuity thrown in.

What is the total requirement for the XM-35 trainer?

General MILEY. 194.

Mr. EVANS. We stand adjourned until 2 o'clock.

AFTERNOON SESSION

Mr. SIKES. The subcommittee will come to order.

CANCELLATION OF 1970 SHERIDAN AMMUNITION BUY

I believe you were prepared to answer a question this morning on a $9 million item for ammunition.

General MILEY. When the Army's budget was originally submitted to the Congress in January, we showed against line item 553 a quantity of ——— rounds at $24.5 million. In the revised budget, which was submitted to the Congress, we zeroed out the quantity. This is based on the deferred employment of the M60A1E2 tank. We kept $9 million in the line to provide for long leadtime components to keep the shell line going until we start again, and for engineering and quality assurance. This investment would be an offset against a future procurement of the same rounds.

Mr. SIKES. What would be the effect if this $9 million were not appropriated?

General MILEY. This means the shell manufacturer's line would cease production and we would have to start them up again in some future year.

Mr. SIKES. How did you arrive at $9 million for this purpose?

General MILEY. This is the minimum rate to keep any continuity on the line.

COST OF SHERIDAN WEAPONS SYSTEM

Mr. SIKES. Provide for the record the original estimated cost for development of Sheridan weapons system including modification and retrofit, providing also the original estimated production cost of the Sheridan, compared with what it is estimated to be today.

General MILEY. Yes, sir; I will.

(The information follows:)

[In millions]

1. Original estimated cost for development of Sheridan weapons system (including fire control and gun launcher, but not including missile and conventional 152-millimeter ammunition)	$30.9
2. Original (1963) estimated average production cost of the Sheridan vehicle based on a total projected buy of ——— and a total program cost of $506.9 million	———
3. Current (1969) estimated average production cost of the Sheridan vehicle based on a total projected buy through fiscal year 1971 of ——— and a total program cost of $459.2 million. This does not include cost of a laser rangefinder which will be supplied in the future for selected vehicles	———
4. As can be seen from the above, the 1969 estimated average production cost of a Sheridan vehicle is approximately 9.7 percent above the original (1963) estimate	———

Mr. SIKES. Are there questions at this point?

If not, we will turn to the application of the Shillelagh to the M–60 tank.

ADOPTION OF SHILLELAGH TO THE M–60 TANK

The GAO report indicated that in 1964 the Army applied the Shillelagh weapons subsystem to the M–60 tank, although this subsystem was a new concept still under development and had not been proven in its initial application on the Sheridan weapons system. Furthermore, the Army approved limited production-type classification in May 1966, awarded production contracts for these tanks when serious deficiencies were known to exist in the conventional ammunition and sufficient testing had not been performed on the overall tank system to adequately evaluate their suitability for operational use. There are a number of rather serious allegations. I would like your comment on them.

General MILEY. The initial program to mount the Shillelagh missile system on the M–60 tank was conceived of as a modification program. We called this the M–60A1E1 tank. This program consisted of a procurement of 243 turreted assemblies, including the Shillelagh weapons system and the stabilization system, to be mounted on prior-produced M–60 chassis.

The development program had gone through the initial stages and in the Army's expert view the program was essentially a low-risk program. We were going to use the chassis of a proven tank. The Shillelagh missile system itself by 1966, when we contracted for this program, was in good shape and the combustible cartridge case problem had not surfaced to the extent it did later in the Sheridan program.

REQUIREMENT FOR A SHILLELAGH FIRING TANK

Mr. SIKES. What was the compulsion for going ahead at this stage?

General MILEY. ———.

Mr. SIKES. Have subsequent developments proved the validity of your action?

General MILEY. As the Shillelagh-firing tank program now stands, we feel we have solved the problems relating to the combustible ammunition round, and now only have to solve the stabilization problem. Late last year when the ammunition problem was solved, the ammunition was released for useful testing. Due to deficiencies that developed in the stabilization system of the tank, it seemed prudent to us to slow down the program and get to work on the analysis of this system. The analysis is now underway by several agencies. The contractor involved is Chrysler, who has been our tank builder for many years. Various agencies within the Army Materiel Command are conducting systems studies on the system and we hope by July or early August to have an idea of what is wrong with the stabilization system.

I might add the stabilization system, when in proper adjustment, is, in the view of the tanker, what he has been wanting for many years.

ACTUAL TANK PRODUCTION VERSUS PLANNED

Mr. SIKES. What have been the gains and what have been the losses of following the procedure which you have outlined?

General MILEY. Actually there were several influences exerted upon our tank program during the time frame 1966 to 1970. If you go back in time to fiscal 1966, we contemplated at that time to produce by 1970 a total of ——— M60A1E2 Shillelagh-firing tanks. In addition, we should have modified 243 of the old M48A1 tanks by putting on top of their chassis the 243 M60A1 turrets from the M60A1E1 program. This would have given us an additional ——— new or improved tanks in the inventory.

Actually, as a result of slowing down the M60A1E1/E2 program, we did two things. We were able to limit our investment in the program and also provide funds for the modification of M48A1 tanks to the M48A3 version that is now used in South Vietnam. Summarizing the total scoresheet, and going back to my earlier statement, ——— Shillelagh-firing tanks plus 243 of the M48A4's would have produced a total of ——— tanks. We actually have produced 300 M60A1E2's which are now awaiting the fix on the stabilization system.

We also are producing ——— M60A1's of which ——— are for the U.S. Army. The remainder were sold to a foreign country. If I include the foreign sale and the ——— M48A3s in the production assets, we actually delivered ——— tanks, whereas our intention was to produce ——— tanks.

Mr. SIKES. If you had to do it over again, would you do it the same way?

General MILEY. No, sir; I wouldn't quite do it the same way.

Mr. SIKES. What would you do differently?

General MILEY. I think if we could have surfaced the stabilization problem earlier—and again there are many "ifs" involved—if the ammunition situation had enabled us to surface the troubles with the stabilization system I doubt if we would have proceeded with our initial procurement of the 300 M–60A1E2 tanks. I think we would have delayed those for another year at least.

Mr. SIKES. How much more is that going to cost?

General MILEY. Sir, until we get the results from out studies, we won't know the fixes.

PRODUCTION IN SPITE OF KNOWN DEFICIENCES

Mr. SIKES. I have been critical of the Army in a number of instances for delaying too long the completion of testing and the availability of new weapons. I think you are right to take the chance if you think you are on sound ground, in order to get the new weapon in inventory more quickly. Even if it costs a little more money, I think you are right. There have been too many instances when we took too long to test new equipment.

In January 1966 a letter contract was awarded for 243 M–60A1E1 compact tank turrets to retrofit existing M–60 tanks to permit their use of the Shillelagh weapon subsystem. Because of various problems, the letter contact was not definitized until December 1967 at a total contract price of about $44 million. A later decision to apply the Shillelagh to a new M–60 chassis was designated as the M–60A1E2. In April 1966, the commanding general of the Continental Army Command stated he fully agreed with the Armour Center analysis of the current status of the M–60A1E1/E2 program and recommended that because of the long list of major deficiencies, the tanks be produced only in service test quantities and not be produced for field use or deployed until they satisfactorily passed their engineering and service tests. He also stated that current planning to apply modification after production was of questionable validity as experience had shown that programs of major modifications after production were costly and for the most part an unsatisfactory method of alleviating design deficiencies for fighting equipment.

The Combat Developments Command that same month recommended the M–60A1E1/E2 program should continue only from a purely research and development standpoint, and the safest course of action was to agree with the developer and not classify the tanks' limited production until sufficient test data were accumulated. In light of the above recommendations, why did the Army in May 1966

approve limited production type classification for the M–60A1E1/E2 tanks and procurement of 243 turrets for the M–60A1E1 program with fiscal year 1966 funds, and 300 new M–60A1E2 tanks with fiscal year 1967 funds?

Do you want to break that out in some detail for the record?

General MILEY. I think it would be useful if I may.

(The information follows:)

This approval was based on four factors in addition to the threat which was previously discussed:

(1) The mobility system was that of the M–60 tank which had 6 successful years of troop use.

(2) The main armament was the Shillelagh missile system which was being recommended for type classification standard A at that time.

(3) The conventional ammunition had undergone extensive tests in the Sheridan development program. It was being procured under limited production type classification. Subject to completion of confirmatory tests, this ammunition was to be recommended for type classification standard A in first quarter fiscal year 1967.

(4) Fire control and turret interface tests had indicated no problems that could not be solved prior to the scheduled type classification standard A date, March 1967.

CONTRACT DEFINITIZATION IN SPITE OF KNOWN DEFICIENCIES

Mr. SIKES. In October 1966, the Army Test and Evaluation Command reported that none of its recommended requirements for the M–60A1E1/E2 program had been met, and the Command considered the engineering and service tests about 10 percent complete. In addition, the foregoing problems with the 152-millimeter conventional ammunition remained unsolved, and as late as March 1967, the Combat Developments Command reported there were no known solutions to the tank stabilization system problems, and the M–60 project manager was looking at other tank stabilization systems.

Why then was the letter contract of September 1966 definitized in June 1967 for 300 M–60A1E2 tanks, plus related items, at an estimated cost of $95 million?

General MILEY. Sir, by August 1967, as a result of the pieces of evidence that you have read from the various Army Commands, the Army staff took a hard look at the M–60A1E1 problem and the M–60A1E2 program and made recommendations to the Chief of Staff and the following actions took place.

First of all, in the case of the M–60A1E1 retrofit program, we directed the people at Anniston Depot who were taking the turrets off the M–60 chassis in anticipation of mounting the new turret, to cease that program and run the tanks through rebuild, which they were down there for, and put them back in the Army inventory.

We made the decision to complete deliveries on a contract, then 15 months old on the turret assemblies and store them at Detroit Arsenal until we could get a fix on the rest of the turret system.

We then took a look at the M–60A1E2 contract which was 13 months old and decided that termination at that time would be very costly to the Government and we allowed that program to continue and also stored those tanks.

The driving influence was that if we continued with the M-60A1E1 retrofit program, we would be in effect, until we got our problems licked, reducing our inventory of usable M-60 tanks, so the decision restored to the tank inventory 243 M-60 tanks.

As a result of that, we recaptured some funds and proceeded to apply those funds to the ——— M48A3 tanks for which we received an urgent requirement from Southeast Asia. We also terminated the program for the M60A1 tank which would have taken the turrets from the M60's and put them on the M48A1 chassis. This also recouped funds which assisted the financing of the M48A3 program.

Looking forward into fiscal 1968, we made a decision to eliminate or not to procure the M60A1E2 tanks in that program but, instead to procure ——— M60A1 tanks and an additional quantity of M48A3's for the Southeast Asia war.

So, in effect, the fall of 1967 was a time of decision where the Army decided that in view of the technical difficulties with the Shillelagh firing tank, to slow down the tank, limit investment and take a look at the fixes that we would have to apply to the vehicles.

LETTER CONTRACT FOR M60A1 AND M60A1E2 TANKS

Mr. SIKES. Why was a letter contract awarded in August 1967 for ——— M60A1 tanks with 105-mm gun and no missile capability, and ——— M60A1E2 tanks, plus related items?

General MILEY. I will supply that for the record.

(The information follows:)

The review of the tank program intensified in August 1967, and continued through the fall. With the extent of the risks associated with the M60A1E2 becoming more apparent, the letter order contract awarded on August 18, 1967, limited the Government's obligation for M60A1E2 peculiar parts to $2 million until December 1, 1967. This maintained the option of continuing the program on schedule, if the fixes proved acceptable. As it turned out, the Army chose in November 1967, to terminate the fiscal year 1968 programs for the M60A1E2 tank and the XM37 turret trainer due to technical difficulties with the tank. The programs for the M60A1 tank, M60 armored vehicle bridge launcher, and M728 combat engineer vehicle were continued.

CANCELLATION OF CHASSIS PRODUCTION BUT NOT TURRET PRODUCTION

Mr. SIKES. Why was the fiscal year 1966 M60A1E1 retrofit program for mounting turrets on existing M60 chassis canceled in October 1967 but production of M60A1E1 tank turrets permitted to continue, resulting in the storage of about $44 million worth of turrets?

General MILEY. By October of 1967, nearly all of the materials for the 243 M60A1E1 turrets had been procured. Total cancellation of the program did not seem to be a prudent action since we would not have been able to recover much of the funds already obligated. The alternative which we selected had several advantages. It reduced our investment pending solution of problems. It also avoided a loss to the inventory, for an extended period, of the 243 M60 tanks scheduled for retrofit. Finally, it provided for eventual utilization of the materials already procured. These considerations led us to the decision by which we terminated the M60A1E1 retrofit program but permitted the completion of the turrets for future use in a M60A1E1 tank program.

1970 FUNDS FOR M60A1E2 PROGRAM

Mr. SIKES. Why are you requesting $3.8 million in the fiscal year 1970 request for the M60A1E2 tank when no quantities are being bought with these funds?

General MILEY. These funds will be applied to the analysis and engineering program to develop whatever modifications we will have to apply to the E2 tank.

Mr. SIKES. Questions on the application of the Shillelagh to the M60 tank?

M48 TANK

RETROFIT PROGRAM FOR M48

Mr. SIKES. The cancellation of the M60A1E1 retrofit program also caused cancellation of the retrofit program for the M48 tank which was to receive the turrets and 105-millimeter guns removed from the M60A1E1 tanks. What impact has this action had on our overall tank program?

General MILEY. If we had completed the M60A1E1 retrofit program, we would have generated 243 turrets with 105 millimeter guns. These turrets would be the ones removed from M60 tanks and replaced by the new compact turret with the 152 millimeter gun/launcher. In order to make use of the excellent capabilities of the 105 millimeter guns involved, it was decided to improve 243 of the 90 millimeter gun tanks (M48A1 model) in our contingency and training assets by replacing their turrets with the M60 turrets. Thus, the program would have reconfigured 243 M60 tanks and 243 M48A1 tanks into 243 M60A1E1 tanks and 243 M48A4 tanks. Cancellation of the program meant that the tank assets involved remained stable.

1970 FUNDS FOR M48A3 MODIFICATION

Mr. SIKES. What use will be made of the $1.5 million requested in fiscal year 1970 for modification of our current inventory of M48A3 tanks? Is this a reinstitution of the retrofit program which was canceled?

General MILEY. These are a few fairly modern modifications to the existing fleet of tanks with lessons learned in the field.

A new fire extinguisher, more rugged headlights and fenders, improved steering and shifting, hydraulic brakes, relocated fuel lines, and a more reliable wiring layout. This is only for a few hundred tanks———.

Mr. SIKES. Any questions?

METHOD OF FUNDING MODIFICATIONS

Mr. SIKES. Are there any funds in the fiscal year 1970 "Army operation and maintenance" budget for depot maintenance to cover the modification of the Sheridan weapon system, the XM35 conduct-of-fire trainer, or the M60A1E1 and M60A1E2 tanks? If so, provide for the record a breakdown of these O. & M. funds by item.

General MILEY. Any modifications to the Sheridan system will be PEMA funded.

Mr. SIKES. Does that apply to the XM35 conduct-of-fire trainer?

General MILEY. Yes, sir.

Mr. SIKES. And the M60A1E1 and E2 tanks?

General MILEY. They will all be PEMA.

PRODUCTION BASE SUPPORT

Mr. SIKES. Will you provide for the record a breakdown by line item and purpose the $33.4 million requested for "Production base support"?

General MILEY. I will do that, sir.

(The information follows:)

The production base support (PBS) program for fiscal year 1970 contains ——— million for advanced production engineering (APE) on the MBT–70. It also has ——— million in facilities projects for the Detroit arsenal tank plant and the Cleveland army tank-automotive plant to support production of M60 series vehicles, M109 SP Howitzer, and M551 Sheridan. The remaining ——— million principally provides for advanced production engineering (APE) on the very high output (VHO) engine family, which will be used in future combat and tactical vehicles.

REPROGRAMING ACTION, FISCAL YEAR 69–15

FUNDS FOR ADDITIONAL M60A1 TANKS

Mr. SIKES. The fiscal year 1967 procurement, the first buy, of 300 M60A1E2 tanks are being retained at the tank plant until conventional ammunition becomes available and other problems are solved. In November 1967, the Army canceled the fiscal year 1968 program for the additional ——— M60A1E2 tanks. Why did the Army, in November 1968 expedite through Congress prior approval reprograming action fiscal year 69–15 to add a production quantity of ——— M60A1 tanks to the fiscal year 1969 program? Was this because your M60A1E2 program for fiscal year 1968 was canceled?

General MILEY. Expedited action was requested of the Congress in order to avoid the possibility of increased costs and schedule delays on the M60A1 tank and the laser rangefinder. The cancellation of the fiscal year 1968 M60A1E2 program was not related to this reprograming action.

LETTER CONTRACT

Mr. SIKES. When was the letter contract covering the buy requested in this reprograming action signed by the contractor and by the Government?

General MILEY. Based on previous congressional approval, a letter order contract for the fiscal year 1969 buy of the M60A1E2 tank was signed on September 23, 1968. The reprograming action, however, did not include the M60A1E2 tank. It instead requested congressional approval for M60A1 tanks and laser rangefinders. The option in the letter order contract for the M60A1 tanks was exercised by the Govern-

ment on December 13, 1968. The contract modification for the laser rangefinders was issued by the Government on December 13, 1968, and signed by Hughes on December 31, 1968.

Mr. SIKES. Then the contractor signed the letter contract before the reprograming action was submitted to the Congress?

General MILEY. The letter order contract signed on September 23, 1968, did not commit the Government to buy the M60A1 tanks nor the laser rangefinders covered by the reprograming action.

NEED TO EXPEDITE REPROGRAMING ACTION

Mr. SIKES. If a letter contract was signed by the contractor in September 1968, precise program realinement and the pricing thereof was available prior to the signing of the letter contract. Why did it take so long to forward the reprograming to the committee and then expedite its consideration through the Congress because the Army only had a few days to exercise an option?

General MILEY. Using the estimated M60A1 costs in the option as a base, total program cost estimates for the M60A1 were completed, program decreases were finalized, and the reprograming action was prepared for staffing and approval on October 4, 1968. It received final approval in the Army on October 29, and was forwarded for approval of the Secretary of Defense and the Congress. The amount of time needed to process this action was largely a function of the careful reviews required at each level in DA and OSD which occurred during the period of peak workload in the development of the fiscal year 1970 budget. Consideration of the reprograming action was expedited through Congress to avoid the possibility of increased costs and schedule delays.

EXTENSION OF OPTION

Mr. SIKES. If the option was to be exercised by October 31, 1968, and the reprograming was not submitted to Congress until November 13, 1968, how was the Army able to take advantage of the option when the Army did not sign the letter contract exercising the option until December 13, 1968?

General MILEY. The Army was able to extend the date for exercising the option through daily contacts with Chrysler Corp. The contractor on three separate occasions signed modifications extending the deadline by 2 weeks.

REQUIREMENT FOR ADDITIONAL M60A1 TANKS

Mr. SIKES. What is the requirement for an additional ——— M60A1 tanks in the fiscal year 1970 budget at a total cost of $67.5 million?

General MILEY. At the end of the fiscal year 1969 funded delivery period, the Army's total of acceptable medium tank assets will be short of the current authorized acquisition objective by a quantity of over ———. The ——— tanks represent an annual increment of the total procurement to offset this shortage. The tank requirement is being filled on an incremental basis in order to keep in being an expandable production base for mobilization purposes.

MINIMUM SUSTAINING RATE

Mr. SIKES. Why is it necessary to buy ——— M–60 chassis to keep the tank production line going "at the minimum sustaining rate" as your statement indicates? Why not 100 such chassis, or 50? What is the rationale for ——— as a minimum sustaining rate?

General MILEY. Our cost studies have shown a sharp increase in the unit price of tank-type vehicles when the production rate drops below ——— per month. To illustrate: A study of the M–60A1 tank was done by USAWECOM in 1968. Results indicated that total unit costs could be expected to increase by about 4 percent if the production rate were reduced from ——— per month. If the production rate were further reduced to ——— per month; however, the study projected an additional unit price increase of about 16 percent.

1970 REQUIREMENT FOR RETROFIT KITS

Mr. SIKES. What is the requirement for ——— retrofit kits for the M–60/M–60A1 tanks in the fiscal year 1970 budget at a cost of $6.5 million?

General MILEY. These retrofit kits are required in order to improve effectiveness of the current inventory of M–60 and M–60A1 tanks and to extend their useful life. The kit includes a new ballistic computer, a waterproof accelerator control box, and an emergency firing mechanism. These features have been incorporated in all U.S. M–60A1 tanks produced since June 1968, and it is planned to apply retrofit kits to the total inventory of M–60 and M–60A1 tanks.

LASER RANGEFINDER FOR M–60A1E2 TANK

Mr. SIKES. Why was there an urgency to procure ——— laser rangefinders for the M–60A1E2 tanks bought in fiscal year 1967 and stored because there is no operational 152-millimeter combustible ammunition and there are still unsolved problems with the turret stabilization system in the M–60A1E2?

General MILEY. At the time of the reprograming action and after it, we had in the fiscal year 1969 program, a quantity of ——— M–60A1E2 tanks and had had in the fiscal year 1967 program ——— of these tanks. The laser rangefinder was the deployment-limiting item for these tanks and at the time we put the budget together and as late as the time of the reprograming action, the full scope of our troubles with the stabilization system hadn't been developed, so at the time that we submitted this reprograming action we intended to procure the laser rangefinder for the tanks that were in the program.

Mr. SIKES. Do you still have a requirement for the laser rangefinders?

General MILEY. When we deploy the M–60A1E2 tank, when we get our stabilization problem licked, we will have a laser rangefinder on it.

In the short term, we are now examining the practicability of applying the laser rangefinders in this program to the Sheridans going to Europe. There is a requirement for laser rangefinders on the Sheridans going to Europe.

Mr. SIKES. Do you anticipate a situation where we will find that we have some laser rangefinders surplus and on the market?

General MILEY. No, sir, we will not.

COST OF LASER RANGEFINDER

Mr. ANDREWS. What is the unit cost of that rangefinder?

General MILEY. I show ———, sir. That is the first buy, which includes the start-up cost. I am sorry. It is ———.

Mr. ANDREWS. Isn't that rather high?

General MILEY. It is pretty complicated piece of equipment and it is a small quantity.

Mr. ANDREWS. How many do you have in the budget for 1969 and in the budget for 1970?

General MILEY. We bought ——— for $4.5 million in fiscal year 1969 and this year it is ——— for $3.8 million.

Mr. ANDREWS. The unit price hasn't come down?

General MILEY. It is just about the same, as I understand it. It is ——— the first time out and down to about ——— now.

VALUE OF LASER RANGEFINDER

Mr. SIKES. What is the contribution of the laser rangefinder that it gives that kind of value to the service?

General MILEY. Our M–60A1 tanks with their large turret had an optical rangefinder. It was the original concept of this tank, with the Shillelagh, that a rangefinder would not be required. However, our European commander has insisted that in order to lay his conventional round on the target out to reasonable ranges he does need a rangefinder. The top of the turret on the M–60A1E2 tank, which was reduced to provide less frontal space to the enemy, won't accommodate an optical rangefinder, so we are having to go to a black box laser to provide the ranging capability.

Mr. SIKES. What would be the comparative cost of the conventional type rangefinder?

General MILEY. The optical rangefinder?

Mr. SIKES. Yes.

General MILEY. About ——— sir.

Mr. SIKES. There is nothing in between?

General MILEY. There is no way of putting a 2-meter rangefinder on the turret. We have to go to the laser. I am not a real expert on laser, but I believe it has a capability in bad weather that the optical wouldn't have.

TYPE OF PROCUREMENT

Mr. ANDREWS. Is this sole-source procurement?

General MILEY. Yes, it is, sir.

Mr. ANDREWS. What company?

General MILEY. Hughes Aircraft.

Mr. ANDREWS. Does anyone else compete?

General MILEY. There were several others who competed but the Hughes version was selected over the others. I understand American

Optical was in it and the Technical Research Group, a division of Control Data Corp. There were two or three candidate lasers considered.

Mr. ANDREWS. The Army is the only customer?

General MILEY. I know of no other service using lasers, but some of the aircraft people may be getting into lasers. Hughes is selling prototype rangefinders to the Belgians.

DURABILITY OF LASER RANGEFINDERS

Mr. SIKES. It would be interesting to know how vulnerable they are. Are they substantial or durable?

General MILEY. I beg your pardon?

Mr. SIKES. It would be interesting to know how substantial or durable they are. Are they relatively foolproof and durable?

General MILEY. It is a fairly rugged system and the principle is a fairly simple one. The trouble we have had with lasers is the uncertainty as to the safety hazard to our own troops out in front. The Surgeon General has resolved some of the questions enabling us to go ahead on the laser.

Mr. SYKES. Why are you buying an additional ——— at $3.8 million when you have fairly substantial quantities stored?

General MILEY. The prior procured quantity in the 1969 budget, plus the quantity we have in this budget, were exactly the number we needed for the ——— M60A1E2 tanks and the ——— turret trainers.

HIGH COST OF FIRST BUY

Mr. SIKES. The funds reprogramed for ——— laser rangefinders amounted to $4.5 million which averages about ——— per unit. In the fiscal year 1970 budget, you are requesting $3.8 million for an additional ——— laser rangefinders at a unit cost of ———. Does this mean that the reprograming for ——— laser rangefinders was overfunded by almost $300,000?

General MILEY. There was an item in the first procurement of $3.2 million for special tooling which doesn't appear in the second buy. I am sorry. ——— per unit for the earlier buy, which does not appear in the present buy.

Mr. SIKES. The laser rangefinder is now classified only for limited production. You are buying them for operational use on the M60A1E2 tank and they haven't complete engineering and service tests. How do you know they are going to work?

General MILEY. We have enough experience to know we can move ahead with the LP-type classification which is reserved for a high priority item that hasn't complete its full testing. We are using the LP category here for what it was intended to be used for.

LASER RANGEFINDER FOR SHERIDAN

Mr. EVANS. Are these going to be bought and stored without the stabilization problems being overcome?

General MILEY. We are now taking a look at the possibility of applying these to the Sheridan vehicle. The commander in Europe has told us he will accept the Sheridan only with a laser rangefinder. So our plan now, if all the pieces fit together, or with minor modification, is to sell these lasers to the Sheridan program so we wouldn't have to buy lasers for the Sheridan.

COST OF RVNAF MODERNIZATION PROGRAM

Mr. SIKES. Now, I would like to have provided for the record a tabulation showing the mounting cost being provided under the modernization and improvement program for South Vietnam forces in the 1969 basic budget and the 1969 supplemental, and in the fiscal 1970 budget.

(The information follows:)

REPUBLIC OF VIETNAM ARMED FORCES MODERNIZATION—FISCAL YEAR 1969

[Dollars in millions]

Activity	Basic	Supplemental	Total	Fiscal year 1970
5. Tracked combat vehicles				$40.3
6. Weapons and other combat vehicles		$2.6	$2.6	5.2
7. Tactical and support vehicles	$3.7	92.7	96.4	84.8
8. Communications and electronic equipment	6.7	17.3	24.0	16.1
9. Other support equipment	15.7	53.0	68.7	21.3
10. Ammunition	32.3	80.8	113.1	157.1
Total	58.4	246.4	304.8	324.8

WEAPONS AND OTHER COMBAT VEHICLES

Mr. SIKES. For fiscal year 1970 you are requesting $123.8 million for "Weapons and other combat vehicles." The fiscal 1969 program for this budget activity was $215.3 million.

XM706 COMMANDO ARMORED CAR

Mr. SIKES. Under the XM706 command armored car, you testified last year there is no firm requirement by Army forces for the commando armored car, and it was type classified LP in 1967 to permit its purchase for South Vietnamese forces. Fiscal year 1968, when ——— were funded, was to have completed the purchase, however, you were funded ——— more in fiscal year 1969 and requested an additional ——— in the fiscal year 1969 Southeast Asia supplemental. In the latter request, ——— were to have been for U.S. Army personnel. It still has a type classification of limited production. Why are they now being purchased in quantities for U.S. Forces?

General MILEY. The only requirement that we have recognized for U.S. Forces to date in the requirements that we are meeting in the 1969 supplemental is for the forces in Southeast Asia, where the MP battalions providing road patrol and convoy duty have decided this would be a very useful vehicle.

The item has not been standardized for use outside of Southeast Asia and you might call this a one-time requirement only. The Army is going to continue the study of the use of armored cars in the future, but for the present time we have no standard armored car for issue to U.S. Forces.

ADVANTAGES OF WHEELED VEHICLE

Mr. SIKES. Will it fill a specific need better in Southeast Asia than any other available vehicle?

General MILEY. Yes, sir; we find this wheeled vehicle with its low maintenance is much more useful than the M-113-type carriers we were using before we bought these vehicles.

Mr. LIPSCOMB. Why?

General MILEY. The wheeled vehicle traditionally and actually is a lower maintenance vehicle. You can run a wheeled vehicle 20 or 30 thousand miles without major overhaul whereas the M-113 carrier, as we heard this morning, after 4 or 5 thousand miles requires a depot overhaul; new tracks, new torsion bars, new engine, new transmission.

You get more miles out of a wheeled vehicle than you get out of a track vehicle with pretty much the same convoy escort service.

Mr. LIPSCOMB. How do you know that?

General MILEY. The ARVN have had them for 2 or 3 years. We borrowed them to test them out.

Mr. LIPSCOMB. Borrowed them from where?

General MILEY. From the South Vietnamese Forces. We got them first in 1966 for the South Vietnamese people.

Mr. SIKES. You are requesting $1.7 million in fiscal 1970 for ——— additional armored cars. Are these for South Vietnamese?

General MILEY. Yes.

M-60 MACHINEGUN

Mr. SIKES. You are requesting $6.6 million for the procurement of ——— M-60 machineguns, 7.62 millimeter. This is a significant increase over the ——— funded in fiscal year 1969. The committee has been advised that only ——— of the fiscal year 1970 quantity will go to South Vietnamese Forces. Why is there a requirement for this large number?

General MILEY. I have to check that. Just a moment, sir.

USE OF THE .223 ROUND

Mr. SIKES. Is the Army still giving consideration to the family of weapons using the .223 round?

General MILEY. The Army at the present time, as you know, has the M-16 rifle in Southeast Asia and the 7.62 millimeter machingun to go with it. We don't like the situation too well. It would be very nice to have the same round for both the rifle and the machineguns. In the Army studies that are going on now for the infantry weapons of the future, this is a primary consideration, but at the present time we have no plan to develop a machinegun using the .223 bullet.

Mr. SIKES. Does the Army think the 5.56-223 is going to be the logical weapon for the immediate future and looking ahead 3 or 4 or 5 years, for troops deployed elsewhere besides Southeast Asia?

General MILEY. The Army Chief of Staff has reached the conclusion and made a recommendation that we convert to what we call the one-rifle army. That for the foreseeable future, the next 2 or 3 or 4 or 5 years, we would convert to the M–16, the 5.56 millimeter rifle, as the standard rifle.

ADVANTAGES OF THE 5.56 ROUND

Mr. SIKES. Does the Army like this small but high velocity round, or bullet, better than the larger 7.62 millimeter or comparable bullet used by the Communist forces?

General MILEY. The Army's experience with the smaller round in Vietnam has been one of great enthusiasm.

Mr. SIKES. As long as you keep it clean?

General MILEY. I think we have finally solved that problem, sir. Our failure rates have gone down sharply. Out to 300 meters, as far as we can determine by test, the accuracy is equal to the 7.62 millimeter weapon. The light weight of the bullet, the light weight of the rifle is a very attractive thing. Out at longer ranges there are still people who contend that we need the heavier bullet.

Mr. SIKES. Not many people get hit beyond 300 meters, at least not on purpose.

General MILEY. That is right. Taking all the evidence into consideration, the Chief of Staff has arrived at his recommendation that we convert to this.

Mr. SIKES. With the large bullet there is a high deflection problem in wooded areas.

General MILEY. The thing that impressed me looking at test results, is that the bullet is at the margin of stability and it produces wound effects that are pretty deadly. I have the numbers on that M–60 machinegun.

1970 REQUIREMENT FOR M–60 MACHINEGUN

Fiscal 1970 program provides for the following projected losses through fiscal 1970 funded delivery period: U.S. forces in Southeast Asia, ———. ARVN modification modernization, ———. Peacetime losses, the rest of the Army, ——— and a washout, peacetime ——— for a total of ——— losses to the inventory and the remaining quantity is to improve our asset position.

We will still be short of our inventory objective about ——— rifles at the end of the funded delivery period.

Mr. SIKES. You mean machineguns?

General MILEY. Yes.

Mr. SIKES. You are simply trying to catch up on inventory where you haven't been able to do so before because of budget limitations?

General MILEY. Yes, sir.

Mr. ANDREWS. General, doesn't the enemy use the same bullet for machineguns in South Vietnam?

General MILEY. I am not sure. The AK47 is a 7.62-millimeter bullet and I am not really familiar with their machinegun calibers. I have the feeling they are the same caliber, but I am not sure of that.

MODIFICATION OF THE M–16 RIFLE

Mr. MINSHALL. General, what did they do with the M–16 in the way of modification aside from instructions just to keep it extra clean?

General MILEY. The two principal modifications to the M–16 that the Army has applied is an improved buffer, and to chrome the chamber.

Mr. MINSHALL. Does that solve the problem?

General MILEY. As I said earlier, the so-called failure rates show a tremendous downward trend as far as I can ascertain, and we stay very close to the M–16. It is fully satisfactory now.

Mr. SIKES. It won't take the kind of handling that an M–1 or an M–14 would. It is well to have this impressed on the troops.

General MILEY. We have had an intensive program to make sure each man has the cleaning equipment he needs and uses it properly.

M–16 FAILURE RATE

Mr. MINSHALL. The failure rate has gone down from what to what?

General MILEY. I have the last 6 months spread and in the November time frame our malfunction was .033 rounds per 1,000 rounds, down to .006.

Mr. MINSHALL. That is quite an improvement then.

General MILEY. If you average the past 5 months and put it all together, it is two malfunctions per million rounds of ammo fired. This is a decided improvement over the early days.

PLAN TO EQUIP ENTIRE ARMY WITH M–16

Mr. MINSHALL. You also said as you looked 4 or 5 years ahead it was your plan to equip 100 percent of the Army with M–16's.

General MILEY. Yes.

Mr. MINSHALL. How many M–16's do you have in the inventory now and how many do you anticipate it will require to make it 100 percent.

General MILEY. As of March 15, we had in the U.S. Army ——— M–16 rifles and our total inventory objective is just about ——— million for the postwar baseline force.

Mr. MINSHALL. How many in this budget?

General MILEY. In this budget we have 599,552.

Mr. MINSHALL. What do you anticipate for next year? How is that going to be spread out, in other words?

General MILEY. We would like to buy this rifle with two producers going at a combined rate of something on the order of 600,000 rifles a year. Spread it out for 2 or 3 years in the future; we would like to keep two producers going if we could.

Mr. MINSHALL. Are there two producers now?

General MILEY. Three of them: Colt, General Motors, and Harrington & Richardson.

Mr. MINSHALL. When will you cut back on one of those?

General MILEY. We do not have complete approval on the procurement plan but we want to go out with a 1970 procurement on a multiyear basis and take the two low bidders and close down the third man.

HISPANO-SUIZA VERSUS TRW 25-MILLIMETER GUN

Mr. MINSHALL. I have one other question about guns. I see you are still using the Hispano-Suiza on the M–114. What ever happened to that gun that TRW was developing, the 25 millimeter?

General MILEY. The TRW gun is still with us. They are still developing it and the Army hopes within the next few years to procure its new scout vehicle which will mount a cannon in that caliber and I am quite sure that TRW's weapon will be one of the No. 1 contenders.

Mr. MINSHALL. One of their original contentions in designing the gun was that the Hispano-Suiza didn't have enough power to it to penetrate the known armor of the Russian tanks and other weapon carriers.

General MILEY. I know when we selected the Hispano-Suiza it was the gun that was here; it was in production and could defeat the Russian personnel carrier. We know that the TRW gun can defeat the Russian armored personnel carrier.

Mr. MINSHALL. But how about the Hispano-Suiza?

General MILEY. That is what I was talking about. I am sorry. When we selected the Hispano-Suiza, we determined that it could defeat the Russian armored personnel carrier. That was the target that we were seeking to attack on the battlefield.

Mr. MINSHALL. Why would you go to the TRW gun if the Hispano-Suiza was doing the job?

General MILEY. We are going out competitively to select——

Mr. MINSHALL. But you are going for a bigger caliber weapon too.

General MILEY. Well the QMR will contain the specifications of the new Scout vehicle. The QMR will have a range of calibers to defeat a certain target and we will solicit proposals in gun designing, from the gun designers, including TRW.

Mr. MINSHALL. But you would rather have the larger caliber weapon, everything else being equal, wouldn't you?

General MILEY. The larger caliber weapon, of course, puts more weight into the vehicle. It means a heavier mount——

Mr. MINSHALL. That wasn't my question. Wouldn't you rather have the larger caliber weapon, everything else considered?

General MILEY. We want an agile, speedy Scout vehicle and weight defeats your agility and speed.

Mr. MINSHALL. Then would you rather have the Hispano-Suiza?

General MILEY. No, sir.

Mr. MINSHALL. What do you want to say then?

General MILEY. We are going out and select the weapon that performs best, that gives us the best configuration of the vehicle. It is a tradeoff between weight and striking power.

WEIGHT OF HISPANO-SUIZA VERSUS 25-MILLIMETER GUN

Mr. MINSHALL. Would you actually pick up that much weight though?

General MILEY. Yes; I think you would.

Mr. MINSHALL. What are we talking about?

General MILEY. The bullet multiplication factor is pretty terrific. It is like the difference between the 5.56-millimeter and the 7.62-millimeter bullet.

Mr. MINSHALL. What do you mean by "multiplication factor"?

General MILEY. For example, the U.S. soldier, when he carries the M–16 rifle——

Mr. MINSHALL. I understand that, but I am talking about this 25-millimeter gun versus the Hispano-Suiza 20-millimeter.

General MILEY. All I am saying is when you multiply a weight increment, by a large quantity of bullets, your overall payload weight increase mounts very quickly.

Mr. MINSHALL. You can use BB guns and you would have nothing.

General MILEY. I don't think it would defeat the target we are attacking, sir.

Mr. MINSHALL. I was just wondering how much weight the TRW gun would add vis-a-vis the Hispano-Suiza. If you haven't got the answer now, if you can supply it for the record, I will appreciate it.

(The information follows.)

[In pounds]

	TRW 25 mm.	Hispano-Suiza 20 mm.
Weight of gun	180	161
Weight of 400 rounds (basic load of M-114)	444	276
Total	624	437

DECISION TO BUY THE HISPANO-SUIZA

General MILEY. The weight didn't enter into the Hispano-Suiza decision.

Mr. MINSHALL. What did enter into it?

General MILEY. The fact that the gun was here. It was available.

Mr. MINSHALL. And a lot of ammunition I understand was available?

General MILEY. The ammunition was in production too. So, in order to meet the urgent requirement of a commander in Europe, the Hispano-Suiza gun was here and with us. We made a one-time buy for the M–114 command and reconnaissance vehicles and now we are looking forward to a new Scout vehicle and we will go out and solicit competition for the design of the gun.

Mr. MINSHALL. Did you ever hear of having an oversupply of the 20-millimeter amunition that they wanted to use up, and that is why they were trying to push this Hispano-Suiza for the M–114.

General MILEY. I never heard that, sir; no, sir.

Mr. MINSHALL. Thank you.

M60 MACHINEGUN

Mr. SIKES. When was the M60 machinegun placed in inventory?

General MILEY. It was type classified Standard A in the third quarter of fiscal 1957.

Mr. SIKES. Has it performed satisfactorily in Vietnam?
General MILEY. Yes, sir. It has been a very fine gun.
Mr. SIKES. Its loss rate was no greater than its predecessors?
General MILEY. I never heard of it having an unusual loss rate.

81 MM MORTAR

Mr. SIKES. What is the status of the type of classification of the 81-millimeter mortar?
General MILEY. The M29E1, which is a modified version of the old 4.2-inch mortar—the new tube is the principal change—will be type classified in May 1969. The L16A1, which is the light weight one we developed with Canada, will be type classified in the same month, May 1969.

M16 RIFLE

Mr. SIKES. You are requesting $81.5 million for the procurement of 599,552 M16 rifles. A total of 1.4 million M16 rifles were funded in fiscal year 1968 and 1969. How many M16 rifles have been delivered and how many more are under contract?
General MILEY. We have had delivered to date through April 30, 1,217,888 rifles. I can give you the breakdown by manufacturer if it is of interest to you.
Mr. SIKES. Provide it for the record and also tell us how many more are under contract.
General MILEY. We have 1,040,770 rifles under contract to be delivered.
(The information follows:)

	M-16 rifle delivery Apr. 30, 1969	M-16 rifle under contract
Colts'	1,196,495	582,163
GMC	15,276	224,724
H. & R.	6,117	233,883
Total	1,217,888	1,040,770

INVENTORY OF M–16 RIFLES

Mr. SIKES. What is the current inventory of M–16 rifles in the U.S. Army?
General MILEY. ———.
Mr. SIKES. Is the Southeast Vietnamese Army—how many there?
General MILEY. ——— as of April 30, 1969.
Mr. SIKES. How many do you propose to procure entirely?
General MILEY. Based on the one rifle decision I talked about earlier, our inventory objective for the one rifle army would be in the neighborhood of ——— million rifles.
Mr. SIKES. What will be done with the M–14 which is now in inventory?
General MILEY. The M–14, of course, we would keep it while we were phasing-in the M–16, and I suppose we would put it away in some kind of war reserve unless we could sell it to some foreign country.

UNIT COSTS FOR M–16 RIFLE

Mr. SIKES. What is the unit cost we will be paying each of the contractors for the M16?

General MILEY. The General Motors price for the 2-year procurement of 240,000 rifles is $170.29, and that is broken down into $130.77 for the rifle production unit cost, $38.87 for start-up costs and 65 cents per rifle for gages.

Harrington and Richardson, the unit price, $140.42. That breaks down into $122.04 for the unit production cost, $17.61 for start-up costs and 77 cents for gages.

The 1968 price to Colt was $109.47 and we are now negotiating with Colt for the 1968 and 1969 buy with a selling price of about $125.

Mr. SIKES. Why is there such a difference in the contract prices now in effect?

General MILEY. The difference between the Colt price and the two new producer prices primarily relates to the startup costs and the acquisition of the gaging equipment. Insofar as the difference between the Harrington and Richardson cost, and General Motors cost, there were two elements that I have developed in my analysis. One is the rather significant labor rate differential between Worcester, Mass., and Ypsilanti, Mich. Something almost on the order of 50 percent higher in Ypsilanti. In addition, the startup costs show a variation because in the case of H. & R. they only had to convert an M–14 rifle line to an M–16 line, whereas General Motors had to set up a completely new rifle line.

M–16 PRODUCTION MEETING SCHEDULE

Mr. SIKES. How well are the new manufacturers doing?

General MILEY. The new manufacturers are both producing——

Mr. SIKES. Is there slippage?

General MILEY. No; General Motors is ahead of the contract schedule. H. & R. is just about on the contract schedule and actually, as of April 30 we have shipped and have in country 11,000 of the new producers' rifles.

Mr. SIKES. Are they already in use in the field?

General MILEY. They are in the hands of troops. They have been delivered to the using units.

Mr. SIKES. Have they been as satisfactory in use as those previously delivered.?

General MILEY. We have had no specific reports. They started arriving over there shortly after the 1st of April. They were given extensive tests at Aberdeen—all three rifles competing against each other, and we really wrung these out but to deliver an item in country 1 year after contract is about as good as we have ever done.

M–16 PROCUREMENT PLANS FOR 1970

Mr. SIKES. You state there be more than one contract for the M–16 procurement requested in the current budget?

General MILEY. Our procurement plan for 1970 still hasn't been completely approved. It is to solicit proposals from the three producers with a view to awarding two contracts—to continue two in production, hopefully on a multiyear basis.

Mr. SIKES. Are you going to try to get these contracts more in line with the current lowest cost?

General MILEY. These will be head-to-head competition. There will be no subsidy to anybody. They will have to be the low bidder to get the first portion and the second low bidder to get the remaining share.

SAVINGS THROUGH COMPETITIVE PROCUREMENT

Mr. LIPSCOMB. General, would you clarify the huge reduction in regard to this? On page 10 of the supporting data it shows fiscal year 1969, 754,232 rifles at $129.2 million.

Fiscal year 1970, estimated, 599,552, at $81.5 million. Can you clarify what accounts for the reduction?

General MILEY. Do you mean in cost?

Mr. LIPSCOMB. Yes.

General MILEY. That relates to the mix of prices that I gave you before where the 2-year contract, which is 1968 and 1969, with General Motors for 240,000 rifles, and H. & R. for 240,000 rifles, the price for General Motors is $170. The H. & R. price is $140. Now, what I would have to do for you is to break out of the 1969 program how many rifles went to each producer and extend them by the unit price. But the reason for the reduction is the reduction that we anticipate from competitive procurement in 1970. We are estimating a program unit cost of $136.

Mr. LIPSCOMB. How realistic is this?

General MILEY. I think we will make it. We are negotiating with Colt now for $125. The two people, the two new people will have to compete with Colt next year to get any share of the procurement.

Mr. LIPSCOMB. You had to pay extra money for going into this business? You gave some kind of bonus?

General MILEY. We bought the rights and drawings from Colt. They invented the rifle.

Mr. LIPSCOMB. Is that in the cost of fiscal 1969?

General MILEY. That was a one-time cost. I believe we funded that in 1967 or 1968. I believe it was $4.5 million for the rights and drawings. A one-time payment to Colt for which they delivered the reproduction rights to the rifle and a complete set of manufacturing drawings.

Mr. LIPSCOMB. Would you, for the record, account for the huge reduction?

General MILEY. I will give you a complete unit price analysis for the 1969 versus 1970 reduction.

(The information follows:)

Fiscal years 1969 and 1970 M16 rifle cost analysis

	Million
Fiscal year 1969: [1]	
Colt's 407,152 at $136 equals	$55.4
GMC 173,540 at $245 equals	42.5
Harrington & Richardson 173,540 at $180 equals	31.3
Total	[2] 129.2
Fiscal year 1970: [3] 599,552 at $136 equals	[2] 81.5

[1] Fiscal year 1969 combined total, 754,232.
[2] Line item 142.

(NOTE: The above testimony deals with the *1968* and *1969* program, whereas the insert deals with a complete unit price analysis for the *1969* vs. *1970* program.)

COMPARABILITY OF M–16 RIFLES

Mr. ANDREWS. You have three rifles, all M–16's, made by three different companies?

General MILEY. That is right.

Mr. ANDREWS. Do they have their name on them?

General MILEY. I haven't checked on that. Usually they do put their symbol on them.

We have taken parts and scrambled them and made rifles out of the separate parts and fired them on the range. There was no discernible difference in performance.

COMPANIES CONSIDERED AS POSSIBLE M–16 CONTRACTORS

Mr. SIKES. How many companies were interested in competing for these contracts at the time you selected General Motors and H. & R.?

General MILEY. We originally had four people in the competition. Not in the price competition, but in an evaluation competition. The other two companies were Maremont, which is a new name for Saco Lowell, and Cadillac Gage. From that group of four we selected what we considered to be the two most likely candidates, those judged to be the best in terms of getting started and that was GM and H. & R.

Mr. SIKES. Were you looking at cost or capability?

General MILEY. At the time final decision was made, it was strictly on the basis of capability, to produce a quality rifle in the shortest possible time.

REPAIR PARTS AND SUPPORT MATERIAL

Mr. SIKES. Provide a breakdown of the items making up the $16.6 million for "Repair parts and support material."

General MILEY. I will be glad to.

(The information follows:)

The $16.6 million for "Activity 6, weapons and other combat vehicles," is distributed by purpose as follows:

	Millions
Replenishment spares	**$15.7**
Provisioning	**.9**
Total	**16.6**

The end item for which initial spares are to be procured with the $0.9 million fiscal year 1970 provision funds is the gun, antiaircraft artillery, towed, 20 millimeter, SM–167.

(Additional information appears at page 1160.)

PORTABLE FLAMETHROWERS

Mr. ANDREWS. I notice on line 145 a portable flamethrower.

General MILEY. We bought ——— in 1969.

Mr. ANDREWS. No request for 1970?

General MILEY. We have none in 1970.

Mr. ANDREWS. What does that indicate? That you have enough on hand?

General MILEY. We have reached our requirement for this type. However, we are requesting about ——— XM–191 portable multishot flame weapons in our ammunition budget. This is an improved version that provides greater range and accuracy.

Mr. ANDREWS. What success have you had with these flamethrowers?

General MILEY. A flamethrower is a very useful device when we are fighting in the bunkers in Southeast Asia. I have only heard good reports of it. It is a very useful weapon.

Mr. ANDREWS. You think you have enough on hand?

General MILEY. The XM–191 procurement will satisfy our initial requirement in SEA. We are currently developing our worldwide requirement for the fiscal year 1971 budget.

Sir, I would like to correct my earlier statement. We also have ——— flame service units in the line which rolls up the items under $500,000. ———. It is shown at line 148. The total cost is under $500,000 and we roll them together into a single line.

Mr. ANDREWS. And you have ———?

General MILEY. We are tacking ——— flame service units onto last year's procurement to meet our requirements.

Mr. ANDREWS. Have you met all the requirements for Southeast Asia?

General MILEY. We have met all those Southeast Asia requirements.

TACTICAL AND SUPPORT VEHICLES

Mr. ANDREWS. The fiscal year 1970 budget program for "Tactical and support vehicles" is $384.1 million, which is $20.2 million more than the fiscal year 1969 program. As you have indicated in your statement, approximately 80 percent of this fiscal year 1970 budget activity, or $302.7 million, is for four truck models.

QUARTER-TON TRUCK

Mr. ANDREWS. A total of ——— ¼-ton trucks were funded in fiscal years 1968 and 1969. You are requesting $51.6 million in fiscal year 1970 for the procurement of ——— additional one-quarter ton trucks. About ——— of those requested in fiscal year 1970 are for South Vietnamese forces. Your statement indicates that for fiscal year 1970 you predict your losses of one-quarter ton trucks at ———. This seems rather high. Do the predicted losses for fiscal year 1970 include combat losses, washouts, and losses to the Army inventory as a result of transferring some of these assets to free world forces?

General MILEY. Of the total requested in the budget of ———, ——— of them will be transferred to the ARVN forces. The remaining quantity represents approximately the losses that we forecast we will experience through the funded delivery period, broken down by combat losses in Southeast Asia, and peacetime losses and washouts in the rest of the Army.

Mr. LIPSCOMB. General Miley, does your answer include losses to the Army inventory through transfers?

General MILEY. ——— are losses to the Army inventory from transfer to the ARVN Air Forces. Of the total ——— that we have in the budget request, ——— are for the modernization program of the ARVN Air Forces. In addition, a small quantity of ——— are for the other free world forces in Southeast Asia.

ESTIMATED LOSSES IN 1970

Mr. LIPSCOMB. Your 1970 losses are predicted for one-quarter ton trucks at ——— for fiscal year 1970, is that right?

General MILEY. Yes, through the fiscal year 1970 funded delivery period.

Mr. LIPSCOMB. Would you break those down as to how you estimated those losses?

General MILEY. The U.S. losses, ———. That is U.S. losses in Southeast Asia, ———.

Mr. SIKES. Total for what period?

General MILEY. For the funded delivery period. From the beginning of the fiscal year to the end of the funded delivery period.

Now, the RVNAF transfer, losses through transfer to the ARVN Forces are ———. Free world military forces, ——— peacetime losses to the Army outside of Vietnam, worldwide U.S. Army losses, ———. We have ——— in sales, for a total of ———.

LOSS HISTORY IN VIETNAM

Mr. LIPSCOMB. Now, what has been your loss history in Vietnam on one-quarter ton trucks over the past 3 years?

General MILEY. The actual losses of the quarter ton truck in Southeast Asia were, during fiscal year 1967, which is a 12-month period, we lost ——— U.S. Forces only.

In fiscal year 1968, which is a 12-month period, ———. We estimate for fiscal year 1969, which isn't complete yet, and won't be completed until June 30, that our losses will reach just about ———.

Mr. LIPSCOMB. If the level of fighting hasn't changed and your inventory is predicted upon the requirement that was laid on you last year in formulating the budget, why are you estimating ——— losses for fiscal year 1970?

General MILEY. Sir, it is for the fiscal year funded delivery period and I don't have the document here, but I have a feeling that 2 or 3 months longer than the fiscal year are involved.

Mr. LIPSCOMB. You can't lose them that fast. And your highest loss rate is that estimated for the current fiscal year, 1969.

General MILEY. In the 12-month period we estimate ——— yes, sir.

Mr. LIPSCOMB. Now you are estimating for whatever period it is ——— and you have never gone that high and the level of fighting is estimated to be lower.

General MILEY. The level of fighting doesn't seem to affect our tactical vehicles. They are used up just by running up and down the road. We are receiving, we think, very accurate loss data from the Southeast Asia theater and this is our best projection.

As I pointed out, our computations are self-correcting because each time we start a new budget or a new apportionment request, we pick out an actual asset report of a particular time and if we have estimated losses too high, the assets on hand will be higher and therefore our procurement will be lower. So, in addition to paying attention to loss reporting, we correct it each 6 months with an actual asset on hand.

Mr. SIKES. For the record, give us the actual combat losses for the ¼-ton truck by U.S. Army forces in Vietnam during fiscal years 1967, 1968, and 1969.

(The information follows:)

U. S. Army Forces actual losses in Vietnam follow:

Fiscal year 1967 ———
Fiscal year 1968 ———
Fiscal year 1969 (through Apr. 30, 1969) ———

Because of the nature of the conflict in Vietnam and the difficulty in determining the exact circumstance of each loss, records maintained centrally on losses in the combat zone do not differentiate between losses due to enemy action, accident, or other causes.

MANUFACTURERS OF QUARTER-TON TRUCKS

Mr. SIKES. It appears there is a relatively high unit cost for the quarter-ton truck. Is that in keeping with the general advance in prices, or are there other reasons?

General MILEY. Well, the quarter-ton truck is subject to the increase in prices of the general economy, but the price of this truck, of course, reflects peculiar military characteristics.

Mr. SIKES. In view of the numbers that you are buying, could they be ——— each? That is a lot of money for a jeep.

General MILEY. This vehicle is procured competitively and generally on multiyear contracts, so we should be taking advantage of close pricing by the manufacturers.

Mr. SIKES. How many competing manufactures were there when the last contract was awarded?

General MILEY. As I recall, there were three, but I would prefer to furnish that for the record, sir, if I could. I think it was Ford, Montgomery Pipe & Tube, and Kaiser, but let me furnish that for the record.

Mr. SIKES. And the amounts that were bid.

General MILEY. Yes, sir.

(The information follows:)

There were three contractors who bid on the last contract. They were: Ford, Kaiser Jeep, and Montgomery Pipe & Tube Co. The amounts were:

[In millions]

	Ford	Kaiser	Montgomery Pipe & Tube [1]
Quantity	———	———	———
Price	$102.2	$103.7	$41.5

[1] Submitted a bid for a single-year contract only.

RVNAF MODERNIZATION

Mr. SIKES. According to Army officials, the gross requirement of one-quarter-ton truck for phase I of the plan for modernization and improvement of the South Vietnamese Army is ———. In calculating this total, the Army included ——— for U.S. advisers, ——— for maintenance float, ——— for 5 years' attrition, ——— for modernization of older equipment, and ——— for pipeline. Could you explain what some of these breakouts mean?

General MILEY. The maintenance float is the quantity of vehicles we keep in our general and direct support units.

Mr. SIKES. What is "float"?

General MILEY. A float of vehicles we keep in general support and direct support maintenance so when a vehicle comes in from a field, he can get ——

Mr. SIKES. Explain it for the record.

(The information follows:)

Maintenance float is defined as follows:

A quantity of end items or components of equipment which is authorized for stockage at supporting installations or activities to be used for replacement of the unserviceable items of equipment in the hands of troops when immediate repair of that unserviceable equipment cannot be accomplished by the field maintenance activity.

VEHICLES FOR SOUTH VIETNAMESE ARMY

Mr. SIKES. When you exclude the calculations for maintenance float, 5 years' attrition, modernization, maintenance float, pipeline, and U.S. advisers, the basic authorization based on operating fleets above provides a ratio of one-quarter-ton truck for every South Vietnamese Army soldier. This appears rather high when you consider other personnel are operating or riding in such vehicles as armored cars, armored personnel carriers, and various other types of trucks and mobile equipment, does it not?

General MILEY. Sir, we are furnishing vehicles to the Vietnamese forces in accordance with the tables of equipment that are reviewed by MACV and we compute the total requirement against those authorized tables of equipment.

I have a feeling they are probably a little leaner than we are, but I would like to develop that ratio for the U.S. forces.

Mr. SIKES. Would you be prepared to say that the South Vietnamese have the second largest number of vehicles of any army in the world?

General MILEY. I wouldn't be prepared to say that, sir.

Mr. SIKES. It would be a good guess though, wouldn't it?

General MILEY. It sounds as though they have plenty of vehicles, sir.

Here is a number we can conjure with. The Southeast Asia inventory for the U.S. forces as of January 1, 1969, was ——— quarter tons, and if I remember our authorized troop strength out there, it is ———. It is one to every ——— people.

COMBAT LOSSES OF OTHER TRUCKS

Mr. SIKES. There is a request for $251.8 million for ——— 1-ton trucks, ——— 1¼-ton trucks, ——— 2½-ton trucks, and ——— 5-ton trucks. Would you provide for the record a tabulation showing actual combat losses of these vehicles by U.S. Army troops for fiscal years 1967, 1968, and 1969?

General MILEY. I will provide that.

(The information follows:)

COMBAT LOSSES FOR U.S. ARMY TROOPS[1]

Vehicle	Fiscal years— 1967	1968	[2]1969
¾-1¼ ton	——	——	——
2½ ton	——	——	——
5 ton	——	——	——

[1] As noted previously, all losses in Vietnam are considered to be combat losses.
[2] Estimated.

The ——— 1-ton trucks are not used by U.S. Army troops. These trucks are needed to meet RVNAF modernization and FWMAF requirements. This vehicle is used in approximately the same role as ¾ to 1¼-ton truck by U.S. forces.

REPLACEMENT OF SUBSTITUTE ASSETS

Mr. SIKES. How many of these vehicles requested for U.S. forces are to replace so-called substitute assets? First tell us what "substitute assets" are.

General MILEY. In the case of the three-quarter-ton and ton and a quarter truck, the substitute asset is the M37, the old M37 Chrysler vehicle. In fiscal 1967 we had ——— total losses of which 87 were of the substitute vehicle.

Substitute losses in fiscal 1968 were ——— and in fiscal 1969 we forecast ———.

In the case of the two and a half-ton trucks, the substitute assets are the gasoline version of the vehicle. In 1967 we placed ———; in 1968 and in 1969 we estimate ———. The 5-ton truck, the replacement of the older vehicle, ——— in 1967, ——— in 1968 and we estimate ——— in 1969.

CONTRACT FOR TWO AND ONE-HALF TON TRUCKS

Mr. SIKES. You testified last year that in February 1968 the Army awarded a single-year contract for the two and a half-ton truck to provide earlier deliveries and shorter leadtime. In 1969 the Army proposed to go out on a multiyear (2-year) contract. Did you do so?

General MILEY. We did go out on a single-year contract in 1968 and our present plan is to go multiyear in 1969.

Let me correct that. Our 1969 program was awarded by an option on the 1968 program. We plan in 1970 to consider a multiyear buy.

Mr. SIKES. Why did you not go out on a multiyear in 1969. You had a substantial buy which apparently would have created considerable competition.

General MILEY. In 1968 the project manager for tactical vehicles came into Washington with the idea of buying an improved two and a half-ton truck. This involved a cab-over-engine design, disc brakes, and some other modifications to it. We turned him down on the basis that this was no time to introduce a new vehicle, with a war going on. So we went out on a single year procurement in 1968 and then again in order to avoid a break in production, we picked up the option on the 1968 competitive contract.

Mr. SIKES. Did you check to see if it was costing the Government money for you to do that? Could you have done better with competition?

General MILEY. Again, by awarding the option, we were able to avoid any possibility of a break in production and get earlier deliveries and the 2½-ton truck has been a critical item throughout the wartime period. Since we had a competitive base for the option, we thought that was the prudent thing to do.

Mr. SIKES. You haven't answered my question. Do you not feel you could have bought them at less cost by going competitive?

General MILEY. For the small quantity involved, I don't think we would have saved any considerable amount of money by going competitive.

Mr. SIKES. Would you call ——— trucks a substantial buy?

General MILEY. We procure this vehicle, something in the range of ——— vehicles a month and this was a fairly small order for the big truck producers we deal with.

Mr. SIKES. There was a buy for ———?

General MILEY. I have ———. In 1969 we had a buy of ———. We requested an additional ——— trucks in the fiscal year 1969 supplemental making the total fiscal year 1969 buy ——— 2½-ton trucks.

Mr. SIKES. What is the unit cost under this optional buy?

General MILEY. I don't have the 1969 price with me. I would like to furnish it for the record if I might.

Mr. SIKES. All right.

(The information follows:)

The unit price of the quantity added to this contract by option was $6,378, the same as that in the basic contract which was awarded competitively in 1968. When the cost of the engine and other Government-furnished equipment, taxes, and in-house costs are added, the unit cost is $9,976.

PROJECTED TRUCK LOSSES

Mr. LIPSCOMB. I am sorry. I had to go answer the roll.

General MILEY. Could I go back to the discussion we were having, Mr. Lipscomb?

Mr. LIPSCOMB. Yes.

General MILEY. The funded delivery period for the 1970 program is 19 months. So we had to take whatever loss rate we had and extend it over 19 months as opposed to 12 months, or some shorter time. The numbers I was giving you were for fiscal years, 12 months, and this is a 19-month deal.

Mr. LIPSCOMB. Can you talk about the same frame of figures?

General MILEY. Since we compute asset positions at the end of a funded delivery period, we calculate losses until the end of the last procured item incoming into the inventory. It is just a method we use in calculating end positions in inventory.

Mr. LIPSCOMB. I understand that it is just a method. However, I think we ought to know a little more about this so we can better justify what is proposed for a person who doesn't look at this closely or work with it, that this year, fiscal year 1970, there is a request before this committee for ——— trucks of four different kinds.

General MILEY. Of that total there are ——— going to the South Vietnamese forces. So the net Army requirement is ——— trucks, and our inventory objective against which we are buying is ——— trucks. So we are talking about something less than 10 percent of our total inventory objective.

CLASSIFICATION OF TRUCKS FOR SOUTH VIETNAMESE

Mr. LIPSCOMB. Can I, on the floor of the House, give the number of trucks that we are giving to the South Vietnamese?

General MILEY. I would imagine you could say something like a third of them. A third of them are going to the South Vietnamese forces. That might be a perfectly acceptable statement.

ESTIMATED DATE FOR COMPLETE EQUIPPING OF SOUTH VIETNAMESE

Mr. ANDREWS. It is an open secret that we are trying to supply and equip the South Vietnamese Army just as fast as we can. You have already told us how many M–16's and how many choppers have been given to them. I would like to ask you this question since you are an expert in this field: Our announced purpose is to "Vietnamize," I believe that is the word, the war. In other words, put them in a position to take over the fighting.

How long will it take to get them equipped to the extent that they can take over? Can you give me an educated guess about the number of months or years it will take to get that mission accomplished?

General MILEY. Sir, if I may, I would like to defer to General Bolton who we are going to bring over tomorrow afternoon to talk about ARVNAF modernization. We read in the paper about the possibility that by the end of the year we will be able to reduce our force over there if the Vietnamese are equipped and modernized.

Mr. ANDREWS. Let's say there is a 100-percent goal in mind. Could you tell me now what percentage of that goal we have reached?

General MILEY. One of the problems I have when I listen to the discussions of the modernization program is that a basic assumption, as I understand it, runs to the effect that when we modernize the Vietnamese Army and get them fully equipped and trained, they will be then in a position to handle the VC and the inherent assumption in that is that the North Vietnamese withdraw and we withdraw. This would be the end product of our efforts on modernization, but I always come away from those briefings wondering if we can arrange the withdrawal of the North Vietnamese.

Mr. ANDREWS. I have that same question and always have had.

EXCESSIVE SECURITY CLASSIFICATION

Mr. LIPSCOMB. General, I want to read a statement and then ask some questions on it. This is from page 7 of your statement. You say: "Our procurement request is for a total of ——— trucks and, hence, as the assets columns indicate, we will ———. Also it should be noted that our ending assets position for all four of these trucks will be ———.

Now, in that statement the following words are classified: ———.

Can you tell me what is so confidential and classified in those words, and why shouldn't they be put on the record?

General MILEY. Sir, I honestly can't tell you. We look to our intelligence people to classify our statements and what I will do when I get back to the Pentagon is to go to work and see if I can't develop what numbers you can use on the floor. I am not an expert in the intelligence area.

NEED TO INFORM THE PUBLIC

Mr. LIPSCOMB. Can you see anything so wrong with letting the American people know that we are going ———?

Do you think that this information violates our security?

General MILEY. I suppose it should give some minor aid and comfort to the enemy ———.

Mr. LIPSCOMB. Do you think reading those words might make some people believe that we should adequately finance our military so that we could or they could support an Army at the level that is necessary.

General MILEY. It was my hope in putting my statement together for presentation to your committee to convey that impression, that we are not being extravagant; that we are living close to the belt——

Mr. LIPSCOMB. You don't have to convince this committee too much because we live with this matter, but all through your statement you raise points and questions of this same nature and in each case throughout your statement it is classified. There are statements I could find if I had time to look for them, but they are always classified. We can't put out this information even though the information indicates why we are supporting such an enormous defense budget.

General MILEY. It was my hope in writing it this way that even if you couldn't use the numbers for reasons of security, you could satisfy yourself and your audience that we are not being extravagant with the budget; that we are buying prudently; ———; that we are not buying too many vehicles during the war that we won't have a need for after the war. This is my hope in putting my statement together this way.

Mr. LIPSCOMB. Here is another one in regard to the Chapparal and the Hawk. These are the classified words again; ———.

Here is another one affecting the tracked combat vehicles: ———.

General MILEY. One thing that I have sensed in the past 3 years of working in the budget area, there is an apprehension on the part of many people, on the part of the Congress, on the part of the public and on the part of friends of mine, that we will buy a lot of equipment in the excitement and urgency of a war that will be sitting around unused after the war is over. So I have tried to demonstrate here that our procurement programs are orderly, that we are reaching postwar inventory objectives in an orderly fashion and not overbuying. That was my intention in developing these data for you.

ORDERLY PROCUREMENT TO MEET POSTWAR OBJECTIVES

Mr. LIPSCOMB. That is a different twist.

What you are saying to me is that you ———.

General MILEY. That was not my intention.

In the case of aircraft, if you will remember that analysis, by and large we will be, at the end of this funded delivery period ———.

In the case of tactical vehicles, we will be ———. We do not want to get to a state where we stop buying for 2 or 3 years and have great blocks of our inventory become obsolete and worn out.

So it is not a question of trying to frighten anyone; it is a question of demonstrating that we are trying to do a businesslike job in developing these budgets.

RESPONSIBILITY FOR LOGISTICS GUIDANCE

Mr. LIPSCOMB. Who is responsible for this logistics guidance?

General MILEY. Logistics guidance is prepared in the Office, Secretary of Defense.

Mr. LIPSCOMB. That is a big office. Who is responsible for it?

General MILEY. It has inputs from both the systems analysis part of the staff and the Installations and Logistics Staff.

Mr. LIPSCOMB. And who is responsible for the logistics guidance that is contained in your presentation?

General MILEY. The logistics guidance I referred to in the opening paragraph of my statement described what logistics guidance does for us that we get from OSD. It prescribes how we compute the inventory objectives for each item.

Mr. LIPSCOMB. Was the logistics guidance changed at any time from your original presentation and request?

General MILEY. During fiscal year 1970.

Mr. LIPSCOMB. On your fiscal 1970 program?

General MILEY. No, sir; we received logistics guidance about the middle of last summer before we started putting the budget together. There have been no changes.

But here again there are two parts to budget making in the Defense Department that are not always recognized. First is logistics guidance which comes down, as I say, 2 or 3 months before the budget preparation, and this prescribes the approved force and how we should compute requirements for the D-day inventory objectives. Then, in addition to that we get other guidance known as budget guidance, which prescribes the level of budgeting that we will develop for the final budget submission.

Now, in addition, we apply constraints of our own internally in the Army. One of these I just mentioned. We like to buy vehicles every year so we can keep our fleet reasonably modern. We have bought the M–113 carrier family below our final objective for several years in order to keep the line hot. We are satisfied with buying tanks at ——— chassis a year to keep the tank line hot. So the final budget that you see is a combination of many influences, pieces of guidance, and constraints that are applied both above and internally in the Army.

REDUCTIONS TO PEMA BUDGET

Mr. LIPSCOMB. What was your original request for procurement of equipment and missiles, Army?

General MILEY. Our initial submission to Congress?

Mr. LIPSCOMB. No, to the Office, Secretary of Defense.

Mr. ANDREWS. Take care of the Army first, then OSD.

General MILEY. Our original request to the Office, Secretary of Defense, was priced at $8,227.8 million.

Mr. LIPSCOMB. How much did the Secretary reduce that?

General MILEY. He reduced it successively down to what we have today. The original submission that we made in January, I believe, was priced out at $6,333 million.

Mr. LIPSCOMB. I am not talking about the budget in front of us today because that has been changed again.

General MILEY. I am trying to track back here to the January submission.

Mr. ANDREWS. What was the original figure?

General MILEY. $8,227.8 million. Then when it came over to Congress in January——

Mr. LIPSCOMB. Pardon me. The original request to the Secretary of Defense was $8,227.8 million. Then what did he reduce that to?

General MILEY. Our original submission to OSD was $8,227 million. When he submitted it to the Congress in January it was $6,333 million.

Mr. LIPSCOMB. There was an action in between, General, which you know very well, whereby he reduced your budget and then you reclamaed.

General MILEY. He reduced our budget by what we call PBD—program budget decision, by $1,935.3 million. We successfully reclamaed of that cut $40.5 million, bringing us back to the $6,333 million that came to Congress in January.

OSD REDUCTIONS TO PEMA BUDGET

Mr. LIPSCOMB. For the record, you can insert the reductions which were made by the former Secretary of Defense, but could you tell us some of the important items that were deleted from your budget?

General MILEY. I can give it to you as a first cut by budget activity and then I can go into individual items, whichever way you would like it.

For example, the first reduction I see is a reduction of $278.6 million in aircraft and $59.4 million for aircrafts spares and repair parts.

The next largest one I see is in communications and electronics equipment. Now, I can go from there. I can give you dollars on those and go from there into line items

Mr. LIPSCOMB. You can insert these in the record if you will.

(The information follows:)

OSD reductions to PEMA budget

Aircraft and spares	—338.0
Missiles and spares	—165.6
Tracked combat vehicles	—54.7
Weapons and other combat vehicles	—17.5

OSD reductions to PEMA budget—Con.

Tactical and support vehicles	—39.1
Communications and electronic equipment	—206.7
Other support equipment	—61.4
Ammunition	—957.3
Production base support	—54.5
Total	—1,894.8

The aircraft program was reduced primarily on revised attrition rates, and deferment of some modifications. The spares were reduced in relationship with the aircraft program.

The missile program reflected a Sentinel program reduction for advanced procurement of long leadtime items, a reduction in the Chaparral program, and a deferral of the first year procurement of the Dragon missile. Advanced production engineering for the AN/TSQ-73 air defense control and coordination system was also deleted. Missile spares were also subjected to a similar reduction.

The tracked combat vehicle program experienced reductions in the VULCAN antiaircraft guns and carriers. The retrofit program for the M60/60A1 tank was also reduced significantly.

The XM167 towed Vulcan and the Goer high mobility vehicles were deleted, and the commercial vehicle program was reduced.

In communications and electronics, funds were eliminated for the combat service support system. There were also reductions in the Starcom program, the area communications equipment, and tactical communications equipment.

The other support equipment program faced reductions in truck-mounted water purification sets, welding machines, semitrailer refrigerators, 10,000-pound forklift trucks and 1.5-kilowatt generators. The procurement of the M17A1 protective mask was reduced and other chemical warfare items were deleted.

The reduction in the ammunition program essentially resulted from forecasted lower SEA consumption rates, and the modernization program in production base support was spread out slightly.

VALUE OF LOGISTICS GUIDANCE

Mr. LIPSCOMB. When do you get this logistics guidance? At what point? You were reduced roughly $2 billion in the Army procurement request. So somewhere along the line you had some logistics guidance At what point does this come?

General MILEY. The logistics guidance came down last year, as I recall, in June or July.

Mr. LIPSCOMB. So you built your original budget of over $8 billion upon the logistical guidance the Secretary gave you at that time.

General MILEY. That is right.

Mr. LIPSCOMB. Well then, what does the guidance accomplish?

General MILEY. Well, logistics guidance describes the force and how to compute the requirements. In other words, it gives you an inventory objective for each line item in your budget. For example, by using logistics guidance and the approved force, we can compute the AAO, the inventory objective for tracks. Now, that is a quantity, and we can look at the quantity we have on hand but then in the case of tanks, as I said earlier, in the case of the M113 carriers, we make another Army decision not to buy out the total requirement in 1 year, but to keep a tank line going and improve our asset position. We can make the same decision on the M113 family. In the case of vehicles we like to buy enough to turn the fleet over. In fact, that is our plan over the next five years, to turn the fleet over so that every year we buy—in the case of the jeep, one-eighth of the baseline fleet.

USE OF LOGISTICS GUIDANCE

Mr. LIPSCOMB. You had logistics guidance in June and you built on that logistics guidance an $8.2 billion budget—that was what the Army felt was the need, with guidance. With that $8.2 billion budget did you build to current wartime inventory objectives, your postwar and baseline objectives?

General MILEY. In the case of airplanes, we built to the postwar objective. On the principle that when the war is over and the temporary forces in Vietnam come home, the aircraft they have can then go to the Reserves and the other Army forces around the world. So that stands out by itself. We bought, in the case of aircraft, to the baseline force.

In the case of missiles, we are buying in accordance with approved programs. We had an approved program to reach our objective in the case of Shillelagh and TOW and we are buying in accordance with that approved plan.

In the case of Hawk, we are starting out in 1969 to buy the Hawk over a 2-year program, so each budget activity has its own unique characteristic. But the logistics guidance established the end goal, the objective we should reach by whatever plan we elect to choose.

LOGISTICS GUIDANCE SETS END GOAL

Mr. LIPSCOMB. You have many of these goals then?

General MILEY. Yes, sir.

In the case of the tactical radios, for example, we have been buying the new items, the AN/VRC–12 and the AN/PRC–25 above the total inventory objectives in order to equip the Active Army with the new sets and finally phase out through the Reserve elements of the older sets.

Mr. LIPSCOMB. Does the logistics guidance you receive go to each and every item and/or category?

General MILEY. No, sir. It is only gross guidance on the force and the methodology for computing the inventory objective. For example, it will tell us that in the European package we have 10 division force equivalents. For that 10 division force equivalents we are authorized to compute in our inventory objective ———. That is a finite number.

In the case of the rest of the force, we buy ———. This is the sort of thing that comes down in the logistics guidance, the methodology of computing the inventory objective on D-day.

Mr. ANDREWS. You have had that same formula for years, haven't you, General?

General MILEY. Yes, sir. It hasn't changed much.

LOGISTICS GUIDANCE VERSUS BUDGET PLAN

Mr. LIPSCOMB. Then how is it that the Army came up with a procurement budget request which was almost $2 billion higher than that which DOD initially wanted to give you? Was it as a result of policy decisions not to come up to the logistics guidance?

General MILEY. No; it represented our judgment of how fast we should go under the umbrella of logistics guidance. There is no dis-

agreement on logistics guidance between us and OSD. When we compute the inventory objective for tanks, they can do the same thing with their own slide rules and we come up with the same number.

Now the question is, how fast shall we buy those tanks? Now, in the case of tanks, there has never been much disagreement that keeping the tank line open at ——— chassis a year is a good plan.

In the case of other items, the Army will attempt to buy faster. When we reach OSD, their decision may be otherwise. But the logistics guidance is not disputed as to ultimate objective, and I think we in the Army recognize a single service cannot have all the money in the budget.

Mr. LIPSCOMB. The committee recognizes that too.

General MILEY. So we come back, after we have gone through our entire review program and our reduction program, back to the Chief of Staff and satisfy him that the budget is enough to do his job.

EFFECT OF REDUCING TRUCKS FOR SOUTH VIETNAMESE

Mr. LIPSCOMB. What would be wrong with our thinking on the committee then, if, say on trucks, we might feel you are buying so many trucks for South Vietnam for example, that everybody in South Vietnam will be on wheels, and that your truck request is too large, and we stretch out the buy. Would there be any problem there?

General MILEY. Well, it means that the approved plan for modernizing the forces in Vietnam will either go short or we will have to make up the plan out of our own hide.

Mr. LIPSCOMB. We would say go ahead with the modernization program so we can Vietnamize the war, but just cut down on the U.S. Army.

General MILEY. That is why I provided you the table in my statement, to demonstrate that what we are asking for is a reasonable quantity, that we are not overbuying, that we are still below our objectives.

Mr. LIPSCOMB. On trucks you received everything you wanted from OSD.

General MILEY. Yes, sir, in the big four that is. We were cut a quantity of ——— of the GOER vehicles.

EFFECT OF CONGRESSIONAL REDUCTION IN VEHICLE REQUEST

Mr. LIPSCOMB. But you claim it would be extremely serious if the Congress decided that there shouldn't be so many trucks purchased to be sent to U.S. forces in South Vietnam?

General MILEY. In the case of the tactical vehicles, what we have done is develop with OSD a 5-year plan for each of the Big Four, in which each year, if we get total approval and funding, we would buy a segment of our fleet each year. For example, in the case of the quarter-ton trucks, the estimated useful economical life of the jeep is 8 years. What we propose to do over the next 5 years is to buy one-eighth of the base line force—within reason—so that by the end of the 5-year period we would be at the base line force with a reasonable mix in the age of our trucks.

NEED TO MODERNIZE EUROPEAN FLEET

One of our problems today is that our European fleet which was shipped overseas during the crises in Europe, is now pretty old, and we would like to modernize the fleet in Europe by washout of the old two and a half ton and five ton trucks. So if the Congress decided to reduce our procurement of vehicles, the older vehicles that are uneconomical to keep in the fleet—some of them are 16, 17, and 18 years old—we would have to keep them around for another year and fix them and keep them running. This would be the impact of reduction in tactical vehicles.

Mr. SIKES. You don't have many 16-year-old vehicles in the fleet.

General MILEY. Sir; if you will look at my table, we have in the case of the quarter ton, ——— vehicles procured prior to 1955. We call them C. & T. Contingency and training assets.

In the case of two and a half ton trucks, even assuming the washout during the funded delivery period, we will have ——— vehicles procured before 1954. So we really have some old vehicles in our fleet.

Mr. LIPSCOMB. Are you including Reserve or National Guard forces?

General MILEY. Yes, sir, the whole force. The 27⅔ division force.

Mr. LIPSCOMB. Where do you think those old vehicles are?

General MILEY. Most of them are in the hands of the Reserves, those two categories.

Now, another requirement that we have to finance out of our budget or out of our assets is the ———. We have a considerable number of trucks sitting in ———.

Mr. LIPSCOMB. What is the relationship of inventory objective to authorized acquisition objective?

General MILEY. It is the same term.

Mr. LIPSCOMB. The figures you gave on the original request, and then the deletion by the Secretary and the reclama, they don't come out, so you will have to check those. It doesn't add out. I mean for the record, straighten it out.

General MILEY. Yes, sir. I will check it.

Mr. LIPSCOMB. Thank you, Mr. Chairman.

XM705 1¼-TON TRUCK

Mr. SIKES. You are requesting $4.5 million in fiscal year 1970 for the XM705 truck. What truck or trucks in the Army inventory will this vehicle replace?

General MILEY. The XM705 1¼-ton truck will replace the M37 series ¾-ton truck and M715 series 1¼-ton truck.

Mr. SIKES. When was the contract definition conducted for XM705 truck and what was the cost?

General MILEY. Contract definition was conducted during the period September 27, 1967, and February 12, 1968, at a cost of $856,680.

Mr. SIKES. Why was General Motors in your opinion the only firm interested in submitting a contract definition proposal?

General MILEY. I believe that General Motors was interested because they had available a staff that could undertake the contract definition

task and they had enough confidence in their technical capabilities to accept the risks associated with a guaranteed performance contract. Some of the reasons cited by firms that elected not to respond included:

a. The risks involved with a fixed price/guaranteed performance contract outweigh potential gains.

b. Nonavailability of the specialized personnel required to accomplish the system analysis and trade-off studies required by contract definition and total package procurement.

c. The XM705 program conflicted in timing with another program one contractor was interested in.

d. Lack of interest in producing a type of vehicle like the XM705.

Mr. SIKES. What type of multiyear contract was awarded to General Motors including the date, the cost, the total vehicles involved, and options.

General MILEY. A fixed price incentive structure contract was awarded to General Motors on December 27, 1968, for ——— trucks ——— cargo and ——— ambulances, and includes a 50-percent option. This contract provides for a target price of $112,666,000 and a ceiling of $127,075,000. It also provides for a sharing incentive ratio of 90/10 whereby 90 percent of any savings realized below target price accrue to the Government and 10 percent accrue to the contractor. If the target price is exceeded the Government pays 90 percent of the additional cost and the contractor pays 10 percent. The contractor pays 100 percent of any additional costs above the ceiling price.

Mr. SIKES. What type of engine will the XM–705 have and will this be Government-furnished equipment to General Motors?

General MILEY. Current plans call for the XM–705 to have a Chevrolet 307 cubic inch, 140 net brake horsepower gasoline engine. This engine is owned by General Motors and will not be Government-furnished equipment.

Mr. SIKES. How will this engine provide 100 percent improvement over current Army truck engines?

General MILEY. The mean time to failure removal for the new engine will be twice that of the current engines. During contract definition, the contractor was provided a base vehicle test report from which he concluded that the current truck engine achieved 47,200 mean miles before failure. In formulating the XM–705 final reliability design goals, the contractor established the engine design goal at 94,600 mean miles before failure. The contractor has guaranteed achievement of reliability goals.

Mr. SIKES. What will be the mean time for replacement for this new engine?

General MILEY. The design goal of the contractor is 94,600 miles. This will be verified during the contractor compliance test.

Mr. SIKES. What performance, reliability, and maintainability improvements will the XM–705 truck have over our current truck fleet?

General MILEY. I will have to provide that for the record.

(The information follows:)

A comparison of these factors is shown in the following table:

(*a*) *Performance characteristics.*—

	XM705 [1]	M715	M37
(1) Engine	Chevrolet 8-307	Kaiser Jeep 6-230	Chrysler T-245.
Maximum horsepower	200 at 4,600 revolutions per minute.	132.5 at 4,600 revolutions per minute.	94 at 3,400 revolutions per minute.
Net brake horsepower	140 at 4,000 revolutions per minute.	116 at 4,000 revolutions per minute.	79 at 3,400 revolutions per minute.
(2) Speed (miles per hour) on 3-½ percent slope with towed load in 4th gear.	41	0	0.
(3) Cruising range (miles)	300	225	122.
(4) Weight distribution (percent):			
Front	44	36	42.
Rear	56	64	58.
(5) Ground pressure (maximum)	12.8	16.1	12.75.
(6) Ground clearance under axles (inches).	11.8	10	10.75.
(7) Angle (degrees) of—			
Approach:			
With winch	61	33	38.
Without winch	61	45	44.
Departure	45	25	32.

[1] As stated by contractor.

(*b*) *Maintainability.*—The XM705 contractor guarantees a maintenance support index (MSI) of 0.106, which allows only 159 maintenance man-hours per vehicle during 30,000 miles of operation. Previous experience indicates the MSI of the M37 truck to be approximately 0.200 and for the M715 truck the MSI varied between test series and averaged 0.168 overall during confirmatory testing.

(*c*) *Reliability.*—The mean time between failure for the current 1¼ ton truck has been calculated to be 5,900 miles. The goal to be achieved for the XM705 is 7,880 miles between failure, which will be an improvement of approximately 84 percent.

Mr. SIKES. At what point in time does the contract call for delivery of a technical data package which will be suitable for competitive follow-on procurement?

General MILEY. A competitive technical data package is to be delivered on or before May 15, 1972.

Mr. SIKES. Was fiscal year 1968 the first funding for the XM705?

General MILEY. There was no PEMA funding for the XM705 in fiscal year 1968. R.D.T. & E. funds were available in the following amounts:

	Million
Fiscal year 1966	$1.094
Fiscal year 1967	2.174
Fiscal year 1968	.683
Total	3.951

These funds were for concept formulation, contract definition, support in-house engineering, and funding part of the development contract effort.

Mr. SIKES. If the first production year will be funded on January 1, 1970, how were fiscal year 1968 funds used?

General MILEY. No PEMA funds were used in fiscal year 1968 for the XM–705 vehicle. The $26.1 million in the fiscal year 1968 PEMA program was used for the purchase of 6,000 M–715 trucks.

Mr. SIKES. For what purpose will the $4.5 million requested in fiscal year 1970 be used?

General MILEY. The $4.5 million requested in fiscal year 1970 will be used for the procurement of ——— XM–705 trucks. This quantity represents the first year of a 4-year multiyear contract for a total of ——— of these trucks.

Mr. SIKES. Thank you very much, gentlemen. The committee will resume its hearings at 10 o'clock in the morning.

WEDNESDAY, MAY. 7, 1969.

Mr. SIKES. The committee will come to order.

This morning we will resume our discussions on the subject of "Tactical and Support Vehicles."

TRUCK ENGINES

Last year the Army witnesses testified that the LDS–465–1A is a supercharged version of the LD–465 multifuel engine used successfully in the two and a half-ton trucks. However, this LDS–465–1A multifuel engine used in the 5-ton truck had not proven satisfactory and the engine was further modified to the LDS–465–1B. What was the result of your evaluation of the modified engine LDS–465–1B with commercial diesel engines to determine the optimum power source for the 5-ton truck for fiscal year 1969 and subsequent years?

General MILEY. The Army Materiel Command made an exhaustive study of engines to get a new engine for the 5-ton fleet and included in the candidate engines was the LDS–465–1B.

We also engaged a research firm as well as our people in Detroit and sought the advice of the principal truck fleet operators. The results of this entire evaluation led the Army Materiel Command to select four commercial diesels and exclude from the solicitation for new engines the LDS–465–1B.

ARMY INVESTMENT IN LD–465 ENGINES

Mr. SIKES. How much money has the Army invested in the multifuel LD–465 engine family in the nature of R.D.T. & E., tooling, productional rights to data, operation of two hot mobilization bases, and so forth?

Give us the total at this point and then a breakdown for the record.

General MILEY. A total of $9.7 million and I will provide the breakdown.

(The information follows:)

	Millions
R.D.T. & E.	$1.7
Facilities investment (capital equipment)	7.4
Special tooling	0.6
Total	9.7

The Army still owns the capital equipment, and the balance of the costs amortized over the 150,283 multifuel engines produced results in an investment cost of about $15 per engine.

BOOZ-ALLEN CONTRACT FOR ENGINE STUDY

Mr. LIPSCOMB. What was the research firm that you retained?

General MILEY. It was Booz-Allen.

Mr. LIPSCOMB. What kind of arrangement was this?

General MILEY. We asked Booz-Allen to develop a mathematical model into which we had the various performance-cost-power data fed to evaluate from the various candidate engines or select from the various candidate engines the one that most nearly met our requirements. It was essentially a statistical evaluation job that was done for us.

Mr. LIPSCOMB. What would a research project such as that cost?

General MILEY. I haven't the figures, sir. I don't think it was very expensive. It didn't take very long.

Mr. LIPSCOMB. Do you call on Booz-Allen to do this type of work often?

General MILEY. I can't put my finger on another job like this that was done for us, but I can find out for you.

Mr. LIPSCOMB. What is their expertise in engines?

General MILEY. Their expertise in engines—as I remember the briefings on the results of their study, they had on their staff two or three fairly competent engine people. We looked to them more for statistical techniques, than for engine know-how. Then we went to the leading truck fleet operators for the real world evaluation of engines to confirm our statistical selection.

Mr. LIPSCOMB. For the record, could you put in your instructions to Booz-Allen for what you desired, and the cost?

General MILEY. Yes; I will.

Mr. LIPSCOMB. And the specification of the research.

(The information follows:)

The guidance directed than an analysis of alternative power sources for the M39 truck be undertaken to determine the most cost-effective engine for this truck series for future procurements. The direction indicated that engine candidates include commercial diesel engines, the product improved LDS-465-1B, and the relatively new lightweight high speed diesel engine. In addition, the experience of commercial trucking firms with various candidate engines was to be reviewed and that their methods and criteria of selecting engines were to be investigated.

The advisability of initiating a retrofit program for the existing M39 multifuel fleet was also to be based on the cost effectiveness evaluation for future procurements and the derated LDS-465-1A field data. The objective of the initial effort was to identify the class or classes of engines that were most appropriate for use in the M39 truck based on a cost-effectiveness evaluation of all candidate engines. The second effort was directed at determining the economic feasibility and desirability of retrofitting multifuel engine M39 trucks in the field with the engine selected for future procurement. The study with Booz-Allen cost $98,800.

MULTIFUEL ENGINES

Mr. SIKES. What Army vehicles now use multifuel engines?

General MILEY. The two and a half-ton truck, and we have a small quantity of what we call the M656 5-ton truck.

Mr. SIKES. What is the experience of other countries in the use of multifuel engines? Are they being used by other nations?

General MILEY. I am not familiar with any other army using multifuel engines although the multifuel engine we are using in the two and a half-ton truck goes back to a German design. Whether or not the German Army is using multifuel engines, I don't know.

Mr. SIKES. Will all two and a half-ton Army trucks for which fiscal 1970 funds are requested have multifuel engines?

General MILEY. Yes; they will.

Mr. SIKES. Do you propose to go further into the use of the multifuel engines, or is this use going to be eventually discontinued?

General MILEY. I think over the long haul we will go back to the straight diesel engine.

Mr. SIKES. Apparently the multifuel hasn't lived up to its early promise, is that the situation?

General MILEY. On the few occasions where we have had to make use of the multifuel capability in the trucks in Vietnam, they have performed in accordance with our expectations. The simple fact is we have no shortage of diesel fuel so we have operated them primarily as diesel trucks.

COST OF MULTIFUEL VERSUS SINGLE FUEL ENGINES

Mr. SIKES. What is the cost difference between multifuel and single fuel engines? I realize that is a rather broad question but give us something that would enable us to have a feel for this.

General MILEY. A two and a half-ton truck gasoline engine costs in the neighborhood of $1,200 apiece. The multifuel is $2,300.

Mr. SIKES. A straight diesel costs how much?

General MILEY. I don't have a straight diesel for the two and a half, but I have one for the 5-ton, which is $3,071.

Mr. SIKES. Do you have a cost comparison for the different engine types of these 5-ton trucks?

General MILEY. Multifuel is $2,657 and the diesel is $3,071.

NO REQUIREMENT FOR MULTIFUEL ENGINES IN SOUTHEAST ASIA

Mr. SIKES. Has the situation in Southeast Asia really substantiated the usefulness of multifuel engines or have you simply relied primarily on one type of fuel there?

General MILEY. We have had plenty of diesel fuel and on the few occasions where we used the multifuel with gasoline it did do what it was designed to do and got the truck home.

Mr. SIKES. There was no requirement for multifuel engines really?

General MILEY. That is right.

Mr. SIKES. Do you foresee in the future a situation where a multifuel engine would be particularly useful or do you think that the fuel-availability picture, wherever we might operate, would render the diesel fuel engine as satisfactory?

General MILEY. We think the diesel capacity is adequate for any future military operations and, in addition, the diesel engine itself has a wide tolerance for fuels and can burn a wide range of fuels almost to gasoline.

MULTIFUEL ENGINES FOR TWO AND A HALF-TON TRUCKS

Mr. SIKES. Why do you continue to buy the multifuel engine for the two and a half-ton truck?

General MILEY. The multifuel engines we use in the two and a half-ton truck belong to the Army. We buy it competitively. We have two sources for it. On a life cycle cost basis it is cheaper than the gasoline engine. It performs essentially as a good diesel engine. Since we own all the rights to it and buy competitively——

Mr. SIKES. If you went strictly for diesel fuel you would be just as well off, wouldn't you, or maybe better?

General MILEY. For diesel engines?

Mr. SIKES. Yes.

General MILEY. We don't own the rights to any straight diesel engines. This would be a sole-source procurement of a diesel engine.

Mr. SIKES. Do you think that you are doing better than you would if you went into the diesel engine procurement?

General MILEY. As I say, for the near term we are satisfied with the engine. We own the engine and buy it competitively.

COST OF MULTIFUEL VERSUS CONVENTIONAL ENGINES

Mr. SIKES. That isn't the question. Are you buying the multifuel engine cheaper in fiscal 1970 than you could buy the diesel engine?

General MILEY. We haven't tested the market for a diesel engine in the 2½-ton truck.

Mr. SIKES. A straight gasoline engine for the 2½-ton truck.

General MILEY. We want a diesel engine in the 2½-ton truck.

Mr. SIKES. It would appear you would have checked the market to see what was available and what the price would be. What is the total amount of this purchase?

General MILEY. I don't have a breakout of the engine itself.

Mr. SIKES. Explore that and tell us what you can for the record about the comparative cost of the different types of engines for the fiscal 1970 program and if there are sufficient savings the committee would expect you to look into the possibility for the procurement of the cheaper-type engine if it would do the job.

General MILEY. I might add, sir, in addition to the actual engine cost, per se, we have a fleet with an engine, with the spare parts behind it. I certainly will do this cost evaluation, but these are factors that will have to be considered.

(The information follows:)

COMPARATIVE COST OF DIFFERENT ENGINES

Comparative costs of the different types of engines for the 2½-ton truck are shown below. The cost shown for the 2½-ton diesel engine is an estimate based on the prices of commercial diesel engines in the horsepower range required for the 2½-ton vehicle because the Army has not procured a diesel engine in the past for this vehicle.

	Horsepower	Unit cost
LD 465:		
Multifuel, 2½-ton truck	140	$2,315
Gasoline, 2½-ton truck	145	1,198
Diesel, 2½-ton truck	140	[1] 2,600

[1] Estimated.

The Army has conducted life cycle cost studies on gasoline and multifuel engines for the 2½-ton truck. These studies show that although the initial investment cost of the multifuel engine is greater than the gasoline engine, better fuel economy and reduced maintenance requirements on a life cycle basis result in a lower overall cost for the multifuel.

The Army owns all rights to the multifuel engine and procures them competitively on a recurring basis. Our mechanics are trained in maintaining this engine and a supply of repair parts is in existence worldwide.

GOER VEHICLES

Mr. SIKES. Turning to the GOER vehicles, what is the status of these vehicles?

General MILEY. The three models of the GOER vehicle have essentially completed their development. We have tested them in Europe. We are satisfied that we are ready to procure them. We now are in the process of developing a study to support the cost effectiveness of this vehicle in a mixed fleet of high-performance vehicles.

Mr. SIKES. Is testing and evaluation still in progress?

General MILEY. Testing is essentially complete, sir. The study that I referred to will develop, we hope, the requirement for the GOER vehicle.

COMMERCIAL VEHICLES

Mr. SIKES. With regard to automobile sedans, the Army was funded about 5,000 light automobile sedans in the last 2 fiscal years. For fiscal 1970 you are requesting $6.2 million for approximately 4,100 additional sedans. What is the reason for this increased requirement?

General MILEY. The increased requirement in sedans arises out of the extended use of the sedans in place of tactical vehicles in Europe and Southeast Asia. We find it is much more economical where we can replace a jeep with a sedan. The initial price is lower and the maintenance costs are lower.

In the case of the buses, we are replacing trucks with buses for transporting troops between air terminals and replacement centers.

Mr. SIKES. I notice that you are showing authorized acquisition for station wagons as having increased as against last year. Does the same reasoning apply here?

General MILEY. In the case of station wagons, our objective is the same.

In the case of the buses we are replacing 551 foreign-made leased buses. This accounts for the increased program in fiscal year 1970.

COMPARATIVE COST OF COMMERCIAL SEDANS VERSUS QUARTER-TON TRUCKS

Mr. SIKES. I would like to have comparative costs on the purchase and operation of sedans with the cost of tactical vehicles, for the record.

General MILEY. Yes, sir.

(The information follows:)

COSTS OF COMMERCIAL SEDANS VERSUS ¼-TON TACTICAL TRUCKS

Vehicle	Program cost, fiscal year 1969	Operation and maintenance cost per mile fiscal year 1968	Average life expectancy (years)	Miles per year
Sedan	$1,500	$0.0753	6	12,000
¼-ton tactical truck	3,395	.1038	8	11,196

Sedan operation and maintenance costs are based on worldwide usage; ¼-ton tactical truck costs are based on a sampling of ——— vehicles in use in Southeast Asia during fiscal year 1968 (last full year for which data has been reported).

The ¼-ton tactical truck has several sophisticated features which have a significant impact on the use and initial cost of the vehicle. These features include a four-speed transmission, four-wheel drive transfer case, 24-volt electrical system, and a waterproofed engine.

The sedans are designed for passenger carrying use on improved roads, while the ¼-ton tactical truck is designed to transport command and reconnaissance personnel, light cargo, communication equipment, weapons and special kits in both on-road and off-road missions.

PASSENGER BUSES

Mr. SIKES. You are listing a requirement for 784 passenger buses, none of which are scheduled for delivery to South Vietnamese forces. Isn't this an increase?

General MILEY. I don't quite understand the question.

Mr. SIKES. Are you buying more passenger buses now than you bought last year?

General MILEY. Yes, we are buying 575 in fiscal year 1969 and 784 in fiscal year 1970. The fiscal year 1969 buy will replace 233 foreign leased buses and 342 worn out buses. The fiscal year 1970 buy will replace 551 foreign-leased buses and 233 worn-out buses.

Mr. SIKES. With the fiscal year 1970 buy, are you increasing your inventory on buses?

General MILEY. Yes, the increase is based on the replacement of these foreign-made buses.

Mr. SIKES. Now, I don't follow you. If you are replacing foreign-made buses, the number should be the same. Are you increasing the number of buses in your inventory?

General MILEY. Our inventory objectives count the foreign-made buses even though they were leased.

Mr. SIKES. Are you still leasing buses now?

General MILEY. We will not be leasing any more buses after the 1970 procurement is delivered. We will retire 233 in 1969 and 551 in fiscal 1970.

Mr. SIKES. Why do you count the leased buses as assets on hand for replacement purposes?

General MILEY. I don't believe we would count them as Army-owned assets but we do take credit for them in meeting our inventory objective. Since we are terminating the leases, we must buy replacements for a like quantity.

Mr. SIKES. I want your authorized acquisition objective for each type of bus in fiscal 1968 and that for the present and that contemplated for fiscal 1970 for the record.

(The information follows:)

BUS AUTHORIZED ACQUISITION OBJECTIVES

Type	Fiscal year—		
	1968	1969	1970
45-passenger	3,559	[1] 3,990	[1] 3,990
25-passenger	2,166	2,166	2,166
Total	5,725	[1] 6,156	[1] 6,156

[1] Includes 8 each in support of ARVN modernization and improvement.

REPAIR PARTS AND SUPPORT MATERIEL

Mr. SIKES. Under "Repair parts and support materiel," provide a breakdown for the record showing the $19.3 million request for "Re-

pair parts and support materiel." Show how the funds will be used.

(The information follows:)

The $19.3 million for activity 7 "Tactical and support vehicles" is distributed by purpose as follows:

	Millions
Replenishment spares	$7.3
Provisioning	12.0
Total	19.3

Examples of End Items for which initial spares are to be procured with the $12 million fiscal year 1970 provisioning funds are as follows:

Item	*Fiscal year 1970 amount*
Truck—1¼-ton utility—M-561, M-705, M-715, M-37, XM-705	$2.173
Truck—5-ton ART—6 by 6 and 8 by 8	8.916
Truck tractor—8 by 8 HET-70, 22½-ton XM-746	0.281
Total	11.370

Communications and Electronics Equipment

Mr. Sikes. Under "Communications and Electronics Equipment," the fiscal 1970 program totals $441.3 million, which is $227.9 million less than your fiscal year 1969 program. This is a welcome decrease. What does it mean?

General Miley. We have reductions in the category of STARCOM COMSEC, Army Security Agency, special projects, tactical communications, night vision, and miscellaneous. Some are a one-time decrease.

Mr. Sikes. Spell it out for the record, if you will. Is this a one-time decrease, or is it anticipated you are striking a new level?

(The information follows:)

This appears to be a one-time decrease as the level of funding in prior years indicate. Detailed information is inadequate at this time to forecast the funds required in fiscal year 1971. A comparison between fiscal year 1969 and fiscal year 1970 shows:

[In millions of dollars]

Category	Fiscal year— 1969	1970	Difference
STARCOM and related items	82.4	58.2	−24.2
COMSEC	17.4	15.1	−2.3
Army Security Agency			
Consolidated intelligence program	2.1	3.9	1.8
ADPE	12.0	14.1	2.1
Special projects	70.7	51.2	−19.5
Electronic warfare			
Tactical communications and electronics	325.1	206.1	−119.0
Night vision	49.9	25.3	−24.6
Miscellaneous	64.9	44.6	−20.3
Totals	669.2	441.3	−227.9

Tactical Communications and Electronics

Mr. Lipscomb. General, on page 19 of your "shopping list" under "Tactical Communications and Electronics," what is the explanation for no funding request in fiscal year 1970 for any of the 24 line items listed in that particular classification? This appears to be where you get your reduction. It is on pages 19 and 20.

General Miley. The items on pages 19 and 20 that have blanks in the fiscal 1970 column indicate no planned procurement because pre-

sumably we have reached whatever inventory objective we wanted to with prior year procurement.

Mr. LIPSCOMB. There must be a good and specific reason. On "Tactical Communication and Electronics," starting at line item No. 338, all through page 20, through line item 360–A, there are no procurements anticipated. What is the reason for all of these being blanked out?

General MILEY. We are required, when we put the shopping list together to show if we had any procurement in the 2 prior years to show that item.

Now, this indicates that from line item 338 down to 360–A we plan no procurement of those items in 1970 because we have on hand what we think we need.

Mr. SIKES. So at any time during fiscal year 1970 we can expect there will be no procurement in this particular area?

General MILEY. Unless some emergency requirement showed up that we have to reprogram and buy. As far as our plans go, at budget time we did not need any of these items.

CX11230 CABLE ASSEMBLY

Mr. SIKES. Could you tell us about line item 354 which is the CX11230 cable assembly twin coaxial one-quarter mile, formerly in one-half mile lengths?

General MILEY. I have sent someone out to get our asset position on these cables.

Mr. LIPSCOMB. You have been requesting this item at a quantity of over 15,000.

General MILEY. 15,000 each of the cable assemblies with end connectors.

Mr. LIPSCOMB. That is for each year and all of a sudden you stop buying the cable assemblies.

General MILEY. I will supply that in a few moments, sir.

SKIP-YEAR-MULTIYEAR CONTRACTS

Mr. LIPSCOMB. You had a purchase of some quantity of radiation survey meters. Does that mean we are completely supplied?

General MILEY. I would have to verify that, sir. Upon occasion the people at the electronics command who buy this kind of equipment for us buy it under what they call a skip-year-multiyear contract. In other words, they place a contract that starts a multiyear procurement in the first fiscal year and then, because of extended production leadtime, skip the next fiscal year. The second year buy of the multiyear contract is made with funds from the third fiscal year. Upon occasion we run into that on the electronics equipment. The page we are looking at is a fair statement of our intentions not to buy any of these things in fiscal year 1970.

Mr. LIPSCOMB. It is hard to comprehend from the way this is set up how you could get through fiscal year 1970 by not procuring any of the tactical communications and electronic equipment we have discussed.

PROCUREMENTS NOT PLANNED FOR 1970

General MILEY. This is just the last page of tactical communications and electronics. We have many other items like the high density radios.

Back on page 18 you will see the AN/VRC–12 radio; we propose to buy ———. That is a high-density vehicular-mounted radio. There are many other items on that same page.

Line item 281 is the beginning of tactical communications and electronics. The grouping at the end on pages 19 and 20 is put in that arrangement because there is no planned buy. We put them at the end of our shopping list. The tactical communications and electronics equipment we propose to buy start at line item 281 and you can see there is quite an array. For example, in the case of the AN/PRC–25/PRC–77, we propose to buy ———. This is a standard man-pack radio used at the battalion and company level.

That last grouping we are talking about is peculiarly arranged at the end because there is no planned procurement for those items for fiscal year 1970.

Here is some information about these items. On line item 338, which is a simulator transponder we have bought up that quantity in prior years because it is phased for use with associated operational equipment. The next item, 339, we have bought it out, which means we have bought out not only the AAO, but a reasonable peacetime consumption for the next 2 or 3 years.

In the case of line item 340, we have bought to the AAO.

On Item 354, that is a skip year procurement.

Colonel BROOKS. That is right.

General MILEY. On line item 355, we have bought up to the AAO.

Mr. LIPSCOMB. Line item 354 is the one I inquired about. What was that explanation?

General MILEY. This is a "skip year procurement."

CX–11230 CABLE ASSEMBLY

Mr. LIPSCOMB. Put in the record a little of the history of the CX–11230 cable assembly, what you have purchased, what you have on hand, how it is used, and the future requirements.

General MILEY. I will put the story together for you in the record.

(The information follows:)

The CX–11230 cable assembly is a lightweight twin coaxial cable used to interconnect tactical multichannel communications equipment.

Initial procurement of this item was made in fiscal year 1968, with a second buy in fiscal year 1969. We intend to continue production by exercising an option on the fiscal year 1969 buy. This option can be funded with fiscal year 1971 funds. Therefore, the item was not included in the fiscal year 1970 budget request.

Total assets are ——— against total requirements of ———. The fiscal year 1971 buy will enable us to achieve the AAO.

AUTOMATIC DIGITAL NETWORK (AUTODIN)

Mr. SIKES. Going to Autodin, you were funded $24 million in fiscal years 1968 and 1969, and there is now a request of $6.4 million required for Autodin in fiscal year 1970.

General MILEY. Could I have Colonel Fritz discuss this for you?

Mr. SIKES. Yes.

Colonel FRITZ. The $6.4 million requested in fiscal year 1970 is for the continued conversion of the automatic digital network. It is intended to satisfy our most urgent requirements for digital communications through the Defense Communications System. These funds provide for the procurement of digital subscriber terminals and a certain amount of spare parts for the digital subscriber terminal equipment. This is required to process message traffic as well as data cards.

We need tools and test equipment for our system overseas.

Mr. SIKES. Will this complete the requirements for the immediate future, or 2 or 3 years?

Colonel FRITZ. No, sir; this will not complete the purchase of Government-owned terminal equipment. Through this procurement we will have ——— of these devices out of a total Army requirement, as we see it, through the next 5 years of ———. We are planning at the present time to procure only approximately ——— of these a year because we have found that it is economical to procure rather than lease, as we are doing now.

Mr. SIKES. What is the life of one of the transportable Autodin terminals?

Colonel FRITZ. We have no experience with these terminals but we anticipate the life of these terminals will be far beyond the 4½ years which is approximately the economical procurement as opposed to lease.

Mr. SIKES. How many will you have purchased through fiscal year 1969?

Colonel FRITZ. Our assets through fiscal year 1969 will be ——— for the Army.

Mr. SIKES. How many will you buy with fiscal 1970 funds?

Colonel FRITZ. With fiscal 1970 funds, we intend to buy ——— more terminals.

CONSOLIDATION OF COMMUNICATION CENTERS

Mr. SIKES. Have you implemented OSD-directed instructions to consolidate communications centers at Army activities?

Colonel FRITZ. Yes, sir; the Army has implemented this directive. To date under this program we have consolidated 17 message center-communications center combinations. We are at the present time studying just over 100 additional possible installations where this could be an effective economy.

Mr. SIKES. Could it be said that you are buying high-speed terminals to permit various Army communication centers to interface with the Autodin switches before the OSD-directed instructions have been complied with?

Colonel FRITZ. The consolidation of the message centers and communications centers, as we know them, will have little effect on the Army's present requirement for these high-speed terminals. We are leasing many terminals.

Mr. SIKES. Colonel, the question is directed toward the consolidation of communications centers themselves at Army activities where you have more than one communications center at an Army activity. It

is our understanding OSD directed the Department to effect such a consolidation. This is apart from the message center-communications center consolidations.

Colonel FRITZ. I believe this is the program called the local digital message switch program. The initials are LDMX. We are not implementing any of those at the present time because each one requires OSD approval on a "location by location" basis. We are consolidating communications centers, however, without waiting for the final LDMX program.

The terminals we are buying here are not the same as the printers that would be used in the LDMX type of consolidation.

Mr. SIKES. So you haven't purchased any high-speed terminals in 1969 and you will not in 1970, is that correct?

Colonel FRITZ. We have purchased high-speed terminals, yes, sir.

Mr. SIKES. In fiscal 1969?

Colonel FRITZ. Yes, sir; but these are not necessarily for these consolidations in the LDMX program.

Mr. SIKES. Would you provide for the record how many high-speed terminals you procured in fiscal 1969 and where they will be located?

Colonel FRITZ. Yes, sir.

(The information furnished the committee is classified.)

AUTOMATIC VOICE NETWORK (AUTOVON)

Mr. SIKES. Under Autovon, you were funded $4.3 million in fiscal 1968 and 1969. Why do you require another $2.1 million in fiscal 1970?

Colonel FRITZ. The funds requested in fiscal 1970 are for continued procurement of auxiliary equipment and to provide funds for the contractual, engineering, and installation of our previously procured equipment.

Mr. SIKES. Will this complete the requirement?

Colonel FRITZ. No, sir. We anticipate that if we get the funds requested for 1970, and again in 1971 at approximately the same level of effort, we will have all of the essential conversions that we need to be compatible with the Autovon switches.

MOBILE/TRANSPORTABLES

Mr. SIKES. For Mobile/Transportables in fiscal 1969 you were funded $7.5 million. You are requesting another $3.4 million for this purpose in fiscal 1970. What are you buying under this category?

Colonel FRITZ. In this category these funds are required in fiscal 1970 to provide the secure voice for these stations, to provide Autovon compatible switchboards. We are going to provide a high-speed secure data terminal capability and miscellaneous qualitative improvements of these stations. By Department of Defense direction, the Army is budgeting, procuring and assembling the three stations, one for each of the three military departments.

MOBILE AUTOVON COMPATIBLE SWITCHBOARDS

Mr. SIKES. Colonel, how are you able to utilize high-speed secure data terminals with a mobile Autovon switch, Autovon being analog?

Colonel FRITZ. We have both capabilities in the stations.

Mr. SIKES. Where are they located?

Colonel FRITZ. There are contingency-type stations that will only be deployed upon direction of the Joint Chiefs of Staff in areas of the world where we do not now have any long-distance capability.

Mr. SIKES. Have any of the Autovon switches themselves been converted to accept data transmission?

Colonel FRITZ. Autovon will not accept data, nor will the Autodin accept the analog. We are building into these stations not an Autovon switch, but we are buying a switch which must be able to work with the Autovon system, telephone; in addition to that, we are buying message and data-type terminals which use additional modes to operate on other channels of these long-range systems.

Mr. SIKES. You just answered that you are buying Autovon compatible switchboards and high-speed secure data terminals. This isn't for the Autovon mobile/transportables?

Colonel FRITZ. These are for the contingency-type stations.

Mr. SIKES. Are the three mobile Autovon stations leased or purchased?

Colonel FRITZ. The three switchboards we are buying with this are not Autovon boards, but they will work with the Autovon system. They will all be purchased.

LOCATION OF MOBILE STATION

Mr. SIKES. Where will they be located?

Colonel FRITZ. I can't say where these will be located at the present time because one station will belong to the Army, one to the Navy, and one to the Air Force.

General MILEY. These are emergency items to be supplied overseas to meet contingencies of the services. The Army is the Agency to put them all together. The Army will put them in place easily reachable by air.

Mr. SIKES. Will it be Southeast Asia, Europe, or has that not been determined?

Colonel FRITZ. ———.

General MILEY. To have a package ready to deploy overseas to meet a contingency operation, sir. They are all assembled in advance, ready to be airlifted to a new wartime location.

Mr. LIPSCOMB. You are buying these to be stocked for a future contingency of some nature?

Colonel FRITZ. Yes.

General MILEY. One package for each service.

Mr. LIPSCOMB. This particular transportable station ties in with your present communications system?

Colonel FRITZ. Yes, sir; it will be completely compatible.

AVAILABILITY OF EQUIPMENT

Mr. LIPSCOMB. What is the availability of these three that you are buying, or want to buy?

Colonel FRITZ. All of the equipment is now, shall I say "commercially available?"

General MILEY. Do you mean when will they all be ready to go?
Mr. LIPSCOMB. You could make the purchase next fiscal year, 1970, and they would be immediately delivered?
General MILEY. What is the target date to be ready to go?
Colonel FRITZ. We would have to go to contract and delivery would not be immediate. There would be several months.
General MILEY. Do you have any end date when they will be ready?
Colonel FRITZ. I don't have the end date that they must be ready.
Mr. LIPSCOMB. Do you have any of these now or is this a new item?
Colonel FRITZ. We have no assemblies of this type at the present time.

LIFE OF EQUIPMENT PRIOR TO OBSOLESENCE

Mr. LIPSCOMB. What assurance can you give the committee that they will be usable 5 years from now, or 10 years from now?
Colonel FRITZ. We are at the present time using the various components, but not in this form of assembling.
Mr. LIPSCOMB. With the rapid change in our communications capability, as demonstrated by the way that you have changed your requests over the last few years, won't these be obsolete 5 years from now?
Colonel FRITZ. No, sir. We don't anticipate these will be obsolete.
Mr. LIPSCOMB. Why do you say that?
Colonel FRITZ. We intend to buy the latest high-frequency-type transmitters available and receivers available and the tropospheric scatter links, we are intending to buy the latest standard items.
Mr. LIPSCOMB. You are saying that it is not possible that if these are stored for future use in case of a conflict these will be up to date and usable and will tie into your system. They won't be obsolete in 5 years?
Colonel FRITZ. That is right.
General MILEY. We will exercise these systems.
Colonel FRITZ. We will have to man them and exercise them.
Mr. SIKES. Is this susceptible to modernization?
Colonel FRITZ. No, sir; this is something we do not now have.
Mr. SIKES. Over 5 years can you replace components?
Colonel FRITZ. Yes. Any components.

INTERFACE WITH PROJECT MALLARD

Mr. LIPSCOMB. How would this interface with Project Mallard?
Colonel FRITZ. We are talking here about strategic-type communications. The Mallard program is directed toward the tactical area.
Mr. LIPSCOMB. Do you mean there is no compatibility between them?
Colonel FRITZ. Project Mallard is the tactical program. The stations we have here are for the strategic, long haul.
Mr. LIPSCOMB. There is no connection between the tactical and the strategic?
Colonel FRITZ. They do work with each other.
General MILEY. Can the two systems talk to each other?
Colonel FRITZ. It is technically possible. However——
Mr. LIPSCOMB. You see no need of that?
Colonel FRITZ. There is seldom any need for this though they will be compatible.

Mr. LIPSCOMB. There is no need for them to talk between this system and Mallard?

Colonel FRITZ. There may be a need, depending on the type of fighting we get into.

Colonel COLE. The Mallard system will be compatible with the Defense Communications System. They will be able to interface. These equipments here are used to extend the Defense Communications System to a point where it does not now exist in the world and we do it by several means. We can do it by a high-frequency transportable, or where the distance is not too great you can do it with a tropospheric scatter transportable. They are buying these to meet any contingency that may occur at the direction of the JCS.

Mr. LIPSCOMB. In parts of the world where you have no capability now?

Colonel COLE. That is right.

Mr. LIPSCOMB. What are these sections of the world?

Colonel COLE. There are many of them, sir.

Mr. LIPSCOMB. The Mideast, Western Europe?

Colonel COLE. For example, we have a station in Asmara in northern Africa. Any other part of Africa where we would have to communicate that would be the nearest point to get back into the Defense Communications System so we would use a transportable piece of equipment to do this by flying it into this point where the emergency exists and working back into the Defense Communications System and then they have the whole system available to them worldwide. As you know, the Defense Communications System is supported by the three services. Some is installed and operated by the Navy, others by the Air Force and the Army.

That is the purpose of the Navy and the Air Force and the Army having the capability, each of them, to do this.

REQUIREMENT FOR TRANSPORTABLE CAPABILITY

Mr. LIPSCOMB. You said there are many such areas of the world.

Colonel COLE. We would have to provide a large chart that would show the nodal points in the whole DCS for me to answer that question, but there are many, many points in the world where we don't have an immediate entry into the defense communications system. If we have a transportable capability we can get in.

I can cite a typical example. The Lebanon situation. When that broke out, there was no way for us to communicate back into the defense communications system and by the time they got equipment out of Fort Gordon and flew it over there the crisis was over with. That was the incident that was the genesis for us to start developing this capability.

Another example was during the Cuban crisis. The President had trouble talking to the South American Ambassadors in those countries. We had no way of communicating from the defense system into those countries, so some transportables were procured for this purpose.

REQUIREMENT FOR MOBILE STATIONS

Mr. LIPSCOMB. Do you plan to procure three mobile stations in 1970 fiscal year? What is your total program?

Colonel FRITZ. The total program as outlined by the Department of Defense at this time is for just three of these stations.

Colonel COLE. We have another capability in the Army. We have a unit called the 11th Signal Group which is out at Fort Huachuca. This unit has quite a number of transportable-type equipments, both high frequency and tropospheric scatter equipments. This unit can be deployed to establish communications in an emergency any place in the world. Our total capability is not wrapped up in these three which are in this budget. This was a directed JCS action to get this capability, one in each of the services.

Mr. MINSHALL. Did I understand you correctly; you said the reason for having this capability in the budget was the Lebanon crisis?

Colonel COLE. No. I said that was the genesis for the transportables requirement, to have them on hand to be rapidly available.

Mr. MINSHALL. Why has it been so long in coming? When was the Lebanon situation?

Colonel COLE. That was in 1957 or 1958.

Colonel FRITZ. 1958.

Mr. MINSHALL. We are 11 years late, then.

Colonel COLE. As I mentioned, we have the 11th Signal Group which was activated back in 1963. This unit has been in being since that time.

Mr. MINSHALL. Why wasn't something done about this sooner? Why now?

Colonel COLE. I would have to investigate the background behind the JCS action to answer that question.

Mr. MINSHALL. What number of personnel is required to operate one of these units?

Colonel COLE. About three or four people.

Mr. MINSHALL. How much equipment is there in it? You say it is transportable? To what degree?

Colonel COLE. It is in an S-280 shelter?

Mr. MINSHALL. What is an S-280 shelter?

Colonel COLE. S-280 shelter will fit on the back of a 2½-ton truck. Some of them also have what they call goats or wheels that they jack up under them, and they can move them, roll them on or off an aircraft. They will fit in our cargo aircraft, the C-124, C-130's, C-141, and all the airplanes.

Mr. MINSHALL. How does this equipment differ, then, from what you have at Fort Huachuca?

Colonel COLE. I do not know specifically.

Colonel FRITZ. I think what Colonel Cole is talking about is the low-powered units. They run up to 10 kilowatts. Some of the sections we have used in the past, that is, and this was not enough.

The three stations which the Department of Defense has directed us to procure for the three military departments will have a capability of at least 40-kilowatt output.

Mr. MINSHALL. Thank you.

MALLARD INTERFACE WITH DCS

Mr. LIPSCOMB. Is it possible that the Autodin and Autovon of the DCS will require some interface equipment to be compatible with the Mallard system?

Colonel COLE. The Mallard project will be compatible with the defense communications system. They are going to design it that way. Since Mallard does not exist today, the technical engineering design of this system is undergoing study right now. It will be capable of interfacing with the DCS system without a whole flock of black boxes as interface devices. They are going to design it that way.

Mr. LIPSCOMB. What you are saying is that it will interface?

Colonel COLE. What I am saying is that when we complete the design of the Mallard system it will be designed so that it will interface with the defense communications system. They have a liaison established between DCA (Defense Communications Agency) and the Mallard project.

Mr. LIPSCOMB. It would be reasonable to assume that these mobile stations will require interfacing equipment?

Colonel COLE. I don't think so, because what we are talking about are mobile stations that will provide the transmission path between two nodal points as well as terminal devices.

The compatibility between a telephone or an input device on one end and a telephone or an output device on the distance end does not involve the transmission system you are talking over, or if you are using a data machine. The thing is that these transportable equipments that are in the program here now will have a capability of transmitting voice or data depending upon what kind of a multiplexing device is put on the end of the transmission system.

Mr. LIPSCOMB. Thank you.

EUROPEAN WIDEBAND COMMUNICATIONS SYSTEM

Mr. SIKES. On the European wideband communications system, during the hearings last year the committee was advised that, according to the latest plan approved by OSD, the funds requested in fiscal 1969 were all that would be required to bring the European Command's communications system up to the same capability it had before the move from France. Now you are asking for an additional $2.2 million in fiscal 1970. Why is this?

Colonel FRITZ. The requested funds are not intended for the same purpose as we had last year.

Mr. SIKES. What are they intended for?

Colonel FRITZ. The statement in the 1969 hearings refers to the completion of the relocation of the U.S. communications from France which was actually completed using the funds available through 1969. The $2.2 million requested here for the European wideband communications system are actually not related to this move from France. This is something that would have been done perhaps in an earlier year if we had not had the requirement to move from France.

Mr. SIKES. What specifically does this $2.2 million accomplish.

Colonel FRITZ. It will accomplish certain objectives of the Department of Defense transmission improvement program. It will increase channel capacity on ——— links in Europe and we will install ———.

Mr. SIKES. The P–1, line item 225, shows European wideband communications system, formerly Freloc. That indicated to the committee it was the same thing. You say that it is not.

Colonel FRITZ. Sir, that was an unfortunate error. In order to continue our line identification in Starcom one of our analysts used that parenthetical designation for our own purposes.

KOREAN WIDEBAND COMMUNICATIONS SYSTEM

Mr. SIKES. All right. Now with respect to the Korean wideband communications system, there is a request for an initial $15 million in fiscal 1970. What is the need?

Colonel FRITZ. This is for the Korean wideband communications system which serves U.S. forces, the United Nations Command, and certain other U.S. Government agencies in Korea. The present system is rather old, having been installed in 1961. Other radio and telephone links have been installed and engineered separately, primarily using tactical type equipment. This system does not provide either the needed channel capacity nor the quality of circuits necessary for the commander of our forces in Korea or for other commanders in the area.

Mr. SIKES. Will this complete the request for the requirement?

Colonel FRITZ. No, sir. This is only the initial requirement, which is to make the main line system compatible with our autovon and autodin to improve certain links and tails which go out to major tactical units.

Mr. SIKES. What additional costs do you foresee in the future with respect to the upgrading of the communications equipment in Korea?

Colonel FRITZ. The total requirement, as we estimate it at the present time, is in the neighborhood of $52 million. However, at this time we are only requesting $15 million to do those items considered most urgent by the commander in the field.

DEFENSE SPECIAL SECURITY COMMUNICATIONS SYSTEM

Mr. SIKES. Under defense special security communications system, there was provided ——— in fiscal year 1968 and 1969. There is a request now before the committee for ——— for this purpose. What is to be done with these funds?

General MILEY. These funds are required to upgrade ——— terminals of the defense special security communications system, to meet operational requirements and also to install a new terminal at ——— and to procure a joint mobile relay center.

Mr. SIKES. Does this complete the requirement?

General MILEY. Sir, I will have to furnish that for the record.

(The information follows:)

The defense special security communications system is a triservice network, consolidating the SPINTCOM and CRITICOM networks. ——— of the ——— terminals on this system will be upgraded through the fiscal year 1970 program. The balance of the system is scheduled to be upgraded with fiscal year 1971 funds. The program for fiscal year 1972 and future years is limited to normal equipment replacements.

Mr. SIKES. Are any of these funds to be used for the lease or purchase of automatic switches? Provide that for the record also.

General MILEY. Yes, sir.

(The information follows:)

There are no funds for lease of switches in the PEMA budget.

There are ——— in the defense special security communications system program in fiscal year 1969 and prior years for the procurement of one automatic digital switch. Procurement of additional switches to complete the automation of the system will depend upon the results of test of the switch currently on procurement.

FLEXSCOP

Mr. SIKES. I see an item entitled FLEXSCOP. What is that?

General MILEY. FLEXSCOP is an acronym for flexible printer equipment for use in military intelligence activities. It is procured by NASA and details about the equipment will have to be furnished on a classified basis.

Mr. MINSHALL. How much is that for, Mr. Chairman? What is the price of that?

Mr. SIKES. ———.

Is that the total cost?

General MILEY. ——— is in the budget. They are ——— each.

Mr. MINSHALL. How many are there?

General MILEY. ——— in the budget request.

Mr. MINSHALL. What does this thing do? Do you know?

Colonel COLE. I have some information on it.

General MILEY. It is a highly specialized piece of equipment and I have not been exposed to it.

Colonel COLE. This system is a ———.

Mr. MINSHALL. Off the record.

(Discussion off the record.)

Mr. SIKES. If you can provide a nonclassified version to give additional information for the record, I suggest that you do so.

General MILEY. We will do that.

(The information furnished the committee is classified.)

AUTOMATIC DATA PROCESSING EQUIPMENT

Mr. SIKES. Under the heading of automatic data processing equipment there is a request for $7.6 million in fiscal year 1970, a significant increase over the amount required in the last 2 fiscal years. What is the purpose of this request?

General MILEY. This request will purchase ADP equipment already on lease by the Army. It essentially consists of equipment at three locations, Letterkenny Army Depot in Chambersburg, Pa., the major item data agency at Chambersburg, Pa., and some equipment at the automated logistics management system at St. Louis, Mo. There are two pieces of ADP equipment at St. Louis and one each at the other places.

Mr. SIKES. Mr. Murphy.

Mr. MURPHY. General Miley, what was the annual lease cost for these pieces of equipment and how long have we had them?

General WILEY. Could I call on Mr. Arnston who is the expert in this field to respond?

Mr. ARNSTON. The MIDA equipment was installed in December of last year. The equipment for St. Louis, ALMSA, was delivered in July of 1967, and the equipment for Letterkenny, the LSSC, as we call it, Logistics System Support Center, will be delivered. It is under lease, it has been ordered but it has not been delivered yet because that contract was just negotiated. The exact rental per piece I will furnish for the record.

(The information follows:)

The annual lease cost for the computers to be procured with the $7.6 million included in line No. 269:

Army Logistics Management Supply Agency, St. Louis, Mo	$1,150,000
Logistics System Support Center, Letterkenny Army Depot, Chambersburg, Pa	535,000
Major Item Data Agency, Chambersburg, Pa	687,000
Total	2,372,000

TACTICAL FIRE DIRECTION SYSTEM

Mr. SIKES. Under tactical fire direction system, there is an initial request of $6.5 million. Will you describe this system?

General MILEY. The tactical fire direction system is an integrated online computer system which applies automatic data processing to field artillery operations. This system will provide an automated capability to the field artillery commander at all levels from the battalion up to the division, to collect target information, to assemble ballistic information, to grind in the weather and read out at the battery, battalion, and division artillery level the data required to control the fires of all the field artillery resources immediately available to the division commander. This item in the budget this year is $6.5 million for long leadtime items for the system.

Mr. SIKES. What will we buy with the $6.5 million, specifically?

General MILEY. Shelters, air conditioners, power units, contractor-furnished components consisting of integrated circuits, cathode ray tube and die castings.

Mr. SIKES. What is the estimated cost of the tactical fire direction system for an artillery battalion?

General MILEY. I will have to furnish that for the record.

Mr. SIKES. Does anyone know?

General MILEY. I don't have any artillery men here with me this morning.

(The information requested follows:)

The estimated cost of the Tactical Fire Direction System for an artillery battalion is ———.

Mr. SIKES. Do you have an estimate for the total cost of the system?

General MILEY. Last year we had $2.4 million in the program, this year $6.5 million, ——— in 1971, ——— in 1972, and ——— in 1973.

Mr. SIKES. Apparently it is a very expensive system which we want you to have if it is required, but what is the basis for the assumption that this large expenditure is justifiable? It seems that you are in the very preliminary stages now of an expensive system.

General MILEY. This system has been carefully tested out in concept and it will bring to the artillerymen the ability to bring fire on a target on orders of magnitude faster than he could do before. In addition, calculations he used to do with a slide rule and the firing table will be done for him. It will provide to the forward observer, whether on the ground or in the air, a method of transmitting data processing-type messages which are quickly transmitted into the computer and turn out the firing data very quickly. So we think this will provide a tremendous increase in capability to the auxiliary units in the Army.

Mr. SIKES. All that you have said is desirable, except the price. The price still seems very high for a sighting device.

General MILEY. It is a combination of a data collection system with a data computation system which we think will greatly improve the effectiveness of our fire. The effect on the enemy, we think, will be increased tremendously.

DUEL BLADE

Mr. SIKES. Under Duel Blade you indicated in your statement that the budget request contains $129.5 million. What has been the total Army investment in this program?

General MILEY. I can give you the total for all appropriations or for PEMA only.

Mr. SIKES. All appropriations.

General MILEY. All appropriations through fiscal 1970, ———.

Mr. SIKES. Again, this is a very costly item. Has it been worth the cost?

General MILEY. Sir, I have Colonel Simmons with me who can talk to you about the ———.

Mr. SIKES. All right, Colonel.

(Discussion off the record.)

Mr. SIKES. Are the field commanders asking for ———?

Colonel SIMMONS. Yes, sir.

Mr. SIKES. That is a pretty good indication it is of some value to them.

Colonel SIMMONS. I was in Vietnam during 1966–67 and we did not have ——— at the time. I was there in October and November on 45 days' TDY, October and November of this past year, and I talked to ground commanders ———. They were very enthusiastic and wanted more. ——— in-country was comparatively young and we were not providing ———.

(Discussion off the record.)

Mr. LIPSCOMB. Mr. Chairman.

Mr. SIKES. Yes.

Mr. LIPSCOMB. General, this ——— program is an outgrowth of the ——— Program of a few years ago; is that correct?

General MILEY. That was part of it, sir. The first ———.

Mr. LIPSCOMB. But this is an outgrowth of the ———?

General MILEY. The first experience was in that system; yes, sir.

Mr. LIPSCOMB. Now, according to what you have told us, the total investment of the Army in this program is ———?

General MILEY. Including fiscal 1970.

Mr. LIPSCOMB. Including fiscal 1970?

General MILEY. Yes, sir.

Mr. LIPSCOMB. And that amount includes all R.D.T. & E. and procurement?

General MILEY. The Army's share of the program. It is a tri-service program.

Mr. LIPSCOMB. With the help of the Comptroller's Office, could we put all in one spot in our hearings the total cost of the investment in this program?

General MILEY. Of all three services?

Mr. LIPSCOMB. Yes.

General MILEY. I could get these numbers, sir, and put them in the record; yes, sir.

(The total budgetary funds identified with all activities of the program was provided to the committee, but it is classified.)

Mr. LIPSCOMB. Also, as it pertains to the Army and all three services, what portion of this project has been ———?

General MILEY. Sir, I cannot respond to that. I will have to do some research for you on that, too, sir.

Mr. LIPSCOMB. This would include the Army's portion, and then, through the help of the Comptroller's Office, all the services.

General MILEY. Yes, sir.

(The information furnished to the committee is classified.)

Mr. LIPSCOMB. I am correct, am I not, that the concept of the ——— program included more than just the ——— program as originally conceived?

General MILEY. The ——— program included ———, as I remember.

Mr. LIPSCOMB. ——— And the ——— program was intended to be there ———?

General MILEY. Yes, sir.

Mr. LIPSCOMB. In the statement that you gave, on page 12, you say the ———.

General MILEY. Sir, you have my draft statement, which I modified in my final version. I think the——

Colonel SIMMONS. It would be interpreted as no longer usable; yes, sir.

General MILEY. What is no longer usable?

Colonel SIMMONS. He asked: Does that mean if the ——— is no longer usable? We can check that, but that was the intent.

Mr. LIPSCOMB. General, did you say that you modified that sentence in your final statement?

General MILEY. My printed copy that was furnished to the committee deleted that ——— information.

Mr. LIPSCOMB. Why is that?

General MILEY. The ——— operation ——— does not relate directly to the ——— equipment that is the primary part of the Army's budget. So, I felt I was misleading the committee to talk about the ——— when, in effect, the Army portion is directed toward the ———.

Mr. LIPSCOMB. I don't understand.

General MILEY. The data is still valid, sir; the ——— data is still valid, but in terms of the kind of equipment that is included in the Army portion of the overall program and in my budget——

Mr. LIPSCOMB. You mean, some other branch of the service should take credit for the ——— per week because of ——— operations?

General MILEY. Let's get Colonel Simmons back here.

Colonel SIMMONS. That is the operation ——— system. Those would have been ——— that would have been ———.

Mr. LIPSCOMB. Again, could some other service that is participating in this ——— program can take credit for ——— per week. Is this a valid statement?

Colonel SIMMONS. I can check that for the record, sir. I do not have the——

Mr. LIPSCOMB. Where did the statistics come from?

General MILEY. That is a valid statement but it related to the ——— portion of that tri-service program and did not relate directly to the hardware that is in the Army budget. The Army budget hardware is almost exclusively related to the ——— portion of this overall program ———. So I felt, rather than use ———, I took it out of my statement and related it more to the ——— side of the operation.

Mr. LIPSCOMB. My point of inquiry now is toward a different direction, but it is of concern to me how these statistics got into your statement. Why would you impress the committee with this accomplishment and capability if it does not apply to the Army?

General MILEY. Sir, I took it out of my statement.

Mr. LIPSCOMB. We cannot work on everything overnight. I have been using the statement marked "Secret," which was received by me May 1.

General MILEY. I hope it was stamped "Draft."

Mr. LIPSCOMB. Well, it is not stamped "Draft."

General MILEY. It should have been stamped "Draft."

Mr. LIPSCOMB. The statement, indicates an excellent capability. Evidently, it means that the services, at the very minimum, are ———. It is an amazing claim.

General MILEY. Sir, I assembled the experts that deal with this program and we sorted it out, and I realized that the original data that I had used in my draft statement related to the ——— whereas the Army's portion of this program is for ———. So rather than take credit for an Air Force performance I changed my statement to relate it more to the ——— part of the operation.

Mr. LIPSCOMB. Would you say that ———?

General MILEY. ———; yes, sir.

Mr. LIPSCOMB. So the ———?

General MILEY. ———; yes, sir.

Mr. LIPSCOMB. But it is a valid figure?

General MILEY. It was furnished to me as operational data from the field; yes, sir.

Mr. LIPSCOMB. And you do not at this point consider the ——— as part of ———, or whatever the project is called?

General MILEY. It is part of the ———.

Mr. LIPSCOMB. At what rate are trucks arriving in North Vietnam from all sources, Soviet and Eastern European countries? Do you know?

General MILEY. I have no data on that. Do you have any?

Colonel SIMMONS. I have not, sir.

Mr. LIPSCOMB. You do not know?

General MILEY. No, sir. I have no intelligence on that.

Mr. LIPSCOMB. ——— is it possible for the Army to find out?

General MILEY. I could go to our intelligence people and find out what estimates are available. I will do so, sir, and furnish it for the record.

Mr. LIPSCOMB. All right. Provide the numbers, and where the trucks are coming from; the Soviet Union, Rumania, et cetera, ——— if that can be estimated, such as ———, et cetera.

General MILEY. Number of trucks arriving in North Vietnam, source and type?

Mr. LIPSCOMB. Yes. In other words, I am trying to determine how fast they ———.

General MILEY. Let me get into this whole area with the intelligence people.

(The information furnished to the committee is classified.)

(Discussion off the record.)

Mr. LIPSCOMB. Also another question in the same area. Inasmuch as this is handled as a triservice effort, this may not be your area of responsibility either, but according to news reports as late as this morning our aircraft losses along Cambodia, Laos, the Ho Chi Minh Trail, have been extremely high in recent weeks because of increased capability of enemy antiaircraft in the area. What is the problem here? ———. Yet, the report comes out today of increased antiaircraft emplacements and increased antiaircraft kill of U.S. planes.

General MILEY. Sir, let me explore that point also with our intelligence people and see if I can furnish a reasonable answer.

Mr. LIPSCOMB. I am not taking issue with the ———. This committee has followed this very carefully. What I am taking issue with is the capability and the further need of additional expenditures. Let's find out where we are going.

General MILEY. Yes, sir.

(The information furnished the committee is classified.)

Mr. LIPSCOMB. Thank you, Mr. Chairman.

Mr. MINSHALL. Mr. Chairman. Off the record.

(Discussion off the record.)

DEFENSE COMMUNICATIONS PLANNING GROUP (DCPG)

Mr. SIKES. The Secretary of Defense, in his budget revision, has reduced the fiscal 1969 PEMA program for DCPG by ———. Just what does it mean?

General MILEY. The reduction of ——— in fiscal 1969 included as a single largest item approximately ———. There is no ——— in the 1970 program. The cause of the reduction in 1969 was that for the types ——— we were buying, we had either reached our requirement or they were no longer needed.

Mr. SIKES. Off the record.

(Discussion off the record.)

Mr. SIKES. Mr. Minshall.

UNAMACE

Mr. MINSHALL. Going back, if I may, to page 16, item 267, what is a unamace?

General MILEY. These funds are required for the procurement of PEMA items required in support of a consolidated intelligence program. The fiscal 1970 program consists of ——— for items of total dollar value of less than $500,000 on which there are no military

PROCUREMENT OF AIRCRAFT AND MISSILES, NAVY—FISCAL YEAR 1970 EXPENDITURE ESTIMATES BY PROGRAM YEAR AND BUDGET ACTIVITY

[In thousands of dollars]

Activity, number, and title	Fiscal year 1961 program	Fiscal year 1962 program	Fiscal year 1963 program	Fiscal year 1964 program	Fiscal year 1965 program	Fiscal year 1966 program	Fiscal year 1967 program	Fiscal year 1968 program	Fiscal year 1969 program	Fiscal year 1970 program	Total fiscal year 1970 expenditures
1. Combat aircraft	$1,300	$1,800	$3,600	$3,400	$17,500	$40,000	$99,870	$432,886	$744,573	$95,759	$1,440,688
2. Airlift aircraft									7,775	3,349	11,124
3. Trainer aircraft							9,432	18,831	39,706	3,086	71.055
4. Other aircraft							3,242	1,100		2,442	6,784
5. Modification of aircraft				1,000	8,000	17,000	45,194	111,666	151,550	64,872	399,282
6. Aircraft spares and repair parts				500	2,000	9,000	18,784	134,961	205,028	97,752	468,025
7. Aircraft support equipment and facilities				500	2,000	14,000	29,722	20,106	44,983	23,289	134,600
8. Ballistic missiles							1,362	13,258	211,574	193,178	419,372
9. Other missiles	200	200	400	600	500	7,000	14,453	72,027	129,805	53,075	278,260
10. Modification of missiles						1,000	1,692	5,767	10,538	4,846	23,843
11. Missile spares and repair parts						500	3,365	14,029	3,911	9,936	31,741
12. Missile support equipment and facilities						1,500	5,384	2,300	8,591	3,751	21,526
Total for procurement of aircraft and missile, Navy	1,500	2,000	4,000	6,000	30,000	90,000	232,500	826,931	1,558,024	555,335	3,306,300

RECOVERY OF FUNDS FROM PRIOR YEARS (RECOUPMENTS)

Mr. ANDREWS. Now we will discuss recoupments.

In fiscal year 1968 you had a recoupment objective of $168.8 million and in fiscal year 1969 the goal was $100 million. How successful have you been in the recoupment of these prior years' funds?

Admiral CONNOLLY. Admiral Walker will answer that.

Mr. ANDREWS. Admiral Walker.

Admiral WALKER. Yes, sir. The fiscal year 1968 recoupment objective for the PAMN was $168.8 million. This objective was achieved by the recoupment of $124 million from the fiscal 1967 program and prior year programs. In order to satisfy the $44.8 million remaining objective it was necessary to reduce fiscal 1968 programs by that amount. The fiscal 1969 recoupment objective for PAMN is $100 million. We have already recovered $39.9 million and have plans to achieve the balance by the 30th of June. This balance is expected to be obtained by recoupment of $2.5 million from fiscal year 1965 and prior NAVAIR programs, decommitment of $26.1 million of fiscal 1966 NAVAIR programs and recoveries of $7.5 million from the fiscal 1967 program. The remaining balance is to be recovered from programs managed by the Ordnance Systems Command and the Strategic Systems Project Office.

In keeping with the congressional intent of utilizing funds most effectively, Navair Systems Command has imposed a 30-month limitation on the obligation of PAMN funds. Thus, funds may not be obligated after the 30-month cutoff without specific item approval by top management.

Mr. ANDREWS. Now, that $39 million figure that you mentioned, is that in connection with the Sparrow program?

Admiral GADDIS. It is just a happenstance that the two numbers come out the same.

Mr. ANDREWS. We are not talking about the same program.

Admiral WALKER. No, sir; we are not.

Admiral GADDIS. No, sir.

Mr. ANDREWS. Now, this recoupment program is certainly a welcome one. The ultimate objective is to save money. Who sets the objective amount?

Admiral GADDIS. The Secretary of Defense makes an assessment of recoupment objective as he sees the developing performance in each of the procurement appropriations.

Mr. ANDREWS. So the DOD tells the Navy what to recoup?

Admiral GADDIS. Yes. This is subject to reclama by the service. We have reclamaed in some instances. In some instances that reclama has been approved and in some instances it has been turned down but we come then to a joint judgment as to the proper recoupment objective.

Mr. ANDREWS. It seems like in 1968 and again in 1970 you are having to scramble all over the lot to meet your recoupment objective, yet you have not been hurt any by it.

Admiral GADDIS. The combination of emergent needs in Vietnam, and the inflationary economy make recoupments a lot more difficult than in a year of balanced program where you can earmark all of your savings or program dropouts for this purpose, sir.

Mr. ANDREWS. Now, when the Secretary of Defense gives you a directive for a recoupment objective, does he point out where you should recoup or does he leave it up to the Navy?

Admiral GADDIS. He assigns this by appropriation and it is the Navy's choice and responsibility as to where it shall be taken.

Mr. ANDREWS. When do you reclama? Do you reclama about the objective amount?

Admiral GADDIS. The total amount and the justification by which the amount was arrived at, sir.

Mr. ANDREWS. You have not been hurt any, have you?

Admiral GADDIS. In this appropriation, not significantly.

Mr. ANDREWS. Nothing you could put your finger on?

Admiral GADDIS. No, sir. In other appropriations possibly more than this one.

Mr. ANDREWS. What is your recoupment objective for fiscal year 1970?

Admiral GADDIS. $75 million, sir, in this appropriation.

Mr. ANDREWS. The recoupment objectives are coming down.

Admiral GADDIS. Yes, sir.

Mr. ANDREWS. In 1968, $168.8 million; 1969, $100 million; 1970, $75 million.

Admiral GADDIS. Yes, sir.

Mr. ANDREWS. In its report on the fiscal year 1969 DOD appropriation bill the committee stressed the fact that the military departments should more closely control and analyze unobligated and unexpended balances remaining in various procurement accounts.

EXCESS BALANCES OF FUNDS ON HAND

On February 17, 1969, the GAO published a report on the "Application of the Full Funding Concept and Analysis of the Unobligated and Unexpended Balances in Selected Appropriations." They found $1.2 million in unexpended obligations and $2 million in unobligated balances in excess to Navy needs in the very limited number of programs reviewed. What program do you have to recoup these excess balances in a timely fashion?

Admiral WALKER. We are following a comprehensive program to maximize the recovery of excess balances. We have imposed, as I mentioned, a 30-month time limit on the authority to obligate procurement funds and we place continuing emphasis on the closing out of prior year contracts. We also conduct an annual analysis of unliquidated obligations on existing contracts and we perform program reviews to determine the best balance between program requirements and resources.

The 30-month time limit on obligational authority was originally introduced in May 1967. Today, fiscal 1967 and prior procurement funds may not be obligated except for cost adjustments without the specific approval of the Naval Air Systems Command Deputy Commander for Plans and Programs and Comptroller.

Under our contract closeout program we have closed out 546 prior year contracts and recovered $4.5 million since July of last year.

Within the command we have established a weekly reporting procedure to report continuing progress in our contract closeout effort. Unliquidated obligations under the procurement and research and

development appropriations receive an intensive scrutiny each year. This year a two-step review is being conducted. Phase 1, completed in February, covered contracts having outstanding balances of $300,000 or more. This review encompassed more than 1,600 documents. Phase 2 involved a review of an additional 1,200 documents having more than $10,000 unliquidated. As of April 30, 1969, approximately $16 million have been recovered. In our annual program reviews we examine the financial and technical status of our programs to determine what changes have occurred in program requirements and what programs have funds which are excess to their original purpose and may be applied to other program requirements or the recoupment objective.

Mr. ANDREWS. Have you discussed that with the General Accounting Office since its report of February 1969?

Admiral WALKER. This has been discussed with the General Accounting Office but we have not had an opportunity to review their report with them.

Admiral GADDIS. I would like to add, Mr. Chairman, that this procedure for time limitation on obligations which was instituted first within the Air Systems Command under Admiral Walker has now been adopted for all procurement appropriations and R.D.T. & E. by the Secretary of the Navy, the CNO and the commandant. So that such a limitation procedure is effective as of January 1 this year for all procurement appropriations of the Navy.

NEED FOR CONTRACTOR APPROVAL OF DEOBLIGATION

Mr. ANDREWS. The GAO cited a case involving the Naval Air Systems Command wherein a plant representative in April 1968 identified and reported $24.6 million of unexpended balances in excess to his needs which could be recouped. As of January 1969 only about $850,000 of the amount reported had been deobligated. Why does it take so long to recover these excess balances?

Captain BURTON. Sir, I am Captain Burton of the Naval Air Systems Command.

The reason it takes so long is it requires a bilateral agreement on the part of the contractor and the person who wrote—who accepted the contract. Many times litigation is involved in the entire process, and many times renegotiation is involved. Each contract is being looked at in detail to do just exactly as the committee and the GAO suggests, which is to recover every available dollar.

Mr. ANDREWS. Are you moving, Captain, at full speed ahead to comply with the requests made by the General Accounting Office?

Captain BURTON. Yes, sir.

Mr. ANDREWS. In this particular area?

Captain BURTON. Yes, sir.

RECOUPMENT IN NAVAL AIR SYSTEMS COMMAND

Mr. ANDREWS. When do you think you will recoup the balance of the $24.6 million?

Captain BURTON. I will provide that specific answer for the record, if I may.

(The information follows:)

The $24.6 million mentioned above has been recouped by the Naval Air Systems Command.

It should be noted that the $24.6 million represented a commitment on the part of the Government, not an obligation.

On May 2, 1967, the authority to obligate these and other PAMN funds appropriated prior to fiscal year 1965 was withdrawn. The $24.6 million was included in this withdrawal of authority to obligate. These outstanding commitments were then eliminated from the Naval Air Systems Command's accounting records and the funds resulting were applied to the fiscal year 1967 PAMN recoupment objective.

In order to remove expired commitments from contracts, various naval plant representative offices, including the one at Bethpage, N.Y., have been delegated authority to execute and issue supplemental agreements with contractors in order to make current contracts reflect the actual availability of funds.

Mr. ANDREWS. Is there any dispute as to the amount the GAO said could be recouped?

Captain BURTON. We have not seen their report. It has not been available to the Air Systems Command or the Navy. It was merely available to your committee, sir.

Mr. ANDREWS. What policies do you intend to institute to speed up this procedure? You may have told us. Do you have anything to add to that?

Admiral WALKER. I have nothing to add, Mr. Chairman. The four or five procedures that I outlined in my previous statement do apply to this question and indicate steps that we are taking.

Mr. ANDREWS. A matter of concern to the GAO during its study was the number of times discrepancies were found in balances maintained by finance and accounting offices at the procurement centers and by administrative contracting offices and the considerable time devoted by the respective offices to reconciling these differences. Has this been a particular problem to you in determining amounts available for recoupment?

EFFECTIVENESS OF ACCOUNTING PROCEDURES

Captain BURTON. It has been a considerable problem because in effect we have an overburdened accounting system, multilevel, throughout the entire breadth of this very widely dispersed establishment that we supervise. It has been an automation problem as well as a personnel problem. In fact, they are so short of personnel in the Naval Material Command Support Activity that they have had to borrow people from us to help straighten out and reconcile records in the detail that is necessary to give us the reports that we need in the depth and time we need them.

Mr. ANDREWS. Did I understand you to say that you had not received a copy of the GAO report dated February 17, 1969?

Captain BURTON. That is correct, sir.

Mr. ANDREWS. Our clerk informs me he has just given you a copy.

Captain BURTON. We thank him very much.

Mr. ANDREWS. I would suggest that you take it and do a little homework on it.

Captain BURTON. Yes, sir.

Mr. LIPSCOMB. Mr. Chairman.

Mr. ANDREWS. Mr. Lipscomb.

Mr. LIPSCOMB. Captain, do I understand you to say that there were discrepancies in your balances and you have a hard time with this because, No. 1, you have a poor accounting system; No. 2, you lack personnel?

Captain BURTON. Perhaps the words "extremely complicated" should be substituted for "poor," referring to the quality of the system. There are many thousands of contracts and many hundreds of activities throughout the geographical limits of the United States involved and they not only cut through appropriation lines but service lines. That is, Air Force business, Army business, and Navy business. It is an extremely complicated item to track contracts and obligations.

Mr. LIPSCOMB. Are they just your procurement centers and your administrative contracting offices that have the poor accounting system?

Captain BURTON. It varies by organization, Mr. Lipscomb.

Mr. LIPSCOMB. What about the accuracy of other figures and facts?

Captain BURTON. When I say an overburdened accounting system, lest I have the wrong impression; the validity of the ultimate product can be verified, but it is a time-consuming and laborious process.

Mr. LIPSCOMB. What is being done? Are you updating and improving the accounting system? Did you request and receive additional personnel for 1970, and if so, has your request been turned down?

Captain BURTON. Throughout the Naval Establishment there has been a continuous attempt to improve the numbers and talents of personnel involved in recordkeeping.

ACCOUNTING AT CONTRACT CLOSEOUT

Admiral GADDIS. I think the principal point here is that we are speaking essentially of deobligation of contracts where deliveries have essentially been completed. It is to the benefit of the contractor, obviously, to keep the contract open. It is to the benefit of the Government to close it. It is our duty to adjudicate a final settlement.

These solutions involve considerable contract negotiations and a large amount of personnel effort. Conversely, it is not the kind of effort that is associated with getting on with the current business at hand. It is the kind of thing that in a small organization is done in spare time, as you know, sir.

Therefore, the accounting in this area is sometimes deferred if you are short of people. Many organizations are short of accounting and contracting personnel, and this is why Captain Burton speaks to the people shortage having a particular effect in this area.

Mr. LIPSCOMB. Allegations have occurred in the press recently with regard to military procurement and contracting. To those who do not understand the system, your statement that discrepancies are there because of complicated and technical accounting systems and lack of employees is shocking. Could this be why there is trouble and so much criticism?

Admiral GADDIS. It possibly could contribute, sir. We are moving to try to correct these kinds of discrepancies, as Admiral Walker noted in his remarks, and also throughout the Navy, sir.

Admiral WALKER. If I may repeat one point that I made, and amplify it a little bit, in terms of contract closeouts, I have designated a group of people who now work full time on this one program.

As I mentioned, we have closed out 546 prior year contracts and recovered $4.5 million in the last 9 months. This represents a great increase in the number of contract closeouts and indicates there is special emphasis in this area. There are these other steps that are being taken which will be of some assistance.

Mr. LIPSCOMB. Even though you have not seen the GAO report, you are aware of the problem and evidently are taking what action you can, with the resources you have, to correct it.

Admiral WALKER. That is right.

Admiral CONNOLLY. I would like to add, I think I am right that with respect to this whole subject, the Naval Air Systems Command is not in trouble. I have not seen the GAO report, but we are not aware of any contract where we have lost good control of the outflow of money and what we get for it.

In spite of the Comptroller's difficulties, we are in pretty good shape. That is what I am trying to say.

Captain BURTON. You will not find any serious cost overruns in the Navy's programs.

Admiral CONNOLLY. You won't even come close to anything like it, I hope.

Mr. LIPSCOMB. I hope so, too, Admiral, because somebody is sure looking for them.

Admiral CONNOLLY. We have been looking at ourselves in this respect. I have asked Admiral Walker several times in the last several months to be sure where we stand.

You might tell Mr. Lipscomb what you have found.

Admiral WALKER. We have a system of checks and balances in the Air Systems Command which satisfies me. I am particularly interested in this. I have been only 2½ months in this position, although I have been in the Air Systems Command for 2 years.

This system of checks and balances, I am satisfied, will provide me with sufficient warning and advance notice of any impending overrun. Wherever it appears that there is a likelihood of an overrun, we make early adjustments which may include the modification of a program in order to be sure that such an event does not occur.

Of course, we also have continuing and penetrating monitoring through our project managers of all of our contracts and contractors. I am satisfied that we have good control.

I would like to say, sir, that in the past 8 years, fiscal years 1961-68, for a total program value of $24 billion-plus, we have 2.4 percent—unobligated as of the 1st of April. Of $24 billion, we have less than $600 million unobligated.

About 10 percent of this total program value of $24 billion is presently unexpended. That is for the last 8 years.

Mr. LIPSCOMB. Thank you, Mr. Chairman.

UNOBLIGATED BALANCES

Mr. ANDREWS. Will you submit for the record a tabulation showing, for all Navy procurement appropriation accounts, (a) the unobligated balances as of the last reporting date, by budget activity and by fiscal year, and (b) the estimated unobligated balances at the end of fiscal years 1969 and 1970, by budget activity?

Admiral CONNOLLY. Yes, sir.

(The information follows; data for other appropriations was not supplied at this point:)

PROCUREMENT OF AIRCRAFT AND MISSILES, NAVY ANALYSIS OF UNOBLIGATED BALANCES, END OF FISCAL YEAR 1969 AND FISCAL YEAR 1970, BY BUDGET ACTIVITY

[In thousands of dollars]

Budget activity	Fiscal year 1969	Fiscal year 1970
1. Combat aircraft	581,368	427,043
2. Airlift aircraft	5,239	14,339
3. Trainer aircraft	44,157	49,082
4. Other aircraft	3,485	1,260
5. Modification of aircraft	141,167	99,092
6. Aircraft spares and repair parts	72,328	94,253
7. Aircraft support equipment and facilities	48,172	48,772
8. Ballistic missiles	81,093	106,118
9. Other missiles	93,690	106,540
10. Modification of missiles	15,479	19,404
11. Missile spares and repair parts	20,478	31,153
12. Other support equipment and facilities	12,440	12,840
Reimbursable program	83,418	95,418
Total	1,202,514	1,105,314

PROCUREMENT OF AIRCRAFT AND MISSILES, NAVY
SUMMARY OF UNOBLIGATED BALANCES AS OF MARCH 31, 1969

[In thousands of dollars]

Activity number and title	Fiscal year 1961	1962	1963	1964	1965	1966	1967	1968	1969
1. Combat aircraft	1,000	2,175	2,757	3,294	5,628	13,932	66,936	162,194	613,268
2. Airlift aircraft									7,995
3. Trainer aircraft						2,994	5,922	16,532	45,988
4. Other aircraft				26	16	1,849	7,298	610	
5. Modification of aircraft	490	540		343	3,423	1,326	29,466	42,540	187,540
6. Aircraft spares and repair parts	200	145				1,042	8,390	18,706	124,258
7. Aircraft support equipment and facilities			15		4,375	365	2,268	8,129	39,892
8. Ballistic missiles						3,032	3,547	12,466	46,072
9. Other missiles	35	155	112	21		6,724	13,542	37,165	172,782
10. Modification of missiles				6		80	1,128	2,723	7,048
12. Missile spare and repair parts				2	165	1,528	3,128	11,088	11,329
12. Missile support equipment and facilities				39		1,573		5,467	13,738
Reimbursable program	342	378	365	2,750	1,237	1,141	26,684	27,506	37,832
Total PAMN	2,067	3,393	3,249	6,481	14,844	35,586	168,309	345,126	1,307,742

Contract Awards, 1968

Mr. Andrews. Based upon the DD forms 350 for all Navy procurements, how many contracts were awarded in fiscal year 1968, and what was the value of these contracts?

Admiral Walker. In fiscal year 1968, the Naval Air Systems Command awarded 212 contracts of a value of $1,166 billion. The Naval Ordnance Systems Command awarded 26 contracts valued at $91.3 million. The Strategic Systems Program Office awarded 40 contracts at a total value of $49.4 million.

The overall total is 278 contracts valued at $1,306.7 million.

TYPES OF CONTRACTS

Mr. ANDREWS. How many letter contracts were awarded in fiscal year 1968, and what was the total value of these letter contracts?

Admiral WALKER. For the Naval Air Systems Command, 65 letter contracts totaling $505.4 million. For the Naval Ordnance Systems Command, four letter contracts, $25.7 million. For the Strategic Systems Program Office, one letter contract, $8.1 million.

A total of 70 contracts, $539.2 million.

Mr. ANDREWS. How many fixed-price contracts were awarded sole-source in fiscal year 1968, in number and value, and how does this compare with the number and value of fixed-price contracts awarded as a result of competition?

Admiral WALKER. Fixed-price, sole-source contracts: Naval Air Systems Command, 82 contracts, $546.6 million. Naval Ordnance Systems Command, 4 contracts, $14 million. The Strategic Systems Program Office, 2 contracts at $0.9 million.

A total of 88 contracts at a total cost of $561.5 million.

I believe you asked, sir, for a comparison of these fixed-price contracts with competitive.

Mr. ANDREWS. Sole-source and competitive. You may submit that for the record, Admiral.

Admiral WALKER. All right, sir.

Mr. ANDREWS. If you have it there, you may answer it now.

Admiral WALKER. Fourteen in the Naval Air Systems Command, competitive, $61.4 million. Naval Ordnance Systems Command, six at $41.5 million. None for Strategic Systems Project Office: For a total of 20 at $102.9 million. This compares with 88 sole-source.

Mr. ANDREWS. There were four times as many sole-source as competitive.

Admiral WALKER. A little over four times.

Mr. ANDREWS. How many cost-plus-fixed-fee contracts were awarded in fiscal year 1968, in number and value?

Admiral WALKER. NavAir, 51; $51.6 million. NavOrd, six; $3.6 million. Strategic Systems Program Office, eight at $20.2 million. Total, 65 at $76.4 million.

COMPETITIVE PROCUREMENT TREND

Mr. ANDREWS. Based on procurement contracts of $10,000 or more in value, what has been the trend in the percentage of awards on a competitive basis for the past 7 fiscal years? You may supply that for the record.

Admiral WALKER. I have that here.

(The information follows:)

The overall trend has been toward more competitive procurement. However, fiscal year 1967 and fiscal year 1968 Naval Air Systems Command experience is an exception to the trend due to the pressure of the Vietnam war. The figures for the first 8 months of fiscal year 1969 show a marked increase, over fiscal year 1968, and I fully expect to the trend to continue for the foreseeable future. The percentage of total "Procurement of aircraft and missiles, Navy" dollars contracted competitively for Naval Air Systems Command (NAVAIR) and Naval Ordnance Systems Command (NAVORD) is as follows:

[In percent]

Fiscal year	Navair	Navord
1962	8.0	7.0
1963	6.0	7.7
1964	9.2	11.6
1965	12.1	15.4
1966	14.7	26.5
1967	7.0	29.0
1968	9.3	30.5
1969 (through February)	11.3	34.5

Note: Comparable figures for the Strategic Systems Project Office are not separable by appropriation.

Mr. ANDREWS. How many contract modifications were awarded in fiscal year 1968, and the total value of these modifications?

Admiral WALKER. NavAir, 1,490 modifications for $992.5 million. NavOrd, 267, $69.6 million. Strategic systems, 160 for $99.1 million. A total of 1,917 modifications at $1,161.2 million.

COMBAT AIRCRAFT

Mr. ANDREWS. Your combat aircraft program for fiscal year 1970 totals $1,350,100,000. This is $152.2 million less than the fiscal year 1969 program for this budget activity.

Admiral Connolly, your statement indicates that as of the first of April, the Navy and Marine Corps were operating 7,147 combat and support aircraft, and an additional 1,355 were in the logistic pipeline. Does this pipeline include new aircraft under contract and in production?

Admiral CONNOLLY. No, sir.

Mr. ANDREWS. Would you explain that?

Admiral CONNOLLY. We do not count the airplanes until they have actually been delivered to the Navy.

Mr. ANDREWS. Until they have actually gone into your inventory?

Admiral CONNOLLY. That is right.

Mr. ANDREWS. On duty?

Admiral CONNOLLY. Yes, sir.

COMBAT AIRCRAFT IN COMBAT UNITS

Mr. LIPSCOMB. Admiral, of the 7,147 aircraft total in inventory, how many were assigned to combat units?

You may put that in the record, if you like.

Admiral CONNOLLY. I do not have it at my fingertips.

Mr. LIPSCOMB. Last year it was 3,752.

(The information follows:)

Of the 7,147 aircraft in the inventory on April 1, 1969, 3,885 were assigned to combat units.

Mr. LIPSCOMB. The statement you gave is different in figures for combat and support aircraft than the figures we were given earlier. What did you give as the total active inventory of combat and support aircraft in the pipeline?

Admiral CONNOLLY. The inventory figures that you had earlier were in the advanced copy of my statement and were based on January 1, 1969. Based on the 1st of April, the Navy and Marine Corps were operating 7,141 combat and support aircraft; 1,355 were in pipeline. A grand total of 8,502. That was on the first of April.

Mr. ANDREWS. Those figures are different from those that I asked you about. Those in the logistic pipeline had gone into your inventory?

Admiral CONNOLLY. We usually figure on the 1st of January, and I think these are the figures you had, Mr. Andrews. We tried to be up to date as of April 1. That is the difference.

Mr. ANDREWS. You are ahead of the committee.

Admiral CONNOLLY. No, sir; never.

Mr. LIPSCOMB. According to your present statement, Admiral, the total active inventory, combat, support, and pipeline, was 8,502 on April 1.

Admiral CONNOLLY. Yes, sir.

DECREASE IN NAVY ACTIVE AIRCRAFT INVENTORY

Mr. LIPSCOMB. A year ago, it was 8,603, according to the record. That is a decrease in your inventory in the past year.

Admiral CONNOLLY. Yes, sir.

Mr. LIPSCOMB. What was the cause for the decrease in numbers of aircraft in the Navy's active inventory?

Admiral CONNOLLY. For the last several years, we have been permitted to buy aircraft to meet combat attrition. Airplanes are lost one other way. We lose them operationally, and some of them, a very few, reach the end of their service life and are transferred out of the active combat inventory.

The answer to the question, 8,600 to 8,500, I am certain is due to the fact that we did not buy enough airplanes to cover our losses.

Mr. LIPSCOMB. For the record, could you put in the total naval losses from all causes, both combat and other losses?

Admiral CONNOLLY. Combat and operational. Yes, sir.

(The information requested is classified and has been supplied the committee.)

Mr. LIPSCOMB. The Navy plan is not for a reduction in inventory, is it?

Admiral CONNOLLY. Absolutely not. We were very concerned about this. If the committee wants us to take a moment or two, I can show you the status of our inventory in a hurry.

Mr. ANDREWS. I think it would be helpful to have it in the record at this point.

Admiral CONNOLLY. This is the history for the last 20 years in straight attack aircraft.

Mr. ANDREWS. Explain this chart so it will show in the record. We will not have the chart in the record.

Admiral CONNOLLY. Between 1950 and 1961 or so, we filled out our inventory of attack airplanes. This should not be too misleading, because we started to buy a lot of A–1's and A–4's. They took the place of fighters that we had used in World War II and in the period from 1945 to 1950.

What you see in the attack category is A–4's, A–1's, and A–3's. We continued to buy the attack category in A–6's and A–7's and A–4's.

The attack category is going downhill. That little bump in 1970 reflects the supplemental that you gentlemen gave us in 1968 when we got more airplanes and they were delivered in 1970.

The downward slope of that curve is what resulted from 1969 and 1970 buys projected. We have not been buying many airplanes.

Mr. ANDREWS. Read the figures for us so the record will show what we are talking about.

Admiral CONNOLLY. In about 1960, we had 2,200 attack airplanes, and now we are down to about 1,500.

Can we show what has happened to us agewise?

Mr. MAHON. Yes, and when the record comes down, you can expand on this.

AGE OF AIRCRAFT

Admiral CONNOLLY. (Slide.) This chart shows what has happened in the age of our straight attack airplanes. This is the average age between 1957 and 1971 or 1972. This is based on this year's authorization anticipated, because we get that in calendar year 1971. The average age of our airplanes has doubled.

Mr. ANDREWS. Read a few of the figures for the record.

Admiral CONNOLLY. The average age of our straight attack inventory in 1957 was 3½ years. In 1966 it rose to 6 years. In 1972, it is projected to be about 7.2 years.

Mr. ANDREWS. What is the expected age limit of your attack planes that we are talking about here?

Admiral CONNOLLY. We have chosen service lives, selected on the basis of wing life and other fatigue factors, not to mention their ability to do the job as airplanes. I will give it to you exactly. It averages about ——— years for fighters and about ——— years for attack airplanes, and most other categories are greater than that. As a rule of thumb, you can say ——— years of service life for fighters.

Mr. ANDREWS. You are about to reach the end of the road.

Mr. MINSHALL. What is the oldest?

Admiral CONNOLLY. Some of our airplanes are 25 years old, older than the pilots flying them.

Mr. MINSHALL. What are they?

Admiral CONNOLLY. They are tankers, C–54's, C–47's.

Mr. ANDREWS. No attack planes are that old?

Admiral CONNOLLY. We have some A–1's out there that are two-thirds as old as the fellows flying them. And the EF–10B is almost as old as General McCutcheon.

Mr. ANDREWS. He is a young fellow.

Admiral CONNOLLY. I am not exaggerating. We have some real old ones.

Show the fighter slide.

That is what is happening to fighters.

Mr. ANDREWS. Read some of those figures into the record.

Admiral CONNOLLY. In 1957, the average fighter was 4 years old. We bought a lot of fighters. We shifted over to jets. Congress gave us a lot of money to get out of props and get into the jets. By 1960, we had an average age of about 3 years, which was good. We have gone to the F–8's. We are hanging onto the F–4B's. Now, by 1972, our fighters will be 7.2 years of age, average.

Mr. MINSHALL. How old are your administrative aircraft? From what to what?

Admiral CONNOLLY. Our C–117's average 26 years old.

Mr. MINSHALL. What do you use those for?

Admiral CONNOLLY. To carry personnel around. The Reserves are flying them.

Our C–130's, one of our really modern airplanes, are 8 years old. Our C–121's, Connies, are 16 years old. The C–118 VIP airplanes, for the CNO and the Secretary, and which others ride from time to time, are 18 years old.

Mr. ANDREWS. How many of those old F–6A's do you have aboard now? I used to see them when I was in the Navy.

Admiral CONNOLLY. I think they are still there, Mr. Andrews.

Mr. MINSHALL. What jet aircraft do you have for administrative use?

Admiral CONNOLLY. Two years ago we were able to get the Systems Analysis boys to let us lease four T–39's for rapid response support between Japan and Southeast Asia. We started with four but we got three. We still have them going, and they are paying off like the dickens. We have four, maybe, this year.

That is it.

ANTISUBMARINE AIRCRAFT

Mr. MINSHALL. How about your antisubmarine fleet? They are fairly new, are they not?

Admiral CONNOLLY. On our P–3's, we are doing pretty well. The S–2 has a service life of ———. We have ——— that are within the service life, but they are right up to it.

We give the P–2, the Neptune, a service life of ——— years of service life. We have ——— of those that are over service life. We have ——— that are within that time.

We do not have any overage P–3's yet. The P–3 we give a service life of ——— years. We have ——— of them, all within that service life.

TRAINER AIRCRAFT

Mr. MINSHALL. How about your trainer aircraft?

Admiral CONNOLLY. Oh, boy.

Mr. MINSHALL. Oh, boy—what?

Admiral CONNOLLY. The TF–9J we give a service life of ——— years. We have ——— of them that are over that, and ——— that are within 3 years of that life. That's it.

Mr. ANDREWS. You are telling us your whole fleet is overage.

Mr. MINSHALL. What is the status of your trainer aircraft?

Admiral CONNOLLY. I gave you the TF–9. They are almost up to the end of their service life. The T–28's are not in here. They are getting very old, too. But the T–2C's are nowhere near service life. We are all right on them.

Mr. MINSHALL. What are they?

Admiral CONNOLLY. The Buckeye that we are asking for this year, the twin jet. We are using T–28C's, and their average life is 13.1 years old; the T–28B is 13.9 years old.

Mr. MINSHALL. What are you using for primary trainers?

Admiral CONNOLLY. We have some new small airplanes that we use with the Air Force. They are nowhere near the end of the line on service life. The T–28 is primary. The primary jet is the T–2B.

Mr. MINSHALL. What is your primary system aircraft?

Admiral CONNOLLY. The T–28.

UTILITY AND TRANSPORT AIRCRAFT

Mr. MINSHALL. I do not know what your designation is for them, but how many twin Beeches do you have?

Admiral CONNOLLY. They are called C–45's in conjunction with the Air Force. In 1969, our UC–45's will be 24.5 years of age, and our C–45J's will be 25.2 years of age.

Mr. MINSHALL. How many of those do you have? You may supply it for the record later.

Admiral CONNOLLY. I will do that, sir.

(The information follows:)

The C–45 (all series) inventory as of 1 March 1969 was 106 aircraft.

Admiral CONNOLLY. We have been trying to retire them from the inventory. We have really been trying to do something about this.

Mr. MINSHALL. What will you go to instead of using the C–45's?

Admiral CONNOLLY. We have a plan, and it is a good one, which consists of having a central scheduling office in Norfolk for everything east of the Mississippi, and a central scheduling office in Alameda for everything west of the Mississippi. We plan to use T–39-type airplanes to meet everybody's needs for this kind of direct, rapid support, travel airplanes.

We can make a big payoff. We can pay for all the airplanes we want to get in about 5½ or 6 years. We will retire all these old props. They require a lot of maintenance, a lot of people. We have to work on them. They take forever to do the job.

Mr. MINSHALL. What does this total up to in dollars?

Admiral CONNOLLY. Our program this year is to get hold of nine T–39's with $14 million.

Mr. MINSHALL. You are talking about 5 years ahead, though.

Admiral CONNOLLY. I am talking about——

Mr. MINSHALL. I know what is in this budget. I wonder, as you look down the road, what you are talking about.

Admiral CONNOLLY. I have this.

Mr. MINSHALL. Put it in the record. I think we should have it.

(The information follows:)

Navy fleet tactical support squadrons are currently operating:

——— C–118's.
——— C–130's.
——— C–131's.
——— CT–39E's.
——— Total.

Navy locally controlled transport aircraft force consists of:

——— C–117/C–47's.
——— C–54's.
——— C–131's.
——— C–121J's.
——— Total.

We propose to combine all these airlift assets into our existing fleet tactical support transport squadrons which are coordinated and scheduled by four Naval Air Logistics Control Offices (Western Pacific, east coast United States, west coast United States, and Europe).

To improve efficiency and reduce cost we propose introduction of jet transports and phase out of the old aircraft with a procurement program which would span a 4-year period. In the 1975 period, the plan would have the following transports in the force:

——— C–118.
——— C–130.
——— C–131.
——— Med Jet (Boeing 727 type).
——— CT–39E.
——— C–8.
——— Intermediate jet (Gulfstream II type).
——— Total.

The ——— existing transports would be replaced by ——— modern transports. Economics and savings indicated in the new force would amortize procurement in less than 10 years.

Carrier on-board delivery (COD) aircraft and Marine transports have not been included in the above totals.

LIGHT JET TRANSPORTS T–39 TYPE

Mr. ANDREWS. Admiral, in the subcommittee hearings for the fiscal 1969 supplemental appropriation, consideration was given to the procurement of four TC–39C aircraft which the Navy proposed to lease in fiscal 1969. Is there a requirement for additional aircraft of this type? Please comment on the value of these small aircraft to your operation, and also what the additional need is which you mentioned.

Admiral CONNOLLY. We did a series of studies with the systems analysis people in the last 2 or 3 years in this area. This led to their allowing us to make application to lease these airplanes in order to show that we could get really high utilization in value from them.

Mr. ANDREWS. Describe the plane for us, briefly.

Admiral CONNOLLY. So far we have done all our demonstrating with these three T–39's that we have gotten out West.

(Slide.) There is the airplane, sir. It is North American's Sabreliner.

Mr. ANDREWS. Is that twin-engine?

Admiral CONNOLLY. Yes, sir. I have an answer here which is more efficient.

Mr. MINSHALL. What do those cost you per copy?

Admiral CONNOLLY. We can get nine for $14 million. That is not flyaway. That is complete with support. A little over a million dollars apiece.

Mr. ANDREWS. Proceed.

Admiral CONNOLLY. Yes.

Additional light turbine jet transports are needed to implement the Navy's response airlift concept. These aircraft would be assigned to fleet tactical support transport squadrons, and would provide timely and responsive air transportation for key personnel and small amounts of high-priority cargo. Key personnel include technical representatives, accident investigators, briefing teams, aircraft structural repair and analysis teams, and so forth.

In addition to the four aircraft which we would like to obtain——

Mr. ANDREWS. Are the four by lease?

Admiral CONNOLLY. We sought them by lease, yes, sir. It is our understanding that the other body does not consider lease to be profitable.

Mr. ANDREWS. Proceed.

Admiral CONNOLLY. In addition to the four aircraft which we would like to obtain through 1969 supplemental funding, we also had hopes to obtain five more in the fiscal year 1970 budget. This would allow us to begin rapid response airlift throughout the Navy.

The total Navy and Marine requirement for aircraft of this type is estimated at ——— operational aircraft. These jets would be centrally located and scheduled, and would replace older propeller-driven C–47, C–117, and C–154 aircraft which are presently assigned and operated by individual air stations. This permits a tradeoff of about 2½ propeller aircraft for one jet, thus providing increased efficiency at lower overall airlift cost.

Mr. MINSHALL. What is the Navy configuration on one of these?

Admiral CONNOLLY. Just seats.

Mr. MINSHALL. How many?

Admiral CONNOLLY. It is not plush. The T–39's are to ferry pilots, primarily, to reduce the combat aircraft pipeline. The faster we get the ferry pilots across to pick up the planes and move them, the less of them are in pipeline. Then the five are the stretched version.

The combined bill for the four that we want to get now, and the five later, is $11.554 million, and the initial spares are $2.1 million. So, the whole bill is $13.654 million. They carry eight passengers.

SAVINGS RESULTING FROM PROCUREMENT OF VT–39

Mr. ANDREWS. If the Congress provided funding for additional VT–39's in fiscal 1970, would you be able to reduce your fiscal 1970 funding as a result of the aircraft which you propose to retire? You may comment on that for the record, and supply whatever savings you will achieve.

Admiral CONNOLLY. All right, sir. I will do that.

(The information follows:)

It had been previously proposed to retire 12 C–117/C–47 aircraft for five CT–39E aircraft in fiscal year 1970. The total annual operating cost of the 12 C–117/C–47 aircraft is approximately $5 million while the total annual operating costs of the five CT–39E aircraft is less than $2.5 million. It is not possible to recover the difference in these total operating costs the first year because of the significant amount of money tied up in airframe rework, engine overhaul, and aviation spares. However, it has been determined that approximately $1 million could be reduced from fiscal year 1970 funding as a result of this "tradeoff." After the first year this savings would exceed $2.5 million per year and would produce total 10-year systems savings in excess of $16.4 million.

In fiscal year 1968, the first year we leased the three CT–39E to replace five C–54 aircraft, we saved over $500,000. This fiscal year we have saved over $1 million and by the end of next year we expect the savings of operating these three aircraft to amortize the original procurement cost. In addition to saving money our existing rapid response airlift system is many times more effective than the previous operation of five locally controlled C–54's.

Mr. LIPSCOMB. Just for clarification, inasmuch as this plane has come up, in the program book for "Procurement," on page 3, for fiscal year 1969, line 33, is shown three of these VT–39E's at $2.8 million. Was that in your procurement program for fiscal year 1969?

Admiral CONNOLLY. Yes, sir. They are the ones we leased the year before. By proving that they were worth it, we were allowed to buy those.

Mr. LIPSCOMB. When did you get authorization? Was it in last year's bill?

Admiral GADDIS. It was in last year's budget.

Mr. LIPSCOMB. It was authorized?

Admiral GADDIS. Yes, sir.

Admiral CONNOLLY. In 1968 we leased them. In 1969, we were allowed to put them in our budget. They were authorized and appropriated.

Mr. LIPSCOMB. You have none in fiscal year 1970?

Admiral CONNOLLY. We had to go through the leasing routine again.

Mr. LIPSCOMB. Did you make a request and it was cut out?

Admiral CONNOLLY. It carried all the way through the Navy. It went downstairs in the Navy budget. It was removed only at the very last in late December.

AIRCRAFT UNDER CONTRACT AND IN PRODUCTION

Mr. ANDREWS. How many aircraft are under contract and in production through fiscal year 1969? You may supply that for the record.

Admiral CONNOLLY. I think the answer to that would be 440, wouldn't it?

Mr. ANDREWS. 440?

Admiral CONNOLLY. That is what was authorized in this year's budget.

Admiral GADDIS. No; this is all aircraft ordered but undelivered. So it could be from prior years.

Mr. ANDREWS. Supply if for the record.

Admiral GADDIS. Yes, sir.

(The information follows:)

As of April 30, 1969, there were 1,088 aircraft under contract and in production utilizing fiscal year 1969 and prior year funds.

RA–5C VIGILANTE AIRCRAFT

Mr. ANDREWS. Last year we discussed the fact that the Navy entered into a multiyear, fixed-price contract for the RA–5C Vigilante reconnaissance aircraft, and that the company assured the Secretary of the Navy the price of the aircraft would remain the same for the full buy.

In fiscal year 1969, the Navy was provided a total of $118.5 million for the procurement of ——— aircraft, which is about ——— million per aircraft, including advance procurement money.

In fiscal year 1970, you are requesting $60.6 million for 10 additional aircraft, which is a little more than $6 million per aircraft excluding advance procurement money. Why has the cost of this aircraft now increased?

Admiral CONNOLLY. The major portion of the unit cost increase of ——— million over the fiscal year 1969 cost of ——— million, that is, ——— million to ——— million, in fiscal year 1970 results from amortizing $10 million of special support equipment for the U.S.S. *Nimitz* over ——— aircraft. When we get a new ship and we put special support equipment in that ship, the airplane pays the price of buying the special support equipment for that ship.

So, it costs $10 million for the special support equipment to go in the *Nimitz*.

Mr. ANDREWS. Are you telling us the aircraft itself did not cost any more than originally?

Admiral CONNOLLY. That accounts for ——— million of the ——— million.

Another part of the increase reflects the ——— million procurement cost of six units of modular reconnaissance equipment, also amortized over ——— aircraft. So, there was another purchase of equipment that was a charge to the airplanes.

The remainder of the increase results from the incorporation of an all-weather carrier landing system. This is an increase in the price of the airplane. And an air traffic control IFF which we had to put in for safety. This equipment, again, is spread over the ——— production aircraft.

Mr. ANDREWS. Then is it correct to say, Admiral Connolly, that the contractor lived up to the assurance given the Secretary of the Navy that the price of the aircraft would remain the same for the total buy?

Admiral CONNOLLY. Yes, sir; it is fair to say that. As a matter of fact, the price of the airframe actually decreased. He will not charge as much for the airframe as last year. There is a little gain on the learning curve. That is all that amounts to.

Mr. ANDREWS. What is the unit cost and flyaway cost of the RA–5C aircraft for fiscal years 1965, 1968, and 1969, and the estimated cost for fiscal year 1970?

You may supply that for the record.

Admiral CONNOLLY. All right, sir.

(The information follows:)

There was no procurement of RA–5C's in fiscal year 1965. The following unit cost information is provided for fiscal years 1968, 1969, and 1970:

[Dollar amounts in thousands]

Fiscal year	Quantity procured	Unit flyaway	Total flyaway
1968	———	———	$81,576
1969	———	———	134,792
1970	10	6,044	60,440

Mr. ANDREWS. As of January 1969, a total of 43 RA–5C aircraft procured in fiscal year 1965 and prior years had been delivered to the Navy. An additional 12 were funded in fiscal year 1968, ——— more were funded in fiscal year 1969, and funds for another 10 are in the fiscal year 1970 budget.

There are no advance procurement funds in the fiscal year 1970 budget. Does this mean that this is the last buy of this aircraft?

Admiral CONNOLLY. Mr. Andrews, it could mean that. We have not yet decided how we are going to carry through until we get another reconnaissance aircraft. That is the reason we have no lend-time money ahead beyond the 10 in this budget.

We have had this RA–5C a long time now. We are looking at it now. We think a reconnaissance version of the ——— would be a very good thing to work on. It is very likely that we will develop a reconnaissance version of the ——— to replace the RA–5C.

If we do not buy any more RA–5C's and we have to wait a while before there is an ——— depending on our attrition and operational losses, we can go continually with the RA–5C or, if we should have to do something, we have the RF–4 which could be used as an interim airplane, and it is a good one.

So, our situation with respect to the RA–5C, I do not consider to be very serious.

A–6A INTRUDER AIRCRAFT

Mr. ANDREWS. Now we shall talk about the A–6 Intruder aircraft.

In the last 2 fiscal years, the Navy has been funded ——— A–6A Intruder aircraft. In fiscal year 1970, you are requesting $62.5 million for 12 additional aircraft.

Are these 12 to replace combat losses in Vietnam?

Admiral CONNOLLY. We will not lose ——— A–6's in Vietnam unless the war heats up a lot and we have bad luck.

Mr. ANDREWS. Put something in the record about your aircraft losses in Vietnam is the last 12 months.

Admiral CONNOLLY. All right, sir.

(The information requested is classified and was supplied to the Committee.)

Mr. ANDREWS. Since that time you have not carried out any missions over North Vietnam.

Admiral CONNOLLY. I would like to straighten that out so the committee clearly understands it.

We continue to fly monitoring reconnaissance flights over North Vietnam. The reconnaissance airplanes are accompanied by fighters. They are given adequate protection. So, occasionally they get shot at.

Mr. MINSHALL. What are they shot at by?

Admiral CONNOLLY. Mostly by triple A, but there have been some SAM's. I will amplify that for the record.

(The material supplied is classified.)

Mr. ANDREWS. What is your information about the antiaircraft capability of North Vietnam as of today? A man who seems to be knowledgeable told me recently that within the last 12 months there had been a terrific buildup of antiaircraft capability in North Vietnam, and that it was very heavily fortified, especially around the cities.

Admiral CONNOLLY. That is right. That is what we think. We think they are among the best antiaircraft gunners in the world. They have had plenty of experience.

Mr. MINSHALL. These aircraft were shot at at what altitude?

Admiral CONNOLLY. We have been using the RA–5C in order to get the kind of pictures we want, ——— feet or below, down as low as ——— feet.

Mr. ANDREWS. Have you lost any from antiaircraft?

Admiral CONNOLLY. I have just been handed a note. Are you talking about A–6?

Mr. ANDREWS. Any kind of aircraft.

Admiral CONNOLLY. I have been talking RA–5C.

We have lost ——— A–6's in the last 12 months.

Mr. MINSHALL. Since the bombing halt?

Mr. ANDREWS. That is what he is talking about, the last 12 months.

Admiral CONNOLLY. ——— since the bombing halt.

Mr. MINSHALL. Where have they been lost?

(Off the record.)

Mr. MINSHALL. Have you lost any over North Vietnam?

Admiral CONNOLLY. We have lost one RA–5C over North Vietnam, and had another badly damaged.

Mr. MINSHALL. Or the DMZ?

Admiral CONNOLLY. No, sir.

Have you lost any over the DMZ?

General McCUTCHEON. No.

Mr. ANDREWS. What is the total Navy inventory of A–6A's as well as the number currently under contract? You may supply that for the record.

Admiral CONNOLLY. I have it, sir.

(The information is classified and has been provided to the committee.)

PUBLICATIONS IN SUPPORT OF A–6A AIRCRAFT

Mr. ANDREWS. Last year you programed $3,769,000 for the procurement of publications in support of the A–6A aircraft. How much was actually required for this purpose?

Admiral WALKER. $4.4 million is currently programed for publications in fiscal 1969. The additional $300,000 was required to fund these testing and troubleshooting manuals.

Mr. ANDREWS. How much are you requesting in fiscal year 1970 for A–6A publications?

Admiral WALKER. The fiscal 1970 requirement for A–6A publications is $2 million. This is required for the following: Updating publications to the fiscal 1970 aircraft configuration, and providing revised and new publications for changes which were approved in fiscal 1970; revise existing airframe, accessory and support equipment publications in conformance with fleet and repair activity recommendations for new and better methods of repair and maintenance procedures.

We are also required to change naval aviation training and operating procedures standardization program manuals.

Mr. ANDREWS. Where do you get your publications manuals?

Admiral WALKER. Where do we get the publications——

Mr. ANDREWS. And manuals.

Admiral WALKER. We get them principally from the manufacturers of the airplane, because they are by far the best qualified activities to provide them for us.

Mr. ANDREWS. It sounds like a lot of money for publications coming from the manufacturer of the plane.

Admiral WALKER. The publications are quite expensive, sir, when you consider that a great deal of technical knowledge has to go into the preparation.

Mr. ANDREWS. Do you have to have a separate set for each separate plane?

Admiral WALKER. No, sir. This is true for some of the publications but not most of them. It depends on the number of activities and sites which are required to support the aircraft.

Mr. ANDREWS. And it goes in the cockpit?

Admiral WALKER. No. These publications include manuals which are used by the maintenance personnel, by the pilots, by the ordnance personnel, the avionics personnel, the loading crews.

Mr. ANDREWS. You may elaborate on that in the record.

(The information follows:)

The A-6A presents a typical example of the quantity and type of publications required to support a modern aircraft. Proper A-6A operational and maintenance support requires a total of 956 technical manuals, checklists, and test tapes of which 537 are applicable solely to the A-6A aircraft. These manuals total 149,337 pages of technical information and are broken down as follows:

	Number of manuals	Number of pages
Aircraft operations manuals covering flight and tactical data	4	1,700
Aircraft maintenance manuals covering structure, landing gear, hydraulics, pneumatics, electrical equipment, avionics, armament, etc	58	25,968
Illustrated parts breakdowns identifying peculiar and standard replacement parts	23	6,700
Component repair manuals covering electronics, armament, instruments and electro-mechanical equipment	190	10,268
Ground support and test equipment operation and repair manuals	123	34,788
Operational and test tapes and associated checklists	139	30,163
Total applicable to A-6A only	537	109,587
Manuals common with other aircraft models, such as engine and other Government-furnished equipment manuals	419	39,750
Grand total	956	149,337

Admiral WALKER. I would like to mention one thing which may bear on this, sir.

If you take as an example the A-6A which we have been talking about, the total number of manuals which are produced and apply only to this model aircraft is 956 separate publications, which include 150,000 pages for one model of airplane.

Mr. ANDREWS. You almost have to have a library for each airplane.

Admiral WALKER. You do have to have that, sir. Of course, there is a lot of money involved, and some of the pages that go into these manuals may total as much as $100 a page for intricate circuit diagrams or hydraulic system drawings.

If you take the entire amount of money that is put out for publications and divide it by the number of pages in the publications, you find that the average cost per page is less than 1 cent a page.

Mr. ANDREWS. You go from $100 a page to 1 cent a page?

Admiral WALKER. Some of them are very cheap, but some of them are expensive, and they must be so because of the fact that it is very important that your detailed avionics drawings, for instance, be absolutely correct.

Mr. ANDREWS. It is most important. I was just questioning the need for so many manuals when they are all the same and all dealing with the same plane, why you have to have such a wide distribution.

Admiral WALKER. There is not a tremendously wide distribution, sir. It is the variety of different kinds of publications.

COMPETITIVE PROCUREMENT OF PUBLICATIONS

Mr. ANDREWS. Last year we discussed the fact that the Navy breaks out publications for competitive procurement whenever possible. Have you increased competition in publication procurement for all aircraft?

Admiral WALKER. Sir, the trend to competitive procurement was initiated in fiscal 1966, and has been expanded to the present time. It is the policy within NavAir and the objective to buy competitively

as many technical publications and publication services as is practical while still obtaining a technically sound publication in the required time frame.

Mr. ANDREWS. Are you trying to get competition?

Admiral WALKER. Yes, sir; we are moving in that direction.

Mr. ANDREWS. I wish you would put something in the record about what success you have had and how much, if any, money you have saved because of your efforts.

Admiral WALKER. We will do that. The trend is in that direction, and I will provide the details for the record.

(The information follows:)

The Navy policy and objective is to buy competitively as many technical publications and publication services as practical while still obtaining a technically sound publication in the required time. When it has been determined that complete technical publications cannot be procured competitively, the elements of the work, such as preparation, printing, etc., are evaluated to determine possible areas of competition.

The emphasis on competitive procurement, which was initiated in fiscal year 1966, has been continued. Examples of our programs for increased competitive procurement are:

(*a*) The policy that all presswork, which represents approximately 18 percent of the cost of technical publications, must be procured through competitive Government Printing Office contracts. This action was initiated in fiscal year 1966, expanded in fiscal year 1967, and became standard procedure during fiscal year 1968.

(*b*) A test program has been established at the Naval Air Technical Services Facility to procure two sets of publications, which cover electronic test equipment, directly from subcontractors rather than the A-6A prime contractor. This program will be evaluated and expanded if deemed practical.

(*c*) Another program to develop competition involved assigning tasks to publication contractors rather than prime contractors when feasible. Costs are lower because basic hourly rates for publications contractors average less than prime contractor rates. However, these contracts are used only when a complete data package is available or the time element is not critical.

The following is indicative of the trend toward using publications contractors rather than prime contractors.

Fiscal year	Number of tasks	Amount
1967	7	$232,000
1968	54	1,011,000
1969	40	670,000

The decrease in fiscal year 1969 results from the critical need to update the publications for one of our first-line aircraft which caused a substantial portion of the technical publications funds to be directed to a single airframe manufacturer. We expect to reverse this trend in fiscal year 1970 when the emphasis on expanding this type of contracting will be continued. For example, a new system for in-house evaluation of changes to technical publications for out-of-production equipment is being initiated. It is expected that this system will result in an increase in the number of changes to be prepared by publication contractors rather than by prime equipment contractors.

Mr. MINSHALL. The question is always asked: I would like to know what you asked for on your shopping list in the way of aircraft, what you did not get, and what your priorities would be if you were to pick up some of those things you did not get.

Admiral CONNOLLY. Yes, sir. I have it. I will be ready.

Mr. MINSHALL. You probably have that already.

Admiral CONNOLLY. Yes sir; it is all set.

Mr. MINSHALL. Thank you.

(The information follows:)

The following is a comparison of fiscal year 1970 aircraft procurement contained in the present budget and that which the Navy requested in its budget submission to the Secretary of Defense on September 30, 1968:

PROCUREMENT, AIRCRAFT AND MISSILES, NAVY

[Dollars in millions]

Items	Navy submit		Present budget		Difference	
	Number	Dollars	Number	Dollars	Number	Dollars
Combat A/C (B.A. 1)	763	2,678	327	1,350	−436	−1,328
A-4M	———	117	49	69	−29	−48
RA-5C	———	78	10	61	−2	−17
A-6A	———	206	12	62	−36	−144
EA-6B	———	262	12	180	−7	−82
KA-6D	———	62	20	58	[1] −4	[1] −4
A-7E	———	357	27	100	−116	−257
AV-8B (HARRIER)	———	.....	12	42	+12	+42
F-4J	———	335	34	146	−66	−189
F-14A	———	280	6	225	.....	−55
CH-46E	———	187	60	109	−48	−78
CH-53A	———	218	.....	.....	−96	−218
AH-1J	———	24	.....	.....	−30	−24
UH-1L/N	———	44	62	34	−5	−10
P-3C	———	260	23	198	−9	−62
Adv procurement	———	248	.....	66	.....	−182
Airlift A/C (B.A. 2)	27	88	8	37	−19	−51
C-2A	———	39	8	37	.....	−2
CT-39E	———	7	.....	.....	−6	−7
C-130E	———	20	.....	.....	−6	−20
C-140 (type)	———	12	.....	.....	−5	−12
C-4/C-9 (type)	———	7	.....	.....	−2	−7
Adv procurement	.....	3	.....	.....	.....	−3
Trainer A/C (B.A.3)	225	218	104	110	−121	−108
T-2C	———	26	24	16	−17	−10
TA-4J	———	147	75	87	−53	−60
TH-1L	———	19	.....	.....	−45	−19
TC-(X)	———	15	.....	.....	−6	−15
T-38A	———	4	5	4	.....	.....
Adv procurement	.....	7	.....	3	.....	4
Other A/C (B.A.4)	32	105	1	9	−31	−96
EC-130Q	———	48	.....	.....	6	−48
UH-3D	———	45	.....	.....	−25	−45
P-3 (magnet)	1	9	1	9	.....	.....
Adv procurement	.....	3	.....	.....	.....	−3
Aircraft mod (B.A.5)	.....	665	.....	326	.....	−339
Aircraft spares (B.A.6)	.....	930	.....	568	.....	−362
A/C supt EQ and FAC (B.A.7)	.....	125	.....	99	.....	−26
Total A/C programs	1,047	4,809	440	2,499	−607	−2,310

[1] The Office of the Secretary of Defense transferred funds to aircraft modification (B.A.5) to convert ——— A-6A's to KA-6D's.

The following list shows the priority Navy would assign if it were permitted to procure some of the items in its September submit which were disapproved in the present budget:

ORDER OF PRIORITY

(The information is classified and was supplied to the committee.)

Mr. ANDREWS. We will adjourn until 10 o'clock tomorrow.

FRIDAY, MAY 9, 1969.

SKEPTICISM WITH RESPECT TO MILITARY

Mr. MAHON. Before we start into the further discussion of procurement of aircraft and missiles for the Navy, I would like to have you philosophize a bit about the low estate of the Department of Defense, including the Navy, which apparently exists at this time.

We are all familiar with the ebb and flow of public opinion. At times the administration, the President, is on top of the heap and well received with a high rating; at times Congress is on top of the heap, applauded by the columnists and the media; at times the military are on top of the heap and receive the plaudits of the people generally. This is a condition which has always existed and will continue, in my opinion, to exist. I think at this time there is a special feeling of frustration and skepticism on the part of the Congress and on the part of the country with respect to the military.

Now, it is fashionable these days to blame everything, including problems on college campuses, on the war in Vietnam. No doubt, the war in Vietnam does have an impact on the people—and should have, but I think we just cannot blame everything on the state of mind which is, to some extent, generated by the war.

Admiral Connolly, are you aware or do you agree that there is an unusual amount of skepticism at this time in regard to the policies and procedures, the programs, and the competence of the military?

Admiral CONNOLLY. Yes, sir; very much so.

Mr. MAHON. Now, Members of Congress tend to say—and they have said this for 20 to 25 years—that if you could just find all the waste in the Pentagon—in Defense—you could save huge sums running into the billions.

Whenever there is a desire to reduce expenditures the tendency is to say: "Take it out of the hides of the military." To borrow a word from Dan Flood: "Those jokers just spend money like there was no limit." It is said: "Well, think of all the waste that they have generated. They start a program and then they stop it. They start programs before they count the costs and before they are sure that the programs will be effective." Now, at times, such as on the Skybolt, for example, the administration comes along and cancels a program, and upsets a foreign country such as England. There are policies involved here for which the uniformed military people have very little responsibility, I would say.

I do not remember the exact figure, but I think in the last 15 years the Defense Department has canceled out about $8 billion worth of programs. About half a billion dollars went down the drain quite a number of years ago on a great big Navy plane. What was that? I am not talking about the F–111B.

Admiral CONNOLLY. The P6M.

Mr. MAHON. Yes; it was a big plane. This is just one of many programs in Defense that has gone down the drain.

So I would like you to tell us what your answer is, in a philosophical and a general way, not speaking so much of the Navy, but of Defense generally; what is your answer to those who feel so skeptical about the management policies of the Defense Department?

Admiral CONNOLLY. Well, we give an awful lot of thought to it, Mr. Chairman, among ourselves, and I think you know we really are aghast at the cost of things. We are just startled by them because we are essentially men who do not deal in big sums of money and do not have big salaries. We talk in millions all day long and go home and balance our checkbooks down to the penny.

There are several reasons that we have gotten in the shape we are in. We have been maintaining a very large military force now for over 20 years, with tremendous commitments. There has been a steady increase in the cost of everything. Our pay, the food that you buy, the gasoline and the oil, spare parts, everything has cost more. The weapons systems have become more sophisticated because of the conditions that they are being designed to cope with. We have entered upon a number of programs that were fairly large and it was very difficult to know in advance how expensive they would become. But the main reason that I think we have gotten in the shape we are in is that there has been a tremendous erosion of authority and responsibility.

I feel this way because when I look around and ask: "Where did we do well?" and "Where did we do badly?" I find that we did very well where the authority and the responsibility were clearly placed in one man or one group, subject to checks, but he really was the boss. Admiral Raborn, assisted by Adm. Levering Smith, did a fantastic job of putting Polaris together in 5 years. The responsibility was clearly his, as was the authority. He was briefed, he was trusted, and he produced. He put together the biggest technical team that had ever been put together in my knowledge, probably just as big a technical team as was put together for the atomic weapon.

Where we have gotten into trouble, it seems to me, is where the fellows that were carrying out the job did not make the decisions. The F–111 is just a perfect example of this. There were too many cooks managing the broth.

Mr. MAHON. Now, I would like to agree that the F–111B was a flop but that is only a fragment of this whole picture.

Admiral CONNOLLY. That is right, sir.

Mr. MAHON. The plane, the P6M; the waste in that case was not brought about by lack of concentrated responsibility, I would think.

Admiral CONNOLLY. No, sir. That was an ambitious program. It is my belief that although the airplane had certain technical difficulties, its principal problem was that its mission evaporated. The technical problems could have been overcome, in time. Its role, however, as a sea based strategic deterrent force was taken over by the fast moving and successful Polaris program. I am not the most informed person on it however because I was not around.

Mr. MAHON. No; I realize that. Then another program was the 3–T's. I do not know that the lack of unified authority played an important role in the problems with the 3–T's which was, for a time, an inglorious flop, very expensive. Congress was very much misled as to what this weapon system would do. For a long time it would not work. Now, how do we explain that? We explained the F–111B but let's move on to other systems. Let's explain these other things. What probably is wrong? Is there anything wrong? Is this inevitable?

Admiral CONNOLLY. Well, my view of the period from about 1948 to around 1960 was a period in which conceptually avionics systems

were seen to be able to do great things, in such systems as the 3–T's but the realization of them was a whole lot harder than men had realized.

In aviation, Mr. Chairman, we bought a lot of black boxes in the form of radars, scanning equipment, communication gear, and fire control gear. We put them in our airplanes, we flew them around and unfortunately we did not have very much success with them for a long time because knowledge about avionics systems was not widespread enough. We in the Navy, our mechanics and our officers just did not really know how to work with this gear, how to fix it. So we did use bad judgment, we did buy equipment that we were not yet ready to employ, not in its entirety, although there were always fine exceptions proving that we could do well. But we have gotten past that stage.

Lest I give the wrong impression Mr. Chairman, the period of the 1950's was not characterized by a rash of failures. Nuclear propulsion came in strong and successfully. A whole family of nuclear weapons from fractional kiloton to multimegaton yields was developed and introduced into our inventory. Propellor airplanes gave way to jets. In 1956 a U.S. Navy developed Crusader fighter became the first operational aircraft to attain 1,000 miles per hour in level flight. I might add also that we are still flying the Crusader in combat operations in Vietnam, 14 years after it first flew. The Sidewinder missile also was developed and introduced and became the first guided missile to shoot down an airplane in combat when used by the Chinese Nationalist Air Force in the late fifties.

I do not like to live too much, Mr. Chairman, by the successes and failures of the past. I think the Navy—and I am talking to my own particular area a little bit more than perhaps you want me to—I think we have done pretty well in naval aviation in two areas: we have advanced many new things in the form of weapons, and aircraft, as well as support for these aircraft and weapons, and still stayed pretty well on the line. It was not by accident that practically every weapon in the free world arsenal came out of the Naval Air Systems Command, OP–05, and the Naval Weapons Center at China Lake. It is not by accident that the F–4 is the best fighter going today. We have developed good contractors in industry who understand about building good systems.

Mr. MAHON. There are, of course, examples of outstanding success such as the F–4, but of course the press and the critics do not concentrate on those. It is the 3–T's or something else that they concentrate on. How do we rationalize the 3–T's?

Admiral CONNOLLY. The mistake we made there, Mr. Chairman, is this—and to me it may be a bad one, but it is an understandable one—we built and converted a lot of ships, based on being missile ships, up to 75. Admiral Arleigh Burke was a tremendous proponent of getting good new, modern ships following World War II and during his 6 years as CNO. These ships were all built with the idea that they were going to carry Terrier, Tartar, or Talos. So they settled in on a design, a launcher, a fire control system, radars, and so on. Then when these components proved to be not good enough to do the job we already had made a hell of a commitment in these ships, most of the money we came up here and asked you for over a

period of years was to straighten out and fix, while going along and doing. It is my impression that we now are, with respect to the 3–T's, far ahead of what anybody hoped we would be when they started the program. The 3–T's are far better today; as a matter of fact, Talos is pretty spectacular.

Mr. MAHON. Off the record.

(Discussion off the record.)

REBUILDING OF CONFIDENCE IN DEFENSE PROCUREMENT JUDGMENT

Mr. MAHON. Admiral Connolly, I would like to bring up another facet of this overall situation. By the time a weapon is completed it seems to be obsolescent and all manner of new electronic improvements are needed. You hardly get it built before you start rebuilding it. People are saying as to the ABM—and I support going along with the ABM certainly until we see what can be worked out with the Soviet Union toward some sort of accommodation on this issue—but they say the ABM would be out of date before it was produced and installed, and probably would not work anyway.

This is the sort of feeling with respect to a lot of our weapons programs. How are you going to build greater confidence on the part of the Congress, in the judgment of the Defense people, in matters of procurement?

Take the C–5A and all the controversy which has been surfaced in the press. There is just so much of this that Members of the Congress and of the American community, in my opinion, are very low in their esteem for those who run these programs. What can you do about it? What can the Navy do about it? What can the Defense Department do about it? What can Congress do about it?

Admiral CONNOLLY. One of the principal causes of obsolescent equipment being in our inventory is delay in introduction into the combat units. Sometimes delay is a result of development or production difficulties greater than those anticipated. Nevertheless, a prime source of delay is the repetitive requirement for study and restudy of a program before approval is granted. As you know, Mr. Chairman combat arms are most effective when they are more advanced or have greater capabilities than those the opposition has or is expected to have. An example of what I'm talking about is in electronic warfare. Because of repeated delays in getting approval for the EA6B, we have had to continually modernize and up-date an obsolescent bomber, the A–3, for this role.

As to the charges that most defense weapons programs are poorly run or unsuccessful, my answer to you would be let's examine the total picture. Let's not keep beating the same old dogs to death, the ones that were wrong. If necessary, a better analysis than I am giving this morning could be given for the three T's program or the P6M problem, but if you put down the successes alongside the failures you will see that we have had many successes. We have built a fleet of the finest nuclear submarines that anybody could hope for and it works. Our tests of Polaris have worked, worked brilliantly. The very contractors that were taking a licking in some of these areas from the press, the very contractors that have been picked on for being bad examples of the military/industrial complex were the contractors who

contributed greatly to the successes; for instance—Lockheed. Lockheed was the prime contractor for Polaris. Their engineers put the Polaris program together from all parts of this country's skill, the scientific community, university work, laboratory work, and engineering, and did a brilliant job of expanding at the same time. Now, North American Rockwell has been taking a licking on the Mk. 2 avionics for the F-111 but I would like to point out that North American Rockwell also was the prime contractor that put Apollo around the moon last Christmas Eve when we were all pretty thrilled about its success.

The A-7 went from contract to combat in the record time of 44 months, thanks to Ling-Temco-Vought. We in the Navy have introduced more new aircraft, more new weapons in the last 3½ years than at any period in the Navy's history, including World War II or Korea or any other time; not only more but also good ones.

We have done some outstanding work. We have suffered also and I get real unhappy about this point: We put in a request for money to do a program. It goes down to the OSD on the third floor in our process of getting our budget together and invariably Systems Analysis says one of two things: Either you can have that number or units of airplanes or whatever, but you do not need that much money; or you cannot have that number of airplanes or units and then they reduce the money still further.

So we get a kind of Hobson's choice. We know in our hearts and we believe we are right, the requirement is there for this equipment. So we take the choice and do the best we can with it. But what happens is we start out in a shortfall position.

Now, in aviation we are a little bit better off because if we start running out of money, we know we haven't enough money to cover it, and you have seen this, we buy fewer airplanes. It is awfully hard, however, to buy part of a ship. Once you start a ship and it turns out you do not have enough money, you cannot say "I will take three-quarters of a ship."

Mr. MAHON. The overruns in ships have been fantastic at times.

Admiral CONNOLLY. Yes, sir.

Mr. MAHON. That is one of the reasons for the breakdown in confidence.

Admiral CONNOLLY. Well here again, the picture isn't as black as it has been painted. While we all are upset now about deficits in ship construction funds several years ago we had consistent surpluses relating to ship construction. As a result, money was transferred out of the SCN appropriation to avoid these surpluses. This happened about 5 years ago, at the same time the inflationary trend started to gallop. These two things have combined to form a large part of the ship construction funding deficits now so prominent.

The other thing is—and, Mr. Chairman, I will not keep going on—but I want to remind the Congress that a combination of military men, Congressmen, and the executive branch who were really the citizen/military combination turned to and in slightly more than 3 years defeated enemies in Africa, the Mediterranean, Italy, Europe, supported the Soviets, the British, helped other Allies, went across the Pacific, saved Australia, New Zealand, went back into the Philippines and defeated the Japanese. This really took slightly over 3 years because from December 7, 1941, we did not make our first return

effort until the spring of 1942. The Navy made its first real bid in the Battle of the Coral Sea in May—3 years later the war was over in Europe and 3 months later it was all over. Our military arms were totally victorious, we all turned to.

The military people, not only did the planning, they also did the procurement, together with many great people from the business world that came and helped them. But since World War II we have had a succession of experts—managerial experts, people who knew more about everything than we did and in almost every area—I hesitate to say this, but I have no example that I can turn to and say, "Well, this really did work better. The commander of the Naval Air System Command really was able to get a better airplane out or a better weapon out." No, we have gotten our military products from our good contractors, from our good Navy laboratories. Sure, we've gotten other things such as ADP, and software, and the country has gone great on communications and computers, real-time displays, et cetera. We have adapted all these management tools. But you do not need these great tools of management if good fundamental concepts and hardware systems designs are not there to manage.

Mr. MAHON. Well, Admiral, you talked about the heroic and successful efforts of our country in war. We all take pride in this. Victory with minimum loss of life, not economy, was the proper objective. Yet, therein to some extent lies part of our problem because these millions of fellows who were in this war, are now and have been for many years citizens in civilian life vie with each other to tell tales of examples of fantastic waste. That is one of the problems you have. They say "Oh, I was there. It was horrible." Don't you see? They say "waste, waste, waste, bad management." Of course, we were successful, but these people are not now upholding the military management. Do you get my point?

Admiral CONNOLLY. Yes, sir; and I hear that, too. But I also hear an awful lot of men in public life and in private life who have gone on and done well, coming and saying how well we do things, how much confidence they have in us. Many men have come up to me this last year to say "Admiral, you and the Navy stay steady. Hold your steady ground. Do not lose your confidence. You are one of the stable forces in our country. You are one of the strong organizations whose patriotism, whose dedication, and whose competence are needed." Now, we are not Fancy Dans. We do not outslick people. We are not our own best witnesses. We do not have public relations agents. We take our licking, and we take a pretty bad licking over things like *Pueblo*. A lot of these things are hard to take. But what happens? We have the finest crop of young officers I think our country could ever turn to, proven in the Vietnam war.

Mr. MAHON. But if they are going to be low rated by the public they are not going to stay with the Navy and with the other military services.

Admiral CONNOLLY. There are not very many of us that are weak enough to give in to that. We think the public is going to turn around. But you cannot invoke arms like we have done in Vietnam and lose more than 34,000 or 35,000 young men and have people in this country like it.

I do not like it.

As a final point, Mr. Chairman, although you essentially dismissed the Vietnam war from discussion after acknowledging it as a cause of the current dissatisfaction with the military, I would caution about underestimating it. I have been in the Navy for 40 years, 36 as a commissioned officer. I have seen failures such as the large dirigibles, the Akron and Macon, taken in stride as an expected price of progress into new systems. Now it seems that any item that doesn't succeed brilliantly must be charged to the ignorance or malfeasance of the military. I submit that much of this attitude of intolerance and lack of support is a direct result of the Vietnam war. The lack of success in the war is charged directly to the military even though the war has been managed, directed, and controlled by persons out of uniform. I believe it is a matter of record that the military leaders wanted to discard the gradual approach and pursue a more vigorous course. Now I'm not here today to render a judgment as to how differently the course of the war would have been had the advice of the military been followed, although I have my opinion. My point here is a restatement of my earlier point about responsibility and authority; the military are held responsible for the disappointing results in Vietnam even though they did not have the authority to run the war as they saw best. These disappointments over Vietnam have been translated into a general drop in confidence in the military by the Congress and the public.

Mr. MAHON. There is a representative here from the Defense Department, Mr. Douglas Sinclair. Mr. Sinclair, I wish you would take this exchange and give it to the Secretary of Defense and say that when he and some of the other people from the services are before us that we may discuss these kinds of issues. I would like to have an objective presentation of the good side and the bad side of this whole picture. The publicity principally goes to the bad side, as we all know.

I see other people with stars on their shoulders here. Would you make any further comment, any of you? I would be glad to hear it I think the committee would.

Admiral Walker, you are sitting there beside Admiral Connolly.

Admiral WALKER. Mr. Chairman, I have two or three points I would like to make. I think they are principally in emphasis of the remarks that Admiral Connolly made. First, I would say that, having personally been in the Manhattan District, the atom bomb program, during World War II, and having been personally in the Polaris program at the beginning with Admiral Raborn, I certainly agree with Admiral Connolly on the fact that in programs where you give authority and responsibility to an individual or one action officer——

Mr. MAHON. I would like to interrupt at this point to point out that General Schriever, heading up the ICBM program in the Air Force, and Admiral Raborn with the Polaris program in the Navy, are exceptions and not the rule. One of the problems has been that about the time something goes sour they transfer the officer away from his job and he is not held responsible for the overrun that takes place or the flop that results from the failure of his program.

So the Polaris is not typical at all, as I see it. Now proceed.

Admiral WALKER. No, sir; I do not speak of it as a typical program but one which has been successful because of the unique organization and emphasis.

Mr. MAHON. Yes, I agree this is right.

Admiral WALKER. Yes, sir.

Another point that I would make is, as Admiral Connolly mentioned, we have introduced more systems recently than has been the case in the past, but I would add to that the fact that we have fewer in process than I think we should. This is, of course, the result of financial restrictions that are placed on us, but there are other countries which may have as many as four or five times the number of aircraft programs under development as we do and we are therefore at somewhat of a disadvantage in our development programs.

The idea that you mentioned, sir, about the fact that was is wasteful, I feel that in combat operations the principal requirement is that we be prepared to react. This will promote equipment and support provisions which would certainly not bring the concurrence of the economists or the efficiency experts, but it is a fact of life that I think has to be recognized, that in wartime there is no way to be as efficient as one would like to be.

Mr. MAHON. Of course, the winning of the war and the saving of human lives is the chief objective, certainly. You speak of the marines. We have heard some of the details this week of the loss of the DaNang ammunition depot. We do not even know, I think, why it blew up, whether it was through enemy action or what, and yet we lost more than $50 million worth of ammunition in one fell swoop.

I mentioned this to some of my friends who do not work in defense and they thought this was incredible. What about that, General?

General MCCUTCHEON. Well, I think the fire that eventually got into that ammunition dump outside DaNang started in a civilian trash burning place some distance away and it got out of hand, and once it got into the ammo dump it became a pretty big thing.

Mr MAHON. It looks like that is a lot of ammunition to be stored in one place, to where if a little of it went up, all of it would go up. That is what the average guy would say.

General MCCUTCHEON. I am, frankly, surprised it has not happened long before this, for other reasons. I was in Vietnam the first year of the war. The one thing that I worried about more than anything else was when somebody might shoot a round into the ammo dump on DaNang Air Base. With all of the rockets that have been fired into DaNang and various other bases around there, they have missed the ammo dumps, by and large. Why, I do not know, because they are pretty good-sized targets. The military, on the other hand, have spread out the dumps and the ammo as much as they can, but of course the more you spread them out the harder the job is to defend them from infiltration attacks, and so forth. So, like most problems, you have to compromise at some point.

Mr. MAHON. Do you have any comment on the general philosophical discussion which we have been having here?

General MCCUTCHEON. Well, there are two points that I would like to add. One bears on Admiral Connolly's observation of the delegation of authority and responsibility. It seems that it is just part of our way of life and times nowadays because of the speedup in communications and news media reporting and everything, that there has been a tendency for decisionmaking to be forced uphill rather than being decentralized and placed at the level that really

has all the facts to make the decision. Though some decisions go further on up, partial decisions are made without having all the facts, and so forth.

The second point is that the military, per se, is not a freewheeling establishment, as you know. There are civilian constraints placed on it. I don't know of any organization that has more constraints, rules, regulations, and other restrictions on it. It is pretty hard for an officer these days running an outfit to really get into deep trouble because he is inspected so many times by auditors, inspectors, and others. The GAO is constantly going around, our own inspectors are going around, and various special investigative bodies. Sometimes these things grow and grow like cancer, and several years do go by before a problem is really recognized as being perhaps larger than they thought, but there are many people involved in such a mistake, not just a few.

Mr. MAHON. Admiral Gaddis?

Admiral GADDIS. Mr. Chairman, I would like to reflect a little bit on the background to what I have heard my cohorts speak of here, sir. Essentially, my comment is this. It is an inherent requirement in the military to so plan and so develop your forces as to be able to win any conflict to which you are committed. That is our task. It therefore is absolutely essential that the weapons that we develop be designed to be superior to what we expect to encounter in the time frame that we are preparing for. This inherently forces us to press the state of the art in weapons development.

Mr. MAHON. Right. You have presented an excellent point.

Admiral GADDIS. Now, in the essentially technological revolution that has taken place since World War II—it was kicked off by all the developments that resulted therefrom. I am talking about radar, about jets, about ADP, if you will, computer control of weapons systems, all are quite sophisticated. They have forced us, in pressing the state of the art, utilizing these tools which we must use if we are to be successful in weapons systems, to be on the verge of success or failure in many, many programs—not all. The farmer would say sometimes you win a few and sometimes you lose a few. I would support Admiral Connolly, when you win it is accepted and when you lose you are criticized.

I would also add that habitually and by policy we do not talk back. We go back and correct it if we can, and I feel we have in the three T's, for instance; or we take our knocks and go on to the next one as we did with the P6M.

This is complicated by these other factors of control. The more dollars that are committed to one weapon system the more control everyone in the chain of command wants to have over it. This is human and necessary. But sometimes it is also overly restrictive. I saw the result of a presentation yesterday—you were talking about shipbuilding—that had the estimates developed by the pricing experts for each one of the ships involved in the cost overrun problem in SCN been accepted, we would not have a cost overrun today. This is the slicing a bit here and slicing a bit there and forcing you to do with 10 people what you know it takes 100 people to do that leads to program shortfalls—and we recognize it.

Mr. MAHON. Well, we have well over—I do not have the figure—well over a million civilians in the Defense Department.

Admiral GADDIS. 1,215,000.

Mr. MAHON. We have about 3,500,000 in uniform. It looks like it is not a matter of not having enough people; is it?

Admiral GADDIS. I am talking about the people qualified to do a specific job. I am talking about such things as, in Admiral Walker's business, who and how many are assigned to supervise the development of a complicated avionics system that cost $5 million a copy for an airplane that is worth $3 million or $4 million without it. He has to have good, professionally qualified people in these specialized areas. They are hard to come by.

Mr. MAHON. I asked Mr. Andrews to run the committee again today, a job which he always does well. He is very much interested and has worked long and faithfully in the vineyard. I did feel that with this group here, headed up by Admiral Connolly who is always quite forthright and articulate, that it would be a good time to mention this kind of thing which troubles me and so many others so much. It is a source of great distress to those of us who work in this field.

Mr. Andrews, that is all I have to say other than to say that at this point in the record I would be glad to have any additional views in connection with this problem that Defense officials might wish to present. I do not know if anybody else has any questions along this general philosophical topic but if they do they may proceed.

VIETNAM WAR POLICY

Mr. ANDREWS. I have enjoyed this colloquy between you and the Navy and the Marine witnesses. I agree that the military is in a state of disrepute today because of the waste pointed up in the press, committed by the military. Every man has his own idea about what is responsible for the criticism of the Defense Department. My thought is this: That the reason we are having to focus on what we have been talking about is that we are spending a tremendous amount of money to carry on a war that we were not permitted to win.

Admiral CONNOLLY. Your words, Mr. Chairman.

Mr. ANDREWS. Now, I sat here with a thrill when you described our accomplishments in World War II, and I think it was wonderful. We at that time were fighting great armies, great countries that had air power, sea power, and manpower, and yet we won in 4 years. Here for the last 9 years we have been fighting a little country that does not have a productive capability, no Navy, little or no Air Force, and we are spending about $30 billion a year and have not won in those 9 years. And, according to the statement made by the Secretary of State within the last 2 months before a Senate committee, we have no objective of winning a military victory in South Vietnam. Now, if that isn't enough to make the American people rise up in holy wrath against those responsible for that condition, I don't know my A, B, C's. Do you realize that this war is the longest in the history of this country?

Admiral CONNOLLY. Yes, sir.

Mr. ANDREWS. I made a speech on the floor of the House last June on the anniversary of the commencement of the war and reviewed the fact that this war at that time was already longer than the Revo-

lutionary War, the War Between the States, World War I, World War II, and the Korean war. I stated that, in my opinion, had George Washington and his successors run the Revolutionary War like this one is being run we would still be under British command. It burns me up. The only analogy that I can draw in my mind on the present conditions is that of an expert football player on the field. He can do everything right but he knows full well that the referee is not going to let him cross the goal line. I do not care how many sophisticated weapons you put down in South Vietnam, if the policy of this Government does not change you will be there 40 years from now and you still will not win. That is what, as Admiral Gaddis said, you are supposed to do—to win a war. That is the reason the American people are getting burned up.

Now, Mr. Lipscomb, you get it off your chest.

Mr. LIPSCOMB. I think my views are well known.

Mr. ANDREWS. State them.

Mr. LIPSCOMB. Mr. Chairman, I think this kind of colloquy with people of the knowledge, dedication and experience of Admiral Connolly and the others on both sides of the table who have talked on this is extremely helpful. In the period of time I have been privileged to serve in Congress I have never been so disturbed and concerned about the situation that faces the security and welfare of our country today—the unjust, unreasonable, and perhaps unthoughtful attacks on the policies of our Government and on the military in particular, and the dedicated job that the military have done.

It is my intent in the months to come to try to help the chairman and others to find meaningful answers. I think that it is important that we put on the record what our feelings are and also what the facts are, because the facts will disprove, in my opinion, many of the allegations being made today. Some of the things that are talked about are of course significant and important, but they are not the whole story.

I am also greatly concerned with the attack upon the Congress itself and with the allegation—I take it as an allegation—that this committee, which I consider a great committee headed by George Mahon, has not done the job necessary to maintain an adequate and efficient military force posture with which to defend our country. At the same time, I think there are some things that have been done by and in the Department of Defense in recent years that have been very detrimental to the operations of our Military Establishment, things that we have discussed or alluded to today. So if we can only be a part of correcting the record, setting the record straight, and also instrumental in correcting some of the things that we know can be corrected in these next few months, I think we will be doing a required job for the country.

Just one more point. The statement was made that the military develops their systems and goals to conform with the historical policies in our country, that is, to prepare ourselves to win any conflict. And then to go out and win. I think that in the military manuals there are instructions to not only senior officers but to new officers and to all military personnel that they serve the country primarily to be able to defeat the enemy—to win the conflict and bring about peace.

Now in recent years, the past 8 years particularly in the Vietnam conflict, this policy has not been permitted to be carried out because it has been said we are in a situation that is a "different" kind of a war, and some have designated it as a political war or something else, but the point is the military has not been able to perform in a way that conforms with our country's history and tradition.

I want to concur with the chairman and Mr. Andrews that we are concerned and that we must do something to straighten things out.

Admiral CONNOLLY. I would like to, if I may, just try to end it on a note that I use every day. I ask myself: "What are you doing? Why are you doing it? Is it worth doing? Are you doing well at it? Should it be done?"

We can take a pretty sanguine view of things because, as has been pointed out, we have deterred the big war for over 25 years. We have not had that nuclear holocaust; nuclear weapons have not been used. American boys have fought and dug and crawled and taken on people whose way of fighting, and way of life, are so foreign to them; they have given up sitting in front of the TV or driving down to the corner and having a Coke with their girl and have gone over there and fought bravely and well. There is no lack of guts in our young men. We have an officer corps combat trained and proven, capable of providing leadership for many years. Also we have taken counsel of all the changes that have taken place and have tried to manage our affairs better.

In OP-05 I probably have been hard-headed running things through my agent here Rear Adm. Tom Walker and before him, through Bob Townsend, on a direct wire with rather tight reins. I try hard to keep myself informed on all changes in our important programs and am prepared to fight any attempts to cut back money or forces. I think this is the right way to do. In meetings Mr. Packard frequently says: "I want to see your program manager." He then will say to him: "Have you got the authority to do what you have to do?" That is what he said to Capt. Mike Ames, my F-14 program manager, when he got the F-14 briefing. Mike does have the authority to do what he has to do to manage his program properly and he is going to continue to have that authority as long as he performs and I can protect him. I have the impression that Dr. Foster and his D.D.R. & E. people are not going to interfere with the F-14 program. But the systems analysis people in OSD short-sheet us all the time; that is, they constantly interfere by trying to cut back on our programs.

We spend three quarters of our time—and I hate to take the committee's time to listen to this—but we spend about three quarters of our time trying to fight this off. We have got to decide in this country what objectives we have in the world, what commitments we are going to stand behind and how much military strength we need and will support. We in the military believe that we know a lot better than systems analyses what forces and equipments are required to meet commitments. We can cut forces if we cut commitments. As Admiral Gaddis says, as a nation, we can cut forces only if we cut commitments. As Admiral Gaddis says, as long as the United States has worldwide commitments and we might have to fight, the country expects us to win, as we did in World War II. So we keep coming to you gentlemen saying: "This is what we require to meet our country's commitments."

Now, one factor that has made things look a little worse than they really are is this—throughout this whole period of Vietnam as we introduced our weapons and aircraft or radars and electronic warfare gear, in many cases we found that they had shortcomings or that the enemy had made advances in his weapons which required correction or modification to our systems to work better in actual combat use. Had we taken these new weapons to a strictly peacetime usage we would not have wanted to make production changes so quickly. We wouldn't be here saying: "We got to change this, or modify that." But neither would we have provided important improvements in combat capabilities to our fighting forces. This is why we have been making so many requests for modification money, why we have come in for more thrust for our engines, better radar, a better computer or more accurate weapons. I have a chart here showing you improved capabilities in the A7E. It shows that we really are getting fine results from our improvement efforts. We believe we may now have the day visual attack system we have been shooting for; that is, great visual bombing accuracy. It does not come easily. Anyone who thinks that you can sit down and write out weapons systems specifications and post a check with them and deliver them to some manufacturer and say: "Now give me that," and that it is going to come back to you and you are going to put it in your airplane and go out and fire it and it will meet the specifications is badly deluded. It takes a lot of hard work.

Mr. MAHON. Mr. Lipscomb, on that particular point, may I interrupt?

Mr. LIPSCOMB. Yes, Mr. Chairman.

COMPLIANCE WITH DECISIONS OF SUPERIORS

Mr. MAHON. You talk about the people, principally in the Pentagon, the Secretary of Defense and the Secretary of the Navy, as well as the Bureau of the Budget, who shave the funds you request. Well, after a decision has been made that you have been provided only a certain amount of funds, do you pay very much attention to it or do you say, "Well, we set out to do so-and-so and we are going to do it and we are not going to be too much concerned that we do not have enough funds; we are going to incur overruns because we are not going to be controlled by those who seek to reduce our program"?

In other words, do you cut the cloth, or the program, to fit the funds that have been made available to you, or do you just go on your way with your original objective, despite the cuts that have been made, knowing that you do not have the necessary funds, knowing that you will incur big overruns, and so forth?

Admiral CONNOLLY. Overruns occur for two reasons, sir. One of them is when the contractor agrees to do the job for a given price and later he comes in with an overrun, saying he cannot do it for the price he thought he could, that he is way over, and he is losing money. You are acquainted with these but they are not the majority. The other kind of an overrun, occurs when we get less money at the time the budget is finalized than is required to buy the item authorized. For example, if the budget decision says to buy 100 F–4's and it allows only so much money, an amount reduced so that we know we

are not going to be able to get 100 F–4's for that amount of money, so we take fewer airplanes in that particular period of time.

Mr. ANDREWS. You do not sacrifice quality?

Admiral CONNOLLY. No, sir.

Go ahead, Admiral.

Admiral WALKER. Mr. Chairman, if I could just add a word or two of specifics in connection with overruns. We accept a program and we accept the amount of money that is assigned to it. Then it becomes the responsibility of the project manager. He recognizes this as his sole responsibility, to prosecute the program within the funds that are allowed. Now, in order to do that we have frequent program reviews which involve, in the case of the Naval Air Systems Command, myself and the project manager for all of the projects that we have. Then we have periodic unobligated balance reviews to determine again what control we have. Then we have decommitment reviews in which we will decommit money in order that it will not be used for improper purposes. We have weekly reviews in which we determine the progress of the program and if we see a potential for an overrun we submit a report through channels to the Chief of Naval Materiel. Then we have weekly contract closeout reviews. We will close out contracts so they cannot be used to continue spending money. Then finally, we have our internal Navy audits in selected management areas. So I think that the thrust of my response is simply to say that we recognize monetary limitations and have mechanisms by which we can control all of our programs.

Mr. MAHON. Excuse me, Mr. Lipscomb.

Mr. LIPSCOMB. Mr. Chairman, I was finished.

Mr. MINSHALL. I sat here and listened to the discussion with great interest, Admiral and Mr. Chairman. There is no doubt in my mind nor in the minds of all of us in this room that there is definitely an organized attempt to destroy the credibility, at least the influence, of the military in this country under the misguided impression that to do so will serve the cause of peace.

No one is for peace any more than all of us in this room. We would like to see the war in Vietnam over tomorrow; I am sure of that.

Admiral CONNOLLY. Yes, sir.

Mr. MINSHALL. Now, I have been in the Congress for 15 years. It has been my pleasure to serve on this subcommittee for 11 of those years and I know of no committee in the Congress that performs its duties more diligently, more faithfully, and with more care than does the Defense Appropriations Subcommittee of the House of Representatives.

Admiral CONNOLLY. We know that.

Mr. MINSHALL. We spend more time, more hours in careful testimony with the Navy, the Army, Air Force, and Marines than any other committee, combined committees on the entire Hill. I could not help hearing Mr. Andrews' remarks about the not winning of the war. It refreshed my memory about some testimony that we have had here in this very room.

Yes, George, we could win this war tomorrow by force, but I think—and I am sure we have passed the point of no return because the American public opinion would not stand for it.

Mr. ANDREWS. Would not stand for what?

Mr. MINSHALL. The use of force over there to win this war.
Mr. ANDREWS. I think it is time for us to get out.
Mr. MINSHALL. It might be just that.
Mr. ANDREWS. That is my personal opinion.
Mr. MINSHALL. We sat right here and right where Admiral Connolly is sitting right now there was a fellow by the name of McNamara; it was about 3 or 4 years ago. I said, Mr. McNamara, that I am not worried about the morale of our military, I am worried about the morale in this country. Now, that is just what has come to pass. "Mr. McNamara," I said, "the whole thing boils down to this: We have not won that war in Vietnam because you are not taking the advice of our military."

Well, the explosion that happened right after that is off the record, but I am sure Mr. Mahon remembers it. But those are my feelings. As the father of three teenage boys, no one is more concerned with the cause of peace than am I. There has been a Minshall in every war this country has ever fought. I served 63 months in World War II after going in for a year's training under the then President Roosevelt. I am proud of my service. I am proud of my family's service. If my sons have to go they will go gladly. But I know that President Nixon and the guy that sat right in this seat where I sit now, Defense Secretary Melvin Laird, they have uppermost in their minds one thing: getting this war over with in Vietnam as quickly as they possibly can by some honorable means. I am sure that that will come to pass.

Thank you, Mr. Chairman.
Mr. ANDREWS. Anybody else?
Admiral CONNOLLY. Great.

EA–6B AIRCRAFT

Mr. ANDREWS. Now we will take up your program for the EA–6B aircraft. In fiscal year 1968 the Navy was funded ——— EA–6B electronic warfare aircraft. In fiscal year 1969, however, OSD permitted the Navy to request only advance procurement funds for a 1970 fiscal year buy because of problems with the avionics and electronics package for this aircraft. Have these problems been completely solved, Admiral Connolly?

Admiral CONNOLLY. Yes, sir. The only problem earlier in development was to get all the ——— that we wanted. We now have it. We have achieved more than ———.

Mr. ANDREWS. Why are you now requesting $180.6 million for 12 more of these aircraft when they have not been approved for service use?

Admiral CONNOLLY. We asked for ——— initially and cut it back to 12 because these are production airplanes that we believe are ready to go and we need them badly in the fleet to replace the airplanes that I talked about yesterday, the EF–10 and EA–1F and EKA–3's. We are not concerned that they will not pass their Board of Inspection survey test; in fact, that is what I tried to say in my other answer.

Mr. ANDREWS. What is the status of your testing program?

Admiral CONNOLLY. We have met all the tests. Dr. Foster is especially pleased with this program.

The testing and development program is proceeding on schedule, with all financial and technical milestones continuing to be met. Two R. & D. and one preproduction airplane are in the flight test phase. The first Navy preliminary evaluation has been completed with no major discrepancies. D.D.R. & E, the Navy and Grumman established certain test objectives that were to be met before production approval would be given. These objectives included the demonstration and flight of the hardware. They were met or bettered by March of 1969. We have run flight tests against ———. The results have been excellent. The tests fully support the commitment of the EA–6B to production.

Mr. ANDREWS. How far, if any, has this program slipped to date?

Admiral CONNOLLY. I would not like to say that it slipped at all because I do not think I could justify a statement that it slipped. We had the ——— EA–6B's in last year's budget, 1969. They were removed in December of 1968 by the Secretary of Defense. So we let a year go by in which we did not build those ———, but that we continued with our R. & D. effort and I think we are going to be fine with these airplanes. So I do not think we really have slipped.

Mr. ANDREWS. Have you experienced any other problems with this aircraft?

Admiral CONNOLLY. No problems other than the one I mentioned.

Mr. ANDREWS. In other words, it has done all you expected?

Admiral CONNOLLY. Yes, sir.

Mr. ANDREWS. What is the production and deployment schedule?

Admiral WALKER. Mr. Chairman, in connection with the production schedule for the fiscal 1970 buy we have 12 airplanes; these will be delivered at the rate of ——— per month.

Mr. ANDREWS. Beginning when?

Admiral WALKER. In ———.

In the year before that, we do not deliver any EA–6B's. There are only ——— EA–6B's in the program prior to the fiscal 1970 buy, and we receive those during calendar year 1969 and 1970.

Mr. ANDREWS. Have you received any so far?

Admiral WALKER. We actually deliver our first EA–6B in June of this year.

Mr. ANDREWS. Do you plan to deploy that in South Vietnam?

Admiral CONNOLLY. We are going to deploy ———. The first ——— we are going to deploy in ———. We are flying these ——— R. & D. airplanes that we got in 1968.

I do not want to take the time of the committee, but I do have slides which show how the ——— works.

Mr. ANDREWS. We would like to see them, Admiral.

Admiral CONNOLLY. This is an EA–6B flying over Cape Cod, and I will show you before and after.

(Slide.) All those spots in the upper left side are aircraft, mainly commercial aircraft, flying in the Boston, New York, Hartford, Providence area. This is the scope of a radar sight on the ground at Cape Cod. Those white spots near the strobe are clouds, weather. You can see that radar site is looking at a lot of aircraft.

The EA–6B will come in and ———. This is one example.

Mr. ANDREWS. You are requesting $4.2 million in advance procurement funds. How many do you propose to buy in fiscal year 1971?

Admiral WALKER. ——— EA–6B in fiscal 1971, sir.

KA–6D AERIAL TANKER

Mr. ANDREWS. Now we will discuss the KA–6D aerial tanker. You are requesting $57.6 million for the first production buy of 20 KA–6D intruder aerial tankers. How many aerial tankers does the Navy have in its aircraft fleet now?

Admiral CONNOLLY. I can give you the precise numbers. I would like to give you that for the record. We do not have one single tanker that was built as a tactical tanker. This will be the first one that we have built from the ground up as a tactical tanker.

(The information requested is classified and was supplied to the committee.)

Mr. ANDREWS. What brought about this requirement for KA–6D tankers? You touched on that briefly.

Admiral CONNOLLY. We have known that we needed tankers for a great many years. It has really been emphasized in the Vietnam war. We need them when an aircraft is struck in the target area and has leaking tanks. There is a tanker waiting for it as it comes off the target to get it back to the ship.

If the fighters get in a scrap and want to stay longer in order to finish the fight, then they know they will have a tanker waiting for them as they come out of the combat area.

Then any straggler that for any reason is short of fuel, the tanker is there.

It also extends the distance for them, which is very valuable to us.

Mr. ANDREWS. Do we have an insufficient number of tankers at this time to accomplish the mission that you just described, Admiral?

Admiral CONNOLLY. We have these tankers which, as I told you, are adapted from other purposes. We have a KA–3 and an EKA–3. The EKA–3 doubles in brass as an electronic warfare plane and tanker. These planes are fast approaching the end of their useful service lives. Their accident rate in the fleet is higher than we would like, caused by material failures. They should have been replaced already.

Previous requests of the Navy for a follow-on tanker have not been approved. We have been approved for the 20 this year.

Mr. ANDREWS. How many current tankers will these 20 aircraft replace?

Admiral CONNOLLY. On a 1-for-1 basis. We will drop 20 of the old tankers with these 20.

Mr. ANDREWS. What will your total tanker fleet be with the procurement of these 20 plus the ——— other A–6A's you will modify as tankers?

I believe you said you would have to supply that for the record.

Admiral CONNOLLY. Yes, sir.

(The information requested is classified and was supplied to the committee.)

Mr. ANDREWS. How many do you propose to buy in fiscal year 1971 with the $4.8 million advance procurement funding request in fiscal year 1970?

Admiral CONNOLLY. ———, sir.

A–7E CORSAIR II AIRCRAFT

Mr. ANDREWS. Now we will discuss the A–7E Corsair II aircraft.

In the past 2 fiscal years, the Navy was funded the procurement of a total of ——— A–7E Corsair II aircraft at a total cost of $808 million. In fiscal year 1970 you are requesting $99.6 million for the procurement of 27 additional A–7E aircraft to replace older light attack aircraft. What aircraft do you plan to replace with the A–7E?

Admiral CONNOLLY. We are replacing the A–4's with the A–7's, the A–7E this year.

Mr. ANDREWS. They will be replaced plane for plane?

Admiral CONNOLLY. Yes, sir, plane for plane.

Mr. ANDREWS. Last year the committee was informed that the A–7E would replace the A–4 Skyhawk aircraft. Why are you requesting $68.6 million in fiscal year 1970 for the procurement of ——— more A–4 aircraft if they are to be replaced by A–7's?

Admiral CONNOLLY. The request for A–4M's this year is for the Marine Corps, who are not getting the A–7E at this time. They may come into the program later, but there are no plans for the Marine Corps to come into the A–7E program. These A–4's are strictly for the Marine Corps.

Mr. ANDREWS. When was the last procurement of A–4 aircraft?

Admiral CONNOLLY. 1967, sir.

Mr. ANDREWS. Have there been any slippages in the A–7E program to cause you to reinstitute your buy of A–4's?

I think you answered that by saying the new A–4's were for the Marines.

Admiral CONNOLLY. You asked me if there were any slippages in the A–7E's, did you not?

Mr. ANDREWS. Yes.

Admiral CONNOLLY. Deliveries from the contractor have not built up as rapidly as is required in the contract schedule. The contractor has indicated that he is having a learning curve problem which is being corrected, but there are as yet no serious impacts on fleet introduction, training or deployment. We think he will catch up.

Mr. ANDREWS. Have any problems developed with respect to the A–7E aircraft, its avionics, or its weapons delivery system?

Admiral CONNOLLY. No, sir, there have been no problems other than small problems connected with the development of the new system.

I want to be quite candid here, though. The contractor has had some trouble in ——— and getting the workers to do it correctly. He has had some quality control or learning curve problems. That is the delay that I referred to earlier. But it is not serious enough to worry about. We are on top of it and we are going to solve it.

Mr. ANDREWS. How many A–7E aircraft have been deployed to Southeast Asia?

Admiral CONNOLLY. None so far, they are just starting to be delivered about now.

Mr. ANDREWS. Are you satisfied with the performance down there with the A–7E?

Admiral CONNOLLY. We have not had any A–7E's deployed yet. The A's and B's have been deployed. Because they did not ——— higher thrust engine. We have a superior bombing system, of which we are extremely proud, and if the committee would like to take a quick look, I will show them why we are proud of the A–7E.

Mr. ANDREWS. All right.

Admiral CONNOLLY. (Slide.) These are the results of tests. The Air Force and Navy are both getting these. The Air Force version is the D, and ours is the E.

What is being shown here, the weapons are released at ———. We have never had anything like this.

We have our fingers crossed. We have a lot of tests like this, not just a few. It is the most impressive thing I have seen in all of my time in aviation.

Mr. ANDREWS. According to that chart, the farthest from the target is ——— feet, the nearest was ——— feet.

Admiral CONNOLLY. Right.

Mr. ANDREWS. From a plane flying at ——— knots and at ——— feet altitude. You said there never has been anything like it?

Admiral CONNOLLY. That is true.

Mr. ANDREWS. To what do you attribute that? The new avionics system?

Admiral CONNOLLY. This is an avionics success story. We have a ———.

This variance in miss distance is more an expression of the aerodynamic characteristics of the bomb than it is of the computer because, of course, there are going to be some deviations in the aerodynamic characteristics of the bomb.

Mr. ANDREWS. Does this system have an all-weather capability?

Admiral CONNOLLY. ———.

Mr. ANDREWS. They have to ———.

Admiral CONNOLLY. The pilot has to ———. But most of our work is done in ———.

We also, of course, have the A–6 as our night and all-weather plane.

Mr. ANDREWS. When was the letter contract for the original buy of A–7 aircraft awarded, and when was the letter contract definitized?

Admiral CONNOLLY. I am sorry, we do not have that; however, I will be happy to provide it for the record.

Mr. ANDREWS. Supply it for the record.

(The information follows:)

The original contract for the development and procurement of the A–7 was a firm fixed price contract and was awarded March 19, 1964. This was not a letter contract.

Mr. ANDREWS. How many more do you plan to buy in fiscal year 1971 with the $4.4 million in advance procurement funds being requested in fiscal year 1970?

Admiral CONNOLLY. ———, sir.

Mr. ANDREWS. Why are you proposing to buy more A–7E's in fiscal 1970, in addition to the ——— already funded, when it has not been approved for service use yet?

Admiral CONNOLLY. Sir, we are confident that we will pass service use inspection. This is not enough of a change for there to be any doubt about it. The avionics system that I have just explained is coming along nicely.

Mr. ANDREWS. What is it about the A–7E that causes you to still carry it in the "B" category?

Admiral CONNOLLY. It has not finished Board of Inspection survey trials. It goes into Board of Inspection survey trials this month. It is in the "B" category until it finishes the trials.

Mr. ANDREWS. You think it will work out well?

Admiral CONNOLLY. We have every confidence.

Mr. LIPSCOMB. Admiral, could you see that the committee receives the report on the results of the survey trials?

Admiral CONNOLLY. Yes, sir, the results of the trial.

Mr. LIPSCOMB. This could prove quite a serious problem, and it bears a lot on our procurement practices if we continue buying great quantities or appropriating for great quantities of items that are in the "B" classification which means they are not ready and approved for service use. This could well be one of the things that causes trouble.

Admiral CONNOLLY. I recognize that.

Mr. MINSHALL. Admiral, could you tell us in layman's language just how this bombing system that you were describing a minute ago works? What is the basis of it? How does it work? Can you do that in layman's language?

Admiral CONNOLLY. It will be layman's language for me, because I am not a detailed expert on it.

I do know as I was saying earlier, that the pilot comes along and is to hit a bridge. He sees the bridge. He is at ———.

Mr. MINSHALL. If he is off target, if he is off course, I should say, will the ———.

Admiral CONNOLLY. ———.

Captain Gallagher is here. This is the A–7E project manager, Mr. Minshall.

Captain GALLAGHER. If he is off target, the pilot, first acquires the target through his ———.

Mr. MINSHALL. What figures the ——— into it?

Captain GALLAGHER. (Off the record.)

Mr. MINSHALL. Does that take into consideration the altitude of the aircraft?

Captain GALLAGHER. Yes, sir.

Mr. MINSHALL. I am talking about a variance of 180°.

Captain GALLAGHER. The system will ———.

Admiral CONNOLLY. Which it did not know about.

Mr. MINSHALL. Thank you.

Mr. ANDREWS. How is the bomb released?

Captain GALLAGHER. ——— sir.

Mr. ANDREWS. The pilot ———.

Captain GALLAGHER. ———.

Admiral GADDIS. And on the ———.

Captain GALLAGHER. With the ———.

Another thing in this system is a ———.

Admiral CONNOLLY. To get an appreciation of what this means, you realize in an A–4 at ——— you can expect ——— when you start cutting the ———. It is really a wonderful improvement.

If we realize this in active service, we are a leg up on bombing that we have never had.

Mr. ANDREWS. What is your requirement and justification for the Navy to have and maintain four different attack aircraft—the A–4, the A–6, the A–7, and the A–3—the first three of which you plan to procure in fiscal year 1970?

Admiral CONNOLLY. Of the types you mentioned, the A–7 is, as I have said before, replacing the A–4. The A–3 is old and is no longer

used as an attack aircraft. We are using it in tanker roles and in electronic warfare, but not in attach. We have only a few A–3's left. The A–6's are all-weather attack, whereas the smaller and not as expensive A–7 is to be used as the bread-and-butter, visual, day attack.

Mr. ANDREWS. So, in a short time you will have only the A–7 and A–6?

Admiral CONNOLLY. That is right.

A–7 AIRCRAFT ENGINE PROGRAMS

Mr. ANDREWS. This past year the committee had its investigative staff review the tactical aircraft engine programs of the military departments, and I would like to discuss certain matters brought to light during the course of that study.

Admiral Connolly, 2 years ago you testified the Navy was evaluating the Air Force TF–41 engine for the A–7 aircraft to determine whether it would be better for your A–7 aircraft. Last year you testified the Navy evaluation had not been completed.

SELECTION OF TF–41 ENGINE

When was this evaluation completed, and what was the result?

Admiral CONNOLLY. The decision to go to the TF–41 in the A–7E was in fact made for us by the Secretary of Defense. We had studied an uprated version of the TF–30, called the TF–30–P–18. This engine would have had certain commonality with the TF–30–P–8 which was desirable.

Going to the TF–41 caused us to change the tail section, but it gave us commonality with the Air Force which was desirable. So, when the decision was rendered for the TF–41, it was certainly acceptable to us.

So far the TF–41 is performing very well, and we are very happy about it. We hope that it continues to perform well.

Mr. ANDREWS. Why did it take over 2 years to complete this evaluation when the Navy had known since October 1966 that the TF–30–P–8 engine did not provide the needed thrust for the A–7 aircraft?

Admiral CONNOLLY. The development of the Navy version of the TF–41 was based on a minor modification of the engine being developed by Allison for the Air Force A–7D. The Air Force engine was not scheduled to qualify until October 1968. Since the Navy program was dependent on resources used and the progress made in the Air Force program, Allison could not start on the development and qualification of the Navy version before February of 1968.

The final decision to release funds to re-engine the A–7 was made by SecNav in April 1968, and the Navy entered into contract with Allison in July 1968.

It was delayed only 2½ months.

Mr. ANDREWS. Why was the Propulsion Division of the Naval Air Systems Command not consulted in the original selection of the TF–30 engine for the A–7 aircraft?

Admiral WALKER. It is my understanding that the Propulsion Division was consulted.

I would like to ask Captain Gallagher, the project manager of the A–7, he is very much interested in the TF–41 engine—to confirm this.

Mr. ANDREWS, Captain, will you explain it for us?

Captain GALLAGHER. I do not have the answer to that question.

Mr. ANDREWS. Put something in the record about it.

Admiral WALKER. It is my opinion, Mr. Chairman, that we were consulted.

Mr. ANDREWS. You may supply for the record the true facts.

(The information follows:)

The Propulsion Division of the Naval Air Systems Command was consulted concerning the practicability of removing the afterburner from the TF30–P–1 (F–111) engine in order to provide a non-afterburning turbofan engine for use in the A–7 aircraft. However the Propulsion Division was not involved in the decision to limit the engine consideration to one engine, the TF30–P–6, in the A–7 airplane design competition.

Mr. ANDREWS. What factors dictate when this division will be consulted and when it will not be consulted in selecting engines for tactical-type aircraft?

Admiral CONNOLLY. I think the answer to that is that they will always be consulted. I do not think there is any doubt about it from now on. If they were not consulted this time, it is a tremendous exception of which I am unaware.

SELECTION OF SUPERSONIC ENGINE FOR SUBSONIC AIRCRAFT

Mr. ANDREWS. Why was a supersonic afterburning engine selected for the A–7, a subsonic aircraft?

Admiral CONNOLLY. The answer is that in the latter part of 1963, the Navy completed the study of a new light attack aircraft which turned out to be the A–7. This study concluded that on a cost-effectiveness basis, the optimum general-purpose aircraft would be derived from a modified existing airframe with a turbofan engine.

It further cited that the only military turbofan under development at that time was the TF–30, which would be a suitable engine if a nonafterburning version were used. The TF–30 engine had been under development for other programs, namely, for the F–111. When the A–7 was designed, the only fan engine available for it was the TF–30. We wanted the turbofan to get better range, better fuel specifics.

Mr. ANDREWS. What alternatives were available, if any, and why were they rejected?

Admiral CONNOLLY. It seems to me the J–52 was the only alternative.

Captain GALLAGHER. There was no other turbofan engine available at that time. The JT8T had started development, that's a modified J–52 engine, but it would have necessitated a 30 percent "growth" of the aircraft to use it rather than the TF–30.

Mr. ANDREWS. The question, Captain, is why would you want to put this type engine in a subsonic aircraft?

Captain GALLAGHER. Sir, the "specifics" on the fan engine are so good, that, to obtain the range and endurance in the A–7, this particular type of engine was required to accomplish the A–7 mission.

Mr. ANDREWS. And you are perfectly satisfied with the engine?

Captain GALLAGHER. Yes, sir.

Admiral WALKER. Mr. Chairman, the term "specifics" may not be a familiar one to you. This means the fan engine has a lower fuel consumption and, therefore, permits greater range of altitudes, longer range and more endurance.

CONVERSION FROM TF-30 TO TF-41 ENGINE COSTS

Mr. ANDREWS. What is the total estimated cost to the Government in terms of termination costs, airframe modification costs, logistics costs, and any other costs resulting from the change from the TF-30 to the TF-41 for the Navy A-7 aircraft?

Admiral WALKER. In connection with engine termination costs, the Government had agreed to pay up to $2 million based on the termination of 90 engines, that is, the number of 129 was reduced to 39. The final cost will be somewhat less, and still remains to be negotiated with Pratt & Whitney Engine Co.

In connection with airframe modifications and associated costs, for installation of the TF-41 engine in the fiscal year 1968 A-7E aircraft numbered ——— through ——— that is, ——— aircraft, the direct cost is $3.494 million, or ——— per aircraft.

Budgetary estimates for associated costs such as ground and flight tests, mockup, training, publications, spares and special support equipment, are $8.91 million.

The direct cost estimate for fiscal year 1969 A-7E's, that is, numbers ——— through ——— is $1.549 million, or ——— per aircraft.

The problem is basically one of replacing the existing aft section of the aircraft with a modified A-7D tail. Bulkheads and mounts are different. The engine starter is different. Electronic gear must be installed in the new aft section, and other minor interface items change.

In connection with special support equipment costs, there are no significant cost differences in the special support equipment for the TF-30 or the TF-41. The total price for each during the time period 1967 through 1972 would be approximately the same; namely, $8.225 million.

Mr. ANDREWS. Is over 2 years considered a reasonable time to fulfill an urgent need for increased thrust in the engine for the A-7 aircraft?

Admiral CONNOLLY. The answer to that, of course, is "No." That is how long it took.

Mr. ANDREWS. What is the current projected date for introduction of TF-41 engines into the A-7 aircraft? What models will receive the TF-41 engine?

Admiral WALKER. The TF-41 engine will go in all A-7E's after No. ———. The first ——— will get the TF-30-P-400, as will all the A-7B's.

Mr. ANDREWS. Let us take one with a TF-30 engine and one with the TF-41 engine. Which would be considered the better plane?

Admiral CONNOLLY. The TF-41.

Mr. ANDREWS. In view of the fact that the TF-41 engine is being used also by the Air Force, does that mean you get a cheaper unit price?

Admiral CONNOLLY. That was one of the reasons for doing this, that it should work out that way.

Mr. ANDREWS. I wish you would put figures in the record showing the cost of the TF-30 engine and the cost of the TF-41.

Admiral CONNOLLY. Yes, sir.
(The information follows:)

At the time the decision was made to use the TF-41-A-2 engine in the A-7 aircraft engine costs were as follows:

	(*In thousands of dollars*)
TF-41-A-2	$400
TF-30-P-18	414

TF-30-P-400 CONVERSION KIT

Mr. ANDREWS. The TF-30-P-400 kit arrangement will not provide the ——— pounds of thrust required for the A-7. To what degree is combat effectiveness hampered by this deficiency in thrust?

Admiral CONNOLLY. We have experience to demonstrate the need for increased thrust in the A-7 in order to be able to ———.

Because of economic considerations, CNO requested the Naval Air Systems Command to investigate an improved and uprated engine for the A-7B. The TF-30-P-8 engine was considered feasible, and in September 1968 funds were reprogramed to proceed with the development. The uprated engine was designated the TF-30-P-400, and later redesignated the TF-30-P-408.

The kit to convert the TF30-P-8 engine into the TF30-P-408 is estimated at $56,000 per kit. The kit will be installed during overhaul at a minimal increased overhaul cost.

With respect to aircraft modification, the engine is still under development, and it will not be known for several weeks whether a new tailpipe will be required. The following data do presume a tailpipe change. Direct costs for installation of the P-406 engine are $1.274 million.

Associated costs, such as publications, special support equipment, and retrofit of special support equipment, are $0.206 million, for a total of $1.48 million, or ——— per aircraft.

It is planned that ——— A-7B's and ——— A-7E's will receive this uprated engine.

The installation required for the tailpipe change and engine pressure ratio indicator change and turbine inlet indicator change and flight testing will cost $250,000.

Did you ask me why not wait for the TF41?

Mr. ANDREWS. I think it would be helpful if you would put on the screen a picture of these planes we are talking about as we discuss them.

Admiral WALKER. Of course, in this case, Mr. Chairman, we are talking about an A-7, and the picture essentially shows the configuration of both the A-7E and B.

Mr. ANDREWS. It is generally the same plane?

Admiral WALKER. As far as the exterior appearance is concerned.

Mr. ANDREWS. To what degree will supply and maintenance considerations, caused by having two different engines, TF30 and TF41, in the A-7 aircraft, limit the Navy's deployment and utilization flexibility for these aircraft?

Admiral CONNOLLY. We will have to stock parts for both engines, and it will complicate it. We cannot deny that.

Mr. ANDREWS. If you had it to do all over again, Admiral, would you use just one engine instead of the two that you will have?

Admiral CONNOLLY. At the time we started the A–7, we could not get more thrust. There wasn't any engine available to give it to us. This is an evolution that we have done in many other airplanes.

In the case of the J52, we have been increasing the thrust.

We do have these logistic problems to contend with. They do not cost any more. They just require more care.

COSTS RESULTING FROM LATE ENGINE DELIVERIES

Mr. ANDREWS. Does the Navy plan to recoup from the engine contractor the additional costs claimed by the airframe contractor for installing engines away from the plant because of late engine deliveries?

Admiral CONNOLLY. Can you help on that, Captain Gallagher?

Captain GALLAGHER. We are in the process of negotiating this matter now, sir.

Mr. ANDREWS. Do you plan to recoup or try to recoup money from the engine manufacturer?

Captain GALLAGHER. I do not have that answer available at present.

Mr. ANDREWS. Explain it in the record.

Captain GALLAGHER. I will, sir.

(The information follows:)

The Navy is now negotiating with the engine contractor. The goal of these negotiations is to determine the extent of the liability the company must bear because of late delivery of engines to the airframe contractor. The Navy intends to enforce its rights under the engine contract.

COSTS AND NUMBERS OF VARIOUSLY ENGINED A–7 AIRCRAFT

Mr. ANDREWS. How much will have been spent by the Navy since March 1963 in modifying the TF30 family of engines for the A–7 aircraft, including the TF30–P–400 kit?

If you do not have that, you may supply it for the record.

Admiral CONNOLLY. For the TF30–P–6, the qualification of this engine was accomplished under fixed-price contract for $4.823 million. The qualification of the TF30–P–8 was accomplished under fixed-price contract for $18.750 million. The qualification of the TF30–P–408 is being accomplished under fixed-price contract for $4.9 million.

Mr. ANDREWS. The Navy version of the TF–41 engine is scheduled to be qualified in July 1969. Why was it considered necessary to spend over $22 million for ——— TF30–P–400 engine kits in the interim when they will not provide the ——— pound thrust required?

Admiral CONNOLLY. First of all, I think the TF41 is going either to hit ——— pounds or come very close to it, maybe even more than ——— pounds. So, we think we will be all right on that one.

(Off the record.)

Mr. ANDREWS. The captain looks like he can answer that question.

Captain GALLAGHER. The P–400 engine will be used in the A–7B's which have the TF30–P–8 engine now. The P–400 is an upgrading of the P–8. We get an increase of ——— percent in thrust in the P–400 over the P–8 engine at sea level, and ——— percent at altitudes between 20,000 and 30,000 feet. This is why the P–8 is being converted

to the P–400 engine. It will improve the performance of the A–7B as well as give favorable performance to the first 67 A–7E's.

Mr. ANDREWS. Will that still give you the ——— pounds thrust?

Captain GALLAGHER. No, sir, it will not. The P–400 engine will give ——— pounds of thrust.

Admiral WALKER. The answer, sir, is that it will give the increased performance in the airplane which are not scheduled to get the TF41.

Mr. ANDREWS. I think the question here is, if we are to have the TF41 qualified in July of 1969, why are we spending this much money to buy P–400 kits when it still will not provide the ——— pounds of thrust the Navy decided it needed in this aircraft in October 1966? Why waste the money here? Why not wait for the TF41 engine? That is the question.

Admiral CONNOLLY. The requirement for the higher thrust was established by the CNO and for the A–7B, in other words, the TF30–P–8, the retrofit. The TF41 engine in the A–7B aircraft would be very expensive because of the high cost of airframe modification and because some ——— replaced TF30 engines which would become surplus.

One of the constraints established for the TF30–P–408 was that the engine would be interchangeable with the P–8 and that there would be no airflow changes which would result in no new duct problems and would lead to no new airframe changes.

The development of the TF30–P–408 was considered to be a relatively low-risk program, and the best and most economical way to give considerable increased thrust, ——— percent, for the A–7B.

I would like to say that the A–7B does not weigh as much as the A–7E, so while the ——— pound thrust in the A–7B is still not quite as good as the ——— -plus in the A–7E, it does not miss it by too much, and it will be a much better airplane than it would have been without it.

Mr. ANDREWS. There is no question it will be better, but will it not still restrict its use when you need ——— pounds of thrust?

Admiral CONNOLLY. We would still like the higher thrust, but for the reason I cited, that is that we will not have to make the change in the tail and we will not have to do anything in the airflow, it seemed to us to be a better solution to uprate the TF30 than to go all the way with retrofitting TF41's.

Mr. ANDREWS. In other words, it is not exactly what you want, but it is all you can get.

Admiral GADDIS. May I add, the cost of the complete back-fit program to put the TF41 in these prior aircraft would add up to an estimated $129 million. That is a fact.

Mr. LIPSCOMB. Admiral, what does that last comment mean?

Admiral GADDIS. The original question cited the cost of the modification kit as $22 million.

Mr. LIPSCOMB. For ——— kits.

Admiral GADDIS. Yes, sir. The alternative, if you planned to achieve ——— pounds of thrust in these older aircraft, would be to backfit the TF41 engine.

Mr. LIPSCOMB. In the A–7B's.

Admiral GADDIS. Yes, sir, and the first ——— A–7E's. This would cost, for the modification program, an estimated $129 million.

Mr. LIPSCOMB. How many A–7B's are there?

Admiral CONNALLY. ———.

Mr. LIPSCOMB. That is the total inventory?

Captain GALLAGHER. Of A–7B's, yes, sir.

Admiral GADDIS. Plus ——— of the A–7E's. That makes about ——— installations.

Mr. LIPSCOMB. Why do you need ——— kits?

Captain GALLAGHER. I would like to correct the number. There are ——— TF30–P–8 engines in the inventory. There will be ——— kits, this will equip the installed engines plus spares.

Admiral CONNOLLY. 196 A–7A's and B's plus 67 A–7E aircraft, and spares.

Mr. LIPSCOMB. Why do you need them in the A–7E's? I thought we were getting the TF41's.

Captain GALLAGHER. The A–7E's get the TF41's other than the first ——— A–7E's which get TF30's.

Admiral WALKER. It is a matter of when the engines become available, sir. We will have had ——— A–7E's with the TF30 engines already in them by the time we receive the first TF41.

Mr. LIPSCOMB. Why would it not be better to have stretched this out on the A–7E and saved the retrofit at a later time? You will have to retrofit your early A–7E's, too.

Admiral WALKER. Our plans do not call for the retrofit of the TF–41 in the first ——— aircraft because of the complications of the installation.

Mr. LIPSCOMB. You are going to have all kinds of different supply and logistics problems in the A–7 program, then. You will have when you get through, three different engines, and you will deploy these all over, I imagine. So, you will have logistics problems that will be greatly complicated.

Admiral CONNOLLY. Maybe this would help.

Mr. LIPSCOMB. Is that not correct?

Admiral CONNOLLY. You are right.

Mr. LIPSCOMB. If the urgency is not such that everything is going to fall apart, why not slow it down a little bit and do it right and get the thrust you need and get your supply?

When the admiral answered $129 million, if we had done a different kind of retrofit in this, you are not even including in that figure the cost of the retrofit. That is just the cost of the kit. It is an expensive project. You are getting three engines and a supply problem that will be hard to live with, particularly in an emergency situation.

Admiral WALKER. We are trying to obtain this ——— pounds thrust engine into our A–7 inventory as soon as possible. The schedule now permits us to get it first into No. ——— A–7E.

In the meantime, we need whatever improvement we can obtain in the first ——— A–7E's. This is the reason we are installing the TF–30P–408 in the A–7B's and in the first ——— A–7E's.

So, the requirement for increased thrust is the essentially guiding factor.

Mr. LIPSCOMB. Why would it not be better to stretch this out? The A–7E is heavier than the A–7B. A lot of problems could be solved if you did not move so fast.

You are going to get the planes. It is just a matter of time.

Admiral CONNOLLY. You do understand if we go TF41 in the A-7B, we have to put an enlarged tail on it, which is a big expense item.

Mr. LIPSCOMB. Now we are talking about the A-7E.

Admiral CONNOLLY. We have ——— A-7E's that will be delivered by December. So, we will have ——— of them that are either already manufactured or so far along in production that it would be terrible to change them.

Of the ——— A-7A's we built, we have about ——— remaining. These will go to Reserves and training. They will go to the RAG. They will go to R. & D. jobs.

Of the ——— A-7B's, we will not retrofit more than about ——— of them. Our plans call for the building of ——— A-7E's and ——— if the Air Force buys the A-7D. So, we will have more than ——— percent or ——— percent of our airplanes in the TF41's.

We thought we were doing the right thing by not spending the money to modify the tails of what amounts to about ——— airplanes.

Mr. LIPSCOMB. One further question. What will the A-7E's be used for when they have a lesser thrust?

Admiral CONNOLLY. We will go right ahead and use them with the ——— pounds of thrust. They will not be as good as if they had ——— but they will still be a very superior plane with this weapons delivery system that we described earlier. The pilots like this airplane.

Admiral WALKER. The difference in thrust would probably generally be compensated for by ———.

Mr. LIPSCOMB. As the Admiral knows, it is at least my feeling that whenever you start changing engines around and putting engines in planes that the airframe was not designed for, you always get in trouble. The Admiral does not agree with me on that.

Admiral CONNOLLY. I agree with you. I wish we were not in the pickle we are in. We apparently did not do exactly the right thing, but we thought we were.

Mr. LIPSCOMB. I was thinking of the F-14. You have an engine change in that one coming along.

Admiral CONNOLLY. Also, you know, it costs a lot of money to change a program and slow it down. The contractor's overhead is tied on. The price of each airplane rises.

I did not bring out earlier that one of the causes of the rise in price of military equipment has been the diddling with the programs, cutting them up, cutting them back. They go up and down. Each time you go up, you pay; each time you come down, you pay.

Mr. LIPSCOMB. Maybe the contractors will have to learn to cooperate a little more when they bump into a problem that affects the capability of the weapons system.

Admiral CONNOLLY. One of the reasons that you are seeing the A-4M up here as a request by the Marines is that that airplane started out with ——— pounds of thrust with the J65, and it had successively three models of J52's that went ——— and now the last version of the J52 will be ——— pounds thrust. We think this is real economical and sensible development and improvement, a lot cheaper than getting new engines and changing the airplane significantly. That is almost a ——— percent improvement in thrust over the years.

Mr. LIPSCOMB. Thank you, Mr. Chairman.

Mr. ANDREWS. In February 1969, the Navy awarded a $211.5 million contract to LTV for A–7E aircraft production. What fiscal year buy is this?

Admiral WALKER. The fiscal year 1969 buy, sir? This buy was for ——— A–7E's for the Navy.

Mr. ANDREWS. The question is this, Admiral Walker: In February 1969, the Navy awarded a $211.5 million contract to LTV for A–7E aircraft production. What fiscal year buy is this?

Admiral WALKER. That is the fiscal year 1969 buy.

Mr. ANDREWS. Would it not have been prudent to stretch out the production schedule of A–7's until the resolution of the TF30/TF41 evaluation and, after the decision was made, to meet the delivery schedule of the TF41 engine, rather than go through an expensive retrofit program later on?

Admiral CONNOLLY. Of course, we are not going to retrofit. We plan not to retrofit, Mr. Chairman.

Admiral WALKER. The first ——— A–7E's that will have the TF30 are a part of the 1968 buy. They are being delivered now. All A–7E's which will have the TF41 will be 1969 buy and subsequent.

Mr. ANDREWS. You can straighten that out in the record.

Admiral CONNOLLY. Yes, sir.

(The information follows:)

It would not have been prudent to stretch the production schedule of the A–7's to meet the delivery schedule of the TF–41. Two factors bear on this conclusion. First, we will not have to go through an expensive retrofit program. The first 67 A–7E's are being delivered with TF30–P–8 engines. At overhaul, these engines will be provided with a kit uprating them to TF30–P–408 configuration. The cost of the kit is $56,000, while installation costs are minimal. Second, stretching the the production schedule would have resulted in increased costs to both Navy and Air Force A–7 programs. We cannot accurately estimate these costs but they would probably be in excess of the TF30–P–408 engine kits.

Mr. ANDREWS. Gentlemen, the committee will adjourn until 10 o'clock Monday.

Monday, May 12, 1969.

Mr. SIKES. We will resume the hearings on the Procurement of Aircraft and Missiles, Navy.

AV–6B HARRIER V/STOL AIRCRAFT

Turning to the AV–6B Harrier V/STOL Aircraft, there is a request for $42.3 million for the initial procurement of 12 of these aircraft. They are not yet service-approved. Is the proposed buy of these aircraft for test and evaluation, or will they be deployed to Southeast Asia or elsewhere in an operational capacity?

Admiral CONNOLLY. Mr. Chairman, General McCutcheon is our real expert on Harrier, if he may answer this one.

PROCUREMENT OF 12 HARRIERS

General MCCUTCHEON. Mr. Sikes, it is the intent of the Marine Corps to take the first 12 Harriers and put them in a Fleet Marine Force squadron in lieu of F–4's. At some point in time, roughly a year from then, a detachment of that squadron will be deployable. Where depends on the circumstances at the time.

Mr. SIKES. What aircraft in the Marine Corps inventory will the Harrier replace?

General MCCUTCHEON. At the present time we are giving up 17 F–4's from the budget under consideration, to procure the 12. If we are allowed to procure additional airplanes, we intend each programing and budgeting cycle to look at our force structure at that time to determine what would be replaced.

The intent is that they will go into FMF squadrons in lieu of existing aircraft that we have there now.

Mr. SIKES. Is this a good trade off?

General MCCUTCHEON. We believe that it is, sir.

Mr. SIKES. With what other aircraft in the Navy inventory can the characteristics of the Harrier best compare?

General MCCUTCHEON. Our study indicates it is closest to the A–4. We have a chart that we can show which shows, for representative missions, how it compares with the A–4, F–4, A–7, and a couple of others.

However, this aircraft provides one characteristic that no other existing aircraft has, and that is the capability of a vertical takeoff as well as STOL, short takeoff and landing.

DOMESTIC V/STOL DEVELOPMENT

Mr. SIKES. We have been trying to develop V/STOL aircraft for years in this country, and a number of companies have built prototypes. Are none of them adequate for the purpose?

General MCCUTCHEON. No, sir. The only V/STOL operational plane in the Free World today is the Harrier, and the only other operational V/STOL aircraft that I know of is the Russian Freehand. In some respects it copied some of Harrier's features, and it does not seem to be quite as far along as Harrier is.

Mr. SIKES. If there has been a need for this type of aircraft, how is it that there has not been a development within the United States?

General MCCUTCHEON. Over the last 10 years, the United States has spent considerable time, effort, and money in trying to develop various techniques for V/STOL aircraft. They also participated in this particular development with the British.

Ten years ago they put some money, I understand up to about ——— million, into the Pegasus engine development program under the mutual defense weapons project.

Subsequently, the United States put additional money into the Kestral program, which was the predecessor prototype of Harrier.

So, from this point of view, although Harrier is a British airplane, the United States definitely had investment interest in it.

Mr. SIKES. For the record, describe the range, payload, armament, and other characteristics of the Harrier.

(The information follows:)

PERFORMANCE CHARACTERISTICS OF THE HARRIER

The Harrier aircraft proposed for the Marine Corps is currently designated the AV-6B. It is to be powered by a PEGASUS 11 engine of ——— pound thrust. It will have improved performance over the version currently being introduced into the RAF. A summary of characteristics of the AV-6B is as follows:

Empty weight (w/pilot) ———
Maximum takeoff weight ———
Maximum weapons load (current clearance) ———
Maximum weapons load (development potential) ———
Internal fuel ———
Design weapons load ———
External fuel combat tanks (2) ———
Ferry tanks (2) ———
Maximum level speed ———
Maximum diving speed ———
Design limit acceleration ———
Maximum ferry range (unrefueled) ———
Thrust-to-weight ratio range (installed thrust) ———
Maximum VTO weight, tropical day ———
Combat radius, ——— foot takeoff run ——— ———
Ground run at design takeoff weight ———
——— (lb. tropical day) ———

The Harrier compares favorably with U.S. attack aircraft in terms of conventional ordnance delivery capabilities, range, payload and time on station, even when takeoff distance or runway requirements are dismissed as a criterion. When takeoff distance limitations are placed on comparative high performance aircraft, the superiority of the Harrier becomes very apparent. Compared to the AH-56 Cheyenne, the Harrier provides vastly superior speed and altitude envelopes which results in improved survivability in high threat environments and superior capability for performance on interdiction missions which are required of Marine attack aircraft. TAB A is a summary of comparative characteristics and performance of some current and proposed close support aircraft.

The comparison in TAB (A) is based upon the close air support capabilities of the aircraft shown. For the F-4J, CAS is a secondary mission, since the airplane is primarily an all-weather fighter aircraft. ———. In this context the following comparison is of interest: ———. The alternate capability of the Harrier to perform an air defense mission further enhances its flexibility of employment and emphasizes its comparative desirability for the Marine mission. Along with the requirement for performance of interdiction missions and operating in severe hostile environments, it strongly supports the Marine Corps mission which favors Harrier rather than lower performance vehicles, such as the AH56.

(*Staff note*: Additional classified information was provided for the committee's use.)

FAILURE TO DEVELOP DOMESTICALLY

Mr. SIKES. In what respects do the aircraft in this general area which have been developed in the United States fail to meet the requirements that you expect to acquire in the Harrier? In other words, I find it hard to understand, when we have been putting money into this concept for 20-odd years to my own knowledge, that we come up with nothing that is usable and we have to go overseas to buy the aircraft. Whose fault is that?

General MCCUTCHEON. I do not think it is anybody's fault, Mr. Sikes. I think in this country the particular techniques that were used and investigated to get the V/STOL did not pan out as well as the vectored thrust principle that is used in the Harrier's engine. We had 12 or 15 different developments in this country, including tilt wings, tilt engines, fanjets, and so forth. Of these, I guess the fanjet shows about as much promise as any.

Mr. SIKES. Did we try to develop in too broad an area? Did we scatter our shot too much? In what way did we fail to accomplish what was desired?

I still have not had an answer as to why all this developmental effort in the United States was unproductive and we had to go overseas to buy an aircraft.

General McCUTCHEON. This is a new area. When we started into it, nobody knew exactly what the final outcome would produce, so they had more or less to shoot across a broad spectrum and try all those approaches that appeared technically feasible.

The fact that this one surpassed all the others accounts for the successful accomplishment of the Harrier.

MANUFACTURE OF HARRIER IN THE UNITED STATES

Mr. SIKES. Are there any proposals to have this aircraft manufactured in the United States under a licensing agreement?

General McCUTCHEON. Hawker Siddeley intends to have a licensee in this country. The Navy and the Marine Corps support this. This would follow a pattern in the same way that Allison is the licensee now of Rolls Royce for the TF41. In some respects, Hawker Siddeley is a licensee to McDonnell for the F–4 program in Britain. The vice president of Hawker Siddeley is currently in the United States. They have conducted discussions with quite a few U.S. aerospace contractors. At the present time they have more or less narrowed it down to about five. I would suspect within 2 or 3 months they will probably make their final determination.

EFFECT ON BALANCE OF PAYMENTS

Mr. SIKES. Is there a quid pro quo in this? In other words, are we selling something to the British in return for their purchase, to compensate for this trade?

General McCUTCHEON. At the present time there is about $50 million left in the foreign exchange balance-of-payments problem which the United States requires to offset against. That is almost what is in the budget for this number of Harriers.

Mr. SIKES. Is that the real reason they are in here?

General McCUTCHEON. No, sir, it has nothing to do with it. We knew the question would come up on offshore procurement and balance of payments, so we wanted to check and find out how much of a credit there was standing.

If we went further with the Harrier, of course, the credit would go on the other side of the books and obligate the British to buy over here. Quite a few people believe this could be the step that ——— and would give the British what they have been waiting for to come over here and place purchase orders for other military equipment.

Mr. SIKES. Have they placed any orders over here in recent months?

General McCUTCHEON. I cannot say about recent months, but of course, as you know, they are in the F–4 program.

Mr. SIKES. For the record, tell us how much the United States has contributed toward the development of the Harrier.

(The information follows:)

The total U.S. investment toward development of the HARRIER aircraft is approximately ——— million.

U.S. AIRCRAFT SIMILAR TO HARRIER

Mr. SIKES. What is the nearest aircraft with capabilities such as the Harrier which has been developed in the United States?

General MCCUTCHEON. If you concentrate on the VTOL, there is none, but the closest would be the Ryan fanjet development.

Mr. SIKES. Why could it not have been given the incentive necessary to place it in the same favorable light the Harrier now enjoys, if that type is what we want?

General MCCUTCHEON. It probably could have if it had received more emphasis in the past. Still, with proper emphasis, it could still be an airplane in the future. The point is that right now they do not have the aircraft flying.

Mr. SIKES. Over what period of time could a satisfactory aircraft be developed by an American firm?

General MCCUTCHEON. It is estimated it would take at least 5 years, probably seven.

Mr. SIKES. Does the Marine Corps propose to use Harriers off carriers?

General MCCUTCHEON. As a part of our mission, as a part of naval aviation, we do go aboard carriers, and if the occasion demands it, we will, yes, sir.

FUTURE REQUIREMENTS FOR HARRIER

Mr. SIKES. What future requirements do you foresee for the Harrier?

General MCCUTCHEON. Over and above the 12?

Mr. SIKES. Yes.

General MCCUTCHEON. We would like to get ——— squadrons worth of Harriers in the Fleet Marine Force aviation, plus a proportionate share of the training group.

Mr. SIKES. What do you foresee for the next fiscal year after this one?

General MCCUTCHEON. At the present time, the number we are planning on is———.

Mr. SIKES. Do you anticipate that at that time you will phase into an American purchase for license and manufacture in the United States?

General MCCUTCHEON. I think the question of when, if ever, this airplane will be built in the United State would depend on Hawker Siddeley's total orders, not only from the United States, but from other interested foreign governments.

From my discussions with members of industry, the number would have to get over———to afford them any chance to break even. There are four or five other countries that are interested in the Harrier.

Mr. SIKES. Do you expect to buy———of these in the next few years?

General MCCUTCHEON. We would hope to be able to; yes, sir. Our total program now is———

Mr. SIKES. Questions on the Harrier?

COST OF HARRIER

Mr. LIPSCOMB. How firm is the price, and how is the price arrived at?

General MCCUTCHEON. I have Colonel Harper, here, who is the program manager in the Naval Air System Command. He has conducted several discussions with the British. I think he is in a much more favorable position to answer that question, if he will.

Colonel HARPER. The flyaway portion of the aircraft price as provided to us by Hawker Siddeley was presented as a ceiling price or a maximum price. At the same time we are planning to buy this aircraft, we are planning a government-to-government agreement. We are having the Ministry of Technology review the price again at this time. However, they have assured us from their preliminary examination that these numbers should be considered the maximum again.

Because of the conservative approach that we felt was essential in this case, the dollars we have asked for represent these maximum figures. We are hopeful that by the time we reach the point where we can accept a letter of offer from the Ministry of Technology, the amount will be somewhat lower. We do not wish to take any risk at this time until we have asked for what we feel will be the maximum number.

MODIFICATIONS TO HARRIER

Mr. LIPSCOMB. Is this price and is this plane up to U.S. needs? Are you going to require a change in the plane in any way to meet your needs?

Colonel HARPER. Our initial approach was to buy the aircraft off the shelf. To examine the point you are raising, a Navy preliminary evaluation (NPE) was conducted in January of this year that reviewed the qualifications of the aircraft, and this flight test program did point up a number of things that might be improved to make the aircraft more useful for the Navy and the Marine Corps.

Also, 2 weeks ago a group of engineers from the Naval Air Systems Command went to England and reviewed the aircraft in depth from the technical standpoint, and again pointed out a number of minor items that we would like to see corrected.

In our discussions with the Ministry of Technology, in literally every instance they planned to make these corrections to satisfy their own requirements.

As you perhaps know, they are still in the process of introducing this aircraft into the RAF. The first squadron went operational April 1.

As a result, the aircraft has some minor things that will require correcting. This will be accomplished over the next 18 months with a minimum impact on us.

Perhaps a reference or two would be helpful. We require a FM/VHF radio for air-to-ground communication. They have one underway, but it will not be available until ———. We will have to make a decision as to whether or not we will be able to afford to wait for it. Our people were not too happy with the strap-in procedures on the Martin-Baker seats. This does not detract from the usefulness of the

seat once the pilot is strapped in, but our folks felt it took a bit too long to strap in. It was perhaps equal to or better than anything that we have.

It is this kind of problem, sir. There are no major requirements for change that we are aware of or contemplating at this time.

UNIT COST OF HARRIER

Mr. LIPSCOMB. Is the $3.5 million unit cost and the total cost for the budget year of $42.3 million the off-the-shelf, flyaway cost?

Colonel HARPER. Yes, sir; at the maximum figure, plus it includes necessarily some funds for special support equipment.

Admiral CONNOLLY. I would like to insert at this point that I get a $2.78 unit flyaway cost.

Mr. LIPSCOMB. I am taking it from the chart here.

Admiral CONNOLLY. The unit cost includes support.

General MCCUTCHEON. That $3.5 million is the overall program unit cost for the aircraft. It is $2.78 million flyaway and support.

Admiral WALKER. May I take this question. The unit flyaway cost for the airplane is $2.775 million. For 12 airplanes, that comes to $33.3 million. Then support costs must be added, which total $9 million for the 12 aircraft, bringing the total here to $42.3 million, to which is added investment spares and spare parts which account for $15.3 million, to give us a total of $57.6 million.

Mr. LIPSCOMB. All the spare parts and all the other equipment in the plane are of British manufacture and design?

Colonel HARPER. Almost entirely. One item, TACAN, is by Hoffman. There is an estimate that perhaps $40,000 worth of material in the aircraft is U.S. made at this time. We are still identifying what these items belonging to TACAN are.

U.S. FUNDS INVESTED IN HARRIER

Mr. LIPSCOMB. The question was asked for the record, how much U. S. funds had been put into the development of this aircraft. Do you have that information available now?

Admiral CONNOLLY. My figures are, in summary, approximately ——— million of mutual defense weapons program funds, and ——— million of service R. & D. funds were provided to this airplane. We have a breakdown of this which we will supply for the record.

(The information follows:)

The total U.S. investment toward development of the Harrier aircraft is approximately ——— million. Of this amount approximately ——— million in mutual weapon program funds were allocated through military assistance group auspices during the initial phases of the development of the basic engine concept (1951–56). The remaining ——— million was invested after the P–1127 aircraft came into being and the tri-service program was established (1962–65). The Army was assigned prime cognizance with the Navy and the Air Force assisting. The U.S. Army's share was ———. The U.S. Navy's share was ——— and the Air Force share was ———.

Mr. LIPSCOMB. Are we getting any of this back in this purchase?

Colonel HARPER. Sir, the Ministry of Technology have a normal 5-percent fee, that they levy against all products developed by the

British Government and sold abroad, as an effort to pay themselves back for the development costs. The fee is not too dissimilar from what we also charge. They recognize that we have an investment in this aircraft, and have agreed to negotiate a lesser fee, in recognition of our previous investment. This negotiation has started. The representatives will meet again to continue it the 28th of this month.

Our initial position has been to ask them to waive the 5 percent they normally charge, as a result of our previous investment. The exact number will be agreed upon, but I do not know it at this time.

U.S. PURCHASE FROM BRITAIN

Mr. LIPSCOMB. I have two observations. Maybe you can comment on them, if you desire.

It appears to me that on transactions of this sort, the United States always gets the short end of the deal.

Second, it is almost inconceivable, in my mind, that it is necessary for the United States, with its great technological ability in manufacturing and development, to find it necessary to go to Great Britain to get a plane such as the Harrier. I just cannot understand this, and I just cannot in good conscience support this particular purchase from this side of the table.

Admiral CONNOLLY. I do not want always to be saying things that are contrary to your impression. I certainly cannot comment on the first part of your statement. You know far better than I about that. Yet, it is not without good precedent that where the British have concentrated and worked hard, they have come up with things that we have not.

After all, Pratt & Whitney would not be developing the turbojet and turbofan today, if they had not had a license from the Rolls Royce in the beginning and learned to build it.

General Motors, as big as it is and great as it is, and with its Allison Division going for so many years, in order to get back in the jet engine business had to become a licensee for the TF41 and other Rolls Royce engines.

I know you are aware that the British in their own way came up up with the steam catapult, the angled deck, and the mirror landing system. While we were so busy moving our carriers around the ocean, into the Mediterranean and out West, they, without funds and striving and struggling, did come up with these concepts, as they have with some other things. They have concentrated on this type airplane.

ADVANTAGES OF HARRIER

I approached this whole thing as a complete agnostic. When McCutcheon came over and said they wanted this, I thought he had lost his mind. As we got into it and conducted the NPE, one of the test pilots, who had fighter experience in Vietnam, came back and said, "I will take on any fighter out there today with the Harrier and I know I will beat him." In fact, one gentleman who may be in the audience, said he would give anybody tail position and he would take the Harrier and get around and get on him.

It is aerodynamically a very good airplane. It has fine stability and control. As General McCutcheon has suggested, it is a successful V/STOL airplane and, more importantly, it is a good STOL airplane.

We do not know much about the use of this airplane, and this is why the purchase is 12, and not 20. It took a long time to decide whether it should be six or nine or 12 or 15. It does hurt a little to realize that these people have come up with something which we couldn't but we would spend millions of dollars and much time going back to Ryan or anybody else to do it now. It seems to me it would be a great waste. We have put so much into Britain. We have helped them for a long time, as you well know. This is something that they have.

It does seem to me that that island over there would be a liability to us if they do not stand on their own two feet. This and the engines are the only things I know of that they have come up with in a long time.

U.S. INVESTMENT IN V/STOL PROGRAM

Mr. ANDREWS. We have spent a lot of money on this and we have not gotten anything yet.

Admiral CONNOLLY. Every one of ours crashed.

Mr. LIPSCOMB. We have spent money not only in our country but in France and West Germany on this same type aircraft.

Admiral CONNOLLY. As I understand the game, this airplane survived all the others. This is what we got out of all the money that we have placed in this concept. It apparently is awfully good.

Mr. ANDREWS. Do they have any flying now?

Admiral CONNOLLY. Yes. They were in this transatlantic race. I believe they won the subsonic race.

Mr. ANDREWS. If you got this money, when would you get the 12?

General MCCUTCHEON. The first delivery would be in——.

I would like to continue in answer to your question, Mr. Lipscomb, if I may.

The United States has spent money in developing 17 different kinds of V/STOL airplanes, six of which are still flying, mainly the one model. Eleven are defunct. During this time, the United States also participated with the British under the mutual defense weapons project and put in this ——— million which was mentioned previously. This was primarily for the development of an engine. The engine that was developed was the Rolls Royce Pegasus, which is a fanjet and uses the vectored thrust principle.

Subsequent to that, the United States participated with Britain and Germany in the 1127 Kestrel development. These were the prototypes of the Harrier. Here I think the total United States commitment was about——— million.

In return for this, 9 airplanes were built. The United States got 3. In addition, they purchased the 3 that the Germans were given as their contribution. So we got 6 Kestrel airplanes here. There is one still flying at NASA Langley, and there is one at Edwards Air Force Base. Of the others, one crashed and the remaining 3 were used for spare parts to keep the others flying which were still being used in research.

HARRIER CAPABILITY

The Harrier that we have now, then, represents the results of 10 years of real, honest-to-goodness development effort. It is an operational airplane. The RAF has one squadron now. They are going to have a couple more. Harrier did participate in this last trans-Atlantic race, as Admiral Connolly pointed out, flying both London to New York and New York to London. It won the subsonic time coming west, and was beaten by 30 seconds going east by a "V" bomber. It was only half an hour behind the F–4 time, and went supersonic in several bursts.

It is the only airplane in the world, other than the Russian Freehand, which has this V/STOL capability. It will give us a lot of flexibility and versatility, that we do not now have in any airplane in the inventory or on the boards. It will increase our reaction time for close air support. It will give us the capability to disperse and cut down the concentration of airplanes on airfields.

As you know, we have lost quite a few this way to rocket and mortar attack.

It would permit us to operate closer to the front line troops.

So for our mission, we feel that it offers something that we cannot look forward to getting anyplace in the next several years.

ADVANTAGE OF BUYING HARRIER

I would like to add to the record, if I might, from the vice president of Ryan, who is probably the closest competitor on this thing, the letter that he wrote to Admiral Walker on January 29. It says as follows:

After going over the British Harrier proposal, I reverse my opinion and think a buy of them could be the best way to get V/STOL rolling in America. We or another manufacturer could build a better airplane, but development costs would be between $300 million and $400 million. Most of that would be to design a good fighter system and not because of the "V" characteristics. If you can get these for $50 million or $60 million, we should go ahead to prove or disprove V/STOL instead of just talking about it.

Mr. ANDREWS. Is it correct to say you have a desperate need for this type of plane, and that this is the only source of procurement from which you can purchase it?

General MCCUTCHEON. Certainly the latter part of the statement is correct. I would hesitate to say that it is absolutely desperate.

Mr. ANDREWS. But you could use it. You have a need for it.

General MCCUTCHEON. Yes, sir, we have a bona fide operational requirement for the airplane.

Admiral CONNOLLY. I would like to add one thought, which you probably already have. The way to go, if we go this way, would be to get one of these prime American builders to become the licensee and take this and in accordance with how our experience with the Marine Corps develops, how much it contributes, how much better it turns out to be, let them step in that point in time and go ahead with it and produce better V/STOLs thereby.

I think we would be far ahead moneywise and timewise.

Mr. ANDREWS. Any other questions?

Mr. LIPSCOMB. What is the capacity of the Hawker Siddeley Co. now to produce these planes?

Colonel HARPER. They have tooling for ——— a month. They expect to reach a rate of ——— a month in June of this year to fulfill their own requirements. That is slightly over ——— aircraft at this time.

HARRIER DEMONSTRATION

General MCCUTCHEON. One more point on this airplane. Harrier will be in this area this week, and there will be a demonstration at Andrews Air Force Base on Friday for the Congress. The members of this committee have been invited. This will include both a briefing on the status of the plane and a flight demonstration.

Mr. LIPSCOMB. What is it doing here?

General MCCUTCHEON. It was coming down after participating in this transatlantic race so people in this area could get better acquainted with it firsthand. Most people have not seen it. It has been flying heretofore only in England.

Mr. LIPSCOMB. What investment do we have in that transatlantic race, and what investment do we have in bringing the plane here for demonstration purposes?

General MCCUTCHEON. We have no investment in the race or the demonstration.

Mr. LIPSCOMB. Who is footing the bill for its visit to Andrews?

General MCCUTCHEON. I cannot answer that question.

Admiral WALKER. It would be the RAF.

General MCCUTCHEON. It is an RAF airplane.

Colonel HARPER. The United Kingdom Ministry of Technology is footing the bill, sir.

Mr. LIPSCOMB. They are paying for all the quartering and subsistence and everything?

Colonel HARPER. Yes, sir, There is a maintenance crew with them.

Mr. LIPSCOMB. Why are they doing that?

Colonel HARPER. They are interested in selling the aircraft, sir.

Mr. ANDREWS. That is a good answer.

Admiral CONNOLLY. We provided services at Floyd Bennett in the way of parking space, but they paid for the fuel and took care of all their own maintenance costs and all that. We did not do anything except be a courteous sister service to the Royal Navy and the Royal Air Force.

Mr. LIPSCOMB. What is the corporate structure of Hawker Siddeley Aviation Co.? Are they subsidized by the British Government, or are they an independent operation?

Colonel HARPER. Sir, I am confident it is an independent operation, but to be absolutely sure, perhaps I had better provide the answer for the record.

(The information follows:)

Hawker-Siddeley is an independent, unsubsidized corporation.

Mr. LIPSCOMB. That is all I have, Mr. Chairman.

Mr. ANDREWS. Mr. Rhodes.

Mr. RHODES. What armament will this plane have?

General MCCUTCHEON. At the present time, it has the capability of carrying bombs and rockets, and it has two 30mm Aden guns internal. During the NPE which was conducted, we took a look at what problems we might expect to have in adapting U.S. ordnance to it, and we will take a further look in the future.

The main armament which we would like to put aboard is the bombs, rockets, and guns, and there is no problem. It is built to NATO standards.

Mr. RHODES. You get the bird without the armament aboard?

General MCCUTCHEON. The guns, of course, would come with it, and so would the racks. We would provide the ordnance to hang on.

Mr. RHODES. That would be done at the factory before flyaway?

General MCCUTCHEON. Some of this would be done in the current trials that are going on within the RAF now.

Mr. RHODES. I am talking about when you get to the manufacturing stage, do you get an airplane with the weapons system, or do you have to get the airplane and then put the armament aboard?

General MCCUTCHEON. No, sir, it will come equipped with guns, bomb racks, and the internal wiring. The bombs or the rockets to be hung on the airplane would be provided by us, just as they would be for any aircraft.

Mr. RHODES. I understand that, of course. I was a little disturbed by your previous statement that you were going to conduct some tests to see whether or not our armament can be adapted to this plane. Do you not think it would be well to do that before you make the contract?

General MCCUTCHEON. Yes, sir, that will be done. I was thinking about some of the more sophisticated weapons such as Shrike, and so forth. We would add to the airplane the provision for carrying ——— which the RAF does not have.

Mr. ANDREWS. Would you put the picture of the Harrier back on the screen for us, please.

Mr. RHODES. What kind of missiles do you expect to put aboard this plane? What air-to-air missiles?

General MCCUTCHEON. The only air-to-air would be the ———.

Mr. RHODES. What air-to-ground missiles?

General MCCUTCHEON. Air-to-ground would be the various bombs, rockets, and the internal 30-millimeter guns. We would also determine the feasibility of dropping napalm, CBU, perhaps Walleye, Shrike, and so forth.

ADVANTAGE OF HARRIER OVER F–4

Mr. RHODES. With all this armament aboard, this is such a fine air-superiority weapon that people out there would rather have it than the F–4, as the admiral mentioned?

General MCCUTCHEON. Rather than answer the question, let me have Colonel Miller, who flew the aircraft——

Mr. RHODES. Maybe the admiral had better answer. He made the statement.

Admiral CONNOLLY. I had better get on that.

The Marines want this primarily as an air-to-ground aircraft, but it has a very fine fighter performance. I was trying to stress the maneuverability and controllability and visibility in its performance as a subsonic fighter. I have been told by Colonel Miller, although actually it was a naval officer who works for me who is the real enthusiast for the airplane. He is just back from having had a fighter outfit in Vietnam.

Mr. RHODES. I was just intrigued by the idea that it could do so well as a subsonic fighter, I do not know why we are buying F–14's and F–4J's.

Admiral CONNOLLY. I want to stress that air-to-air combat frequently takes place at low altitudes, subsonically, as it has in conflict in Vietnam. However, that is not enough. If you want to break off or if you want to catch a man, you need much more performance. We think you definitely need a supersonic fighter.

The Marines want to buy this as an air-to-ground vehicle.

General MCCUTCHEON. There are two points that make this a good airplane for fighter purposes at low altitude—its maneuverability and its high thrust-weight ratio. There is no other airplane flying now that can touch it on the latter count.

In all V/STOL development, one of the penalties that has been paid in many of the developments has been the fact that you had to put in a weight penalty to get the aircraft off the ground or to permit it to land. With this engine and this vectored thrust principle, you can use this technique not only for the vertical takeoff and landing, but also for the maneuvering in the air, so you are not paying a weight penalty just for a small percentage of the flight time.

VECTORED THRUST PRINCIPLE

Mr. RHODES. Because some of the people who read this record may not know what a vectored thrust principle is, would you put something in the record at this point to explain that?

General MCCUTCHEON. Yes, sir.

(The information follows:)

Vectored thrust is a mechanization of turbojet engine exhaust nozzles which provides the capability to direct the engine thrust to desired angles relative to the airframe. Angles which may be selected range from directing the thrust rearward, in which case the vectored thrust aircraft operates the same as any other jet aircraft, to directing the thrust to some angle forward of vertically downward in which case a measure of reverse thrust is provided. When the engine nozzles are directed vertically downward, thrust is provided in the same direction as lift on the airplane wing, and if the magnitude of the thrust is equal to or greater than the weight of the aircraft, it will be capable of taking off and landing vertically. Vectored thrust angles between rearward and vertically downward are usable for "short takeoffs." In this case the vertical component of the thrust assists the airplane wing in lifting the weight of the aircraft, and the rearward component powers the aircraft as in conventional jet flight.

ADVANTAGES OF HARRIER OVER HELICOPTERS

Mr. RHODES. What are the advantages that this plane has over helicopters?

General McCutcheon. The main advantage this aircraft has over the helicopter is in its ordnance-carrying capability, its speed, and its range. No gunship flying now can compete with it in either range, payload, or speed.

The nearest thing coming down the road that would be a competitor with it would be the AH–56 Cheyenne. Although it might lift a heavier payload, it is greatly inferior to Harrier in speed, and would not have the same legs and be capable of intercontinental ferrying in order to get to the combat zone.

Mr. Rhodes. What about the vulnerability of this aircraft to ground-fire as compared to helicopters now in service?

General McCutcheon. We do not think it is any more vulnerable than any other airplane that is flying, due to its maneuverability and its small size compared to the A–4 and certainly its speed over the helicopter. These would make it, I should think, less vulnerable.

We have a special study being run now by the Naval Air Development Center at Johnsville on this specific point.

COST OF HARRIER

Mr. Rhodes. Does the $3.5 million unit cost include all the armament and every other feature of cost that we would ordinarily take into account, such as research and development, prorated? Break down the $3.5 million unit cost for us, will you?

General McCutcheon. Do you want it now?

Mr. Rhodes. If you have it now, I think it would be well to have it.

Admiral Walker. I have that.

In calculating the flyaway cost, which is a portion of the unit cost, airframe accounts for $1.1 million per airplane.

Changes for the airframe, $64,000.

Engines themselves are $934,000.

Electronics, $470,000

Armament itself, which then indicates the armament is included in the flyaway cost, $9,000 per airplane.

Mr. Rhodes. $9,000?

Admiral Walker. That is right, sir.

Mr. Rhodes. You do not mean $9,000, surely.

Admiral Walker. $9,000. These are the components of the airplane which permit you to hang the bombs which we have ourselves, such things as the bomb racks, the gun installation, but not the ordnance itself.

Instruments, $47,000.

General equipment, $121,000, which includes the gun pads and external fuel tanks.

Ordnance, $1,600.

The numbers I have given you total $2.775 million, which is the unit flyaway cost. This, multiplied by 12, gives $33.3 million, which is the flyaway cost for the 12 aircraft.

Then in the area of support, special support equipment, which includes airframe, engine and avionics, totals $6.3 million.

Trainers, $1.1 million.

Publications, $700,000.

Factory training, $500,000.

Contractor technical services, $400,000.

These support items total $9 million for all 12 aircraft.

In addition to that, investment spares and spare parts cost $15.3 million. That $15.3 million is additive to the flyaway and the support, to give you a total of $57.6 million for the entire 12-aircraft program.

Admiral GADDIS. The $3.5 million unit cost does not include the spare parts, which are budgeted elsewhere in this item appropriation.

Admiral WALKER. I can clarify that. The $2.775 is the unit flyaway cost. Then the $9 million of support costs divided by 12 adds $750,000 per airplane to bring the total unit cost to $3.5 million per airplane. That, multiplied by 12, is then added to the investment spares for the grand total of $57.6 million.

Mr. RHODES. If you get 12 aircraft for $57.6 million, I suppose you could say that your unit cost is $5 million-plus, could you not, depending on the way you want to figure it?

Admiral WALKER. Yes, except if you bought more than 12, the unit flyaway cost would decrease and in addition there would not be a comparable increase in support cost or investment spares. These support costs would be spread over a larger number of units.

General MCCUTCHEON. Specifically, if you went to the full ——— that $5 million would drop to around $3.5 million.

Mr. RHODES. Admiral, you testified as to the amount the United States contributed to the development of the Harrier.

Do you have any figures to indicate the total cost of development of the Harrier so we can arrive at some fraction as to our participation?

Colonel HARPER. No, sir. However, I asked the Ministry of Technology how much they have invested in the Harrier program since we dropped out, since the end of the triparty exercise, and they said just a little in excess of ——— million. This is the only figure that I have with respect to the program.

MARTIN-BAKER SEAT

Mr. RHODES. I believe somebody mentioned that there is some possible dissatisfaction with the Martin-Baker seat in this plane. Did somebody mention that?

Colonel HARPER. Yes, sir. The Martin-Baker seat is an excellent seat. However, the strapping procedure they put onto this latest version took a bit too long to get in, as far as our pilots were concerned. There is a trade-off. Once you get into their seat and are strapped in, you are much better off inverted than you are in our own seats, and the chances of back injury are less, at the price of a few additional straps to attach.

Martin-Baker indicated this could be changed. They could put our kind of strapping arrangement on the seat if we desired it. This is an example of a possible change, not mandatory.

Mr. RHODES. Who are the principal American seat manufacturers? Does anybody know?

Colonel HARPER. McDonnell Douglas manufactures many for the U.S. Navy, including the A–7 and the A–4.

Mr. RHODES. There used to be a company in Arizona, that wanted to manufacture some seats. In fact, they had one the Navy thought was pretty good.

General MCCUTCHEON. Stanley used to be in the seat business.

Admiral CONNOLLY. He had one that pulled you out with a parachute. Instead of being shot out, you were pulled out.

Mr. RHODES. The one I was talking about was the conventional shoot-out.

General MCCUTCHEON. The Martin-Baker seat is in all the F–4's and it is made in England.

Admiral WALKER. I would like to add something here in connection with Stanley. I am inclined to think this may be the company you are thinking about, sir.

Mr. RHODES. I think they merged with somebody, and I do not know what the name is at the present time.

Admiral WALKER. They have been involved in proposals for the ejection aspects of several of the newer model aircraft, including the F–111 and our F–14. Initially, one of the 5 proposers did have the Stanley ejection system as part of its proposals. So, this company is still active in this area.

F–4J PHANTOM II AIRCRAFT

Mr. ANDREWS. Admiral, in fiscal year 1969 the Navy was funded ——— F–4J Phantom II fighter aircraft at a cost of $221.8 million. You are applying $25.8 million of advance procurement money toward this buy. However, you were funded only $17.2 million in fiscal year 1968 in advance procurement money.

ADVANCE PROCUREMENT FUNDS

Where did you obtain the remaining $8.6 million?

Admiral WALKER. The remainder of the advance procurement funds, $8.6 million, was budgeted in fiscal year 1967. In fiscal 1967, advance procurement funds were budgeted for fiscal year 1968 program, and the F–4J program in 1968 was canceled. So, these 1967 funds were available then to finance a portion of the 1969 program.

OPERATIONAL LOSSES

Mr. ANDREWS. You have indicated that the fiscal year 1970 request for F–4J's will provide replacements for operational losses. How recent is the combat loss data upon which this request was based? Tell us something about your loss record.

Admiral CONNOLLY. The fiscal year 1970 budget is based on combat sortie and loss rate experience from 1 November 1968 to 11 December 1968. This is the period of the first 41 days after the cessation of the bombing of North Vietnam.

The attrition rate during that period was ——— F–4 aircraft per 1,000 sorties. The most recent combat loss rate based on the period 1 November 1968 to 30 April 1969 is the same ——— aircraft per 1,000 combat sorties.

Mr. ANDREWS. How many F–4J's have we lost in the past 6 months when compared to the previous 6 months?

Admiral CONNOLLY. In the 6 months' period from 1 November 1968 to 30 April 1969, the Navy and Marine F–4 losses were ———. Combat losses were ———.

During the previous 6 months' period, 1 May 1968 to 31 October 1968, Navy and Marine F–4 losses were ———. Combat losses were ———.

The request for 34 aircraft will not replace our projected total losses. As a consequence, our fighter force will decrease in numbers.

FUTURE PROCUREMENT OF F–4J'S

Mr. ANDREWS. You are requesting $11.2 million in advance procurement funds in fiscal year 1970 for the F–4J. How many do you propose to buy in fiscal year 1971?

Admiral CONNOLLY. ———, sir.

Mr. ANDREWS. How long will we be buying F–4's before the F–14A becomes a reality?

Admiral CONNOLLY. The fiscal year ——— is our planned last buy for the F–4 under current plans. The total approved in our 5-year defense plan for fiscal year 1971 to 1973 is ———. The Navy's procurement objective for that period is ———.

F–4J COST OVERRUNS

Mr. ANDREWS. You experienced cost overruns of $30.6 million in fiscal year 1966 and $4 million during the first half of fiscal year 1969 on the F–4J aircraft. What were the reasons for these cost overruns?

Admiral CONNOLLY. The fiscal year 1966 increase reflects a negotiated price increase of $14.4 million and increased support costs owing to the combined effect of price increases and augmented requirements.

The fiscal year 1969 increase reflects similar combined effects of price increase and augmented requirements.

A breakdown of the $30.6 million total increase follows:

The final negotiated price increase was $14 million.

Special support equipment for the AWG–10, $935,000.

Portable vans for intermediate level repair at overseas bases for avionics, $5.85 million.

Improved trainer to provide increased cockpit procedure and ASW25 data link training facility, $1 million.

A total of $30.68 million.

Mr. ANDREWS. You say $14 million was for increased costs?

Admiral CONNOLLY. Yes, sir; negotiated price increase.

Mr. ANDREWS. What period of time does that $14 million figure represent?

Admiral CONNOLLY. I do not believe we know that.

Mr. ANDREWS. Put something in the record about it.

Admiral CONNOLLY. We will get it, sir.

(The information follows:)

The $14.4 million increased cost of the fiscal year 1966 F–4J airframe is that which has occurred since the fiscal year 1966 supplemental appropriation for Southeast Asia was approved by the Congress in April 1966. The magnitude of this increase first became known in the summer of 1966 when we were negotiating firm airframe prices with the prime contractor. At this time, the Navy submitted a reprograming action reflecting this increase, which was approved by the Secretary of Defense on September 24, 1966.

There have been no cost increases since that time; in fact, the program, which has a value of approximately $400 million, has had cost decreases of $3.8 million. Since the program is virtually completed, no further cost adjustments are anticipated.

The reason that our budget estimates were at variance with actual costs is related to the costs necessary to accelerate the F–4 production line to insure adequate fighter aircraft for Navy and Marine Air Forces in Southeast Asia.

In this instance, the costs of the production line acceleration were not accurately predictable.

VALIDITY OF PROJECTED F–4J COSTS

Mr. ANDREWS. How confident are you about your cost estimates for the fiscal year 1970 program buy?

Admiral CONNOLLY. We are confident. We do not have any reason to believe they are going to get away from us.

Do you have anything further to add?

Admiral WALKER. Only that our history now is such that at this point in time we have confidence in our present prices. The cost increases we were just discussing were for earlier years. We are now settled down and have full confidence in these prices.

Mr. ANDREWS. What provision, if any, has been made for substantial increases in the cost of labor and material in this program?

Admiral WALKER. We do carry an escalation factor in all our programs which takes into account anticipated increased costs in labor and materials.

Mr. ANDREWS. Percentagewise, what would you say has been the yearly increase in cost of aircraft purchased by the Navy?

Admiral CONNOLLY. Four percent a year.

Mr. ANDREWS. You have taken that into account in connection with these figures you have given us?

Admiral CONNOLLY. I am not being as definitive about this as I would like to be. It seems to me we have a contract—I know we do with Grumman on the F–14, and I think we have on McDonnell—that goes for a fixed period of time, and if there are any cost overruns, they get it.

After 3 or 4 years of this arrangement, then the next 3 years are negotiable based on what happens to the Bureau of Labor Statistics.

Mr. ANDREWS. Did you have a fixed price contract when you had a $14 million increase?

Captain HARVEY. The fiscal year 1969 contract is a fixed price incentive contract, the one we would plan for 1970 being a fixed price-incentive as well. That means you have a target price with a ceiling swing.

Mr. ANDREWS. Which would take into consideration the increased cost of material and labor.

Captain HARVEY. Yes, sir.

Mr. ANDREWS. So-called escalation?

Captain HARVEY. Or decreased costs of labor and material if we are fortunate enough to have those.

Mr. ANDREWS. You have not had one of those in a long time.

Captain HARVEY. Yes, sir, we have them on a general basis but not on this specific program. We have them sometimes through cost decreases due to extra efficiency. There we might have a saving. At a fixed price-incentive contract type it is designed to share increases or decreases and savings.

Mr. ANDREWS. Was this $14 million above the ceiling or cost?

Captain HARVEY. I do not have the statistics for the 1966 program, sir, but I think it would be from the target. On a fixed price-incentive contract you talk about price increases or decreases from the targets.

Mr. ANDREWS. Put more information in the record as best you can.

(Information requested follows:)

The $14.4 million F–4J airframe cost increase does not specifically relate to target or ceiling costs but to the amount this program actually cost compared to the amount estimated in our budget submissions. This program cost $14.4 million more than we had budgeted.

With reference to the target and ceiling cost of this program, the $14.4 million total increase includes a $3.5 million increase over the target.

HARRIER AS TRADE-OFF FOR F–4J

Mr. LIPSCOMB. In the January 1969 procurement program justification book for fiscal year 70 on page 2, it showed that the program for F–4J was 51.

In the revision in April 1969 it was reduced from 51 to 34.

Also in that same justification book it shows that there were no Harriers proposed in January but in the revision the number 12 came into being.

What is the relationship, if any, of this revision and why was it revised?

Admiral CONNOLLY. I believe we are talking FY–70.

Mr. LIPSCOMB. Yes.

Admiral CONNOLLY. The 51 came about in this way. We originally asked for a larger number. OSD came back to us with the revised expected losses and cut us back to 51.

These were to be shared by the Marines and the Navy. The Marines' share of that 51 would turn out to be about ——— airplanes and about ——— to go to the Navy.

In order to get this Harrier the Commandant of the Marine Corps came forward in November or December and asked the Secretary of the Navy for support in procurement of Harriers without running up the fiscal year 1970 budget.

The offering was to compensate for Harriers with F–4's as the trade. They looked over what they could trade and they felt they could trade these if it was all right with the authorities in the Department of Defense and with the Members of the Congress.

Then to price out and pay for the 12 as we have been going through here, $57 million, that is how the 17 came off.

Admiral GADDIS. The change you speak of was that this proposal for Harrier as a trade-off in the regular President's budget, as you say in the January submission, came so late in the budget review season that Mr. Clifford and Mr. Nitze deferred decision at that time.

When we had the budget review under Mr. Laird and Mr. Packard the question of Harrier was reopened and was accepted as an equal-cost tradeoff in the budget amendment which was delivered in April to the Congress.

Mr. ANDREWS. You traded off 17 F–4J's for 12 Harriers?

Mr. LIPSCOMB. 17 or 18.

Admiral GADDIS. That is right, 17, sir.

Mr. ANDREWS. That is the wish of the Navy and the Marine Corps?

Admiral GADDIS. Yes. It is a dollar tradeoff, $57.6 million.

Mr. LIPSCOMB. Does the Navy intend to try to recoup next year the 17 F–4J's and put them back in your program?

General MCCUTCHEON. The Marine Corps' intent is to put Harrier in in lieu of the F–4's.

OSD ACTION ON HARRIER

Mr. LIPSCOMB. Was the Harrier request in the original Marine Corps submission to the Office, Secretary of Defense?

Admiral GADDIS. It was not in the Secretary of the Navy's submission. The question had not come up at that time, sir. That was submitted on October 1, 1968.

Mr. LIPSCOMB. And at that time the request was turned down by the then Secretary of Defense?

Admiral GADDIS. The request had not been made as of the Secretary of the Navy's budget submission on October 1.

The Commandant's request was made to the Secretary of the Navy in late November and was forwarded to the Secretary of Defense in December, sir.

Mr. LIPSCOMB. They took no action?

Admiral GADDIS. That is correct. They deferred action on the basis of the time being so short until they had to close up the budget that they really couldn't do it with confidence at that time.

General MCCUTCHEON. I believe they viewed it would be subject to a reprograming action on the 1970 budget later. The Marine Corps reopened it when the opportunity came along in January and February in order that we could get started on the program sooner and so that the Congress could be apprised of our intention at an earlier date.

Admiral CONNOLLY. The Secretary of the Navy did go down with the 12 and we did do a lot of discussing on whether to wait for 1971. The argument against it is that there are always so many reasons to wait.

What happened was that in the fall the Marines had done enough work, done enough flying of the airplane, the airplane had suddenly become much more attractive to the Marine Corps than they had realized before, and the whole program came about in just the way I am describing it upon the initiation of the young combat fliers who flew it.

Mr. LIPSCOMB. If the Marine Corps had gone ahead with the 17 F–4J's as originally programed, when would they have come into your inventory?

Admiral CONNOLLY. We get the airplanes in the calendar year following the fiscal year. When the fiscal year 1970 authorization and appropriation comes, we start receiving the planes as a rule of thumb in the calendar year following, between January and December of 1971.

Mr. LIPSCOMB. So there is a lag between the receipt of the Harrier and what would have been the receipt of the F–4J's?

Admiral GADDIS. They will be received in essentially the same timeframe.

Mr. LIPSCOMB. I though you said the Harrier would begin being delivered in ———.

General MCCUTCHEON. I corrected that to ——— sir.

F–4J UNIT COST

Mr. LIPSCOMB. The fact that the Marine Corps reduced its request by 17 raised the fiscal year 1970 unit cost of the F–J4 by approximately $540,000 per plane?

Admiral WALKER. Flyaway costs under the 34-aircraft program are ——— million. Under the 51-aircraft program they were ——— million.

Mr. LIPSCOMB. That is not what is shown on page 2, Admiral, of the justifications book.

Admiral WALKER. I am afraid we are involved again in this difference between flyaway unit cost and total program unit cost which represents——

Mr. LIPSCOMB. The book uses the column "unit cost".

Admiral WALKER. In that connection, then, sir, your figures are correct.

Mr. LIPSCOMB. Why does a reduction of planes increase the fiscal year 1970 unit cost by some $540,000 per plane?

Admiral WALKER. With your permission, sir, I would highlight the the areas which are the more significant. There are 15 different items of increases.

Mr. LIPSCOMB. Give a couple of good examples now and put the rest in the record.

(The information follows:)

THE FISCAL YEAR 1970 F-4 UNIT COST INCREASES BY ITEM

Item	Unit cost		Difference
	51 aircraft program	34 aircraft program	
Airframes	$1,939,045	$2,196,699	+$257,654
Airframe changes	76,163	87,868	+11,705
Engines	414,000	414,000	
Engine accessories	24,215	24,699	+484
Electronics	718,846	774,537	+55,691
Other equipment	85,578	87,285	+1,707
Support costs	785,290	997,264	+211,974
Total	4,043,133	4,582,352	+539,186

Admiral CONNOLLY. In the area of electronics in the F–4J, for example, where the 51 aircraft buy has for electronics $719,000 per airplane, in the 34 buy this number is $774,000.

Mr. LIPSCOMB. Why would that increase?

Admiral WALKER. I would have to say here that this increase results from the lower production rate of the sophisticated AN/AWG–10 Fire Control Systems installed in the aircraft. This lower production rate results in fixed overhead costs being spread over fewer production units, thus increasing the unit cost.

Admiral GADDIS. The principal area is that support costs which are part of the unit cost in addition to flyaway are related to the program year more than they are related to the number of aircraft you buy. Therefore, if you have $20 million of support costs spread over fewer airplanes the unit cost increase due to support costs is higher per aircraft.

Additionally, the various manufacturers have a relatively fixed overhead in terms of tooling, assembly, engineering and administrative personnel and other items that are essentially unchanged at any production level below a certain rate and must therefore be prorated against the quantity of aircraf to be procured. As the quantity of air-

craft to be procured decreases a higher percentage of the unit cost is related to this fixed overhead.

Admiral WALKER. The area under question is not in connection with support only. I think it boils down, Mr. Lipscomb, to the fact that as you buy fewer airplanes it costs you more per airplane.

Another example would be the airframe itself. The unit cost for airframe alone for 51 is 1.9 per airplane and for 34 it is 2.2.

Admiral CONNOLLY. In summary you are way ahead of us. You cut the buy and they spread their overhead and their taxes and their profits to stockholders. As Admiral Gaddis said, you have certain fixed support costs there so that by the way the accounting goes it has to be tied to each airplane.

PURCHASE OF F–4J'S BY FOREIGN COUNTRIES

Mr. RHODES. How many other countries are buying F–4J's?

Admiral CONNOLLY. I think the Israelis are trying to buy.

Admiral WALKER. ———. We can give you the exact number for the record.

Mr. RHODES. I wish you would give the exact number of planes being bought and the approximate dates of delivery.

(The information follows:)

The F–4 is currently being bought by the United Kingdom, Iran, Israel, and the Federal German Republic. The following chart shows the quantity being procured and the delivery dates by country:

Country	Quantity being procured	(Calendar year) delivery period
United Kingdom	———	———
Iran	———	———
Israel	———	———
Germany	———	———

Mr. SIKES. Are you telling us that because of the change in the program as amended in April that the plant making the F–4J's—I assume it is the St. Louis plant—will curtail its activities?

Admiral CONNOLLY. I will say that I don't know the answer to this question. I will have to find out.

Mr. RHODES. I will have to know before I accept your version of this unit cost increase.

Mr. LIPSCOMB. I agree. I also will have to know.

INCREASE IN UNIT COST

Mr. RHODES. I do not go along with this "J. C. Penney" argument that the more overalls you buy the less expensive they are always. This may be true but if your change in program is causing McDonnell-Douglas to shut down its line or change its capacity for operation then maybe you have a point, but I certainly would like to see something more than we have had here today.

Admiral CONNOLLY. It seems McDonnell had a strike during this period and negotiated some wage increases. I don't know how that affected the contract.

Mr. RHODES. I don't, either. The point you are making is that you are buying fewer and therefore you have to pay more. This would be true if it made a change in the total output of the factory.

Admiral CONNOLLY. I don't like to be on the side of arguing on the side that it is logical. I don't understand the details of it, either.

Mr. RHODES. If you will, supply something more persuasive for the record than anything you have now.

Admiral CONNOLLY. We will dig it out, sir.

(The information follows:)

INCREASE IN F–4J UNIT COST

The following discusses the unit cost increases in the proposed fiscal year 1970 F–4J procurement which was reduced from 51 to 34 aircraft in the amended budget. This unit cost increase is estimated at $539,000. The areas of increase and an explanation follow:

Airframe (unit cost increase of $270,000): Approximately $200,000 is attributable to lower production at the prime contractor's facility. The delivery rate for F–4 aircraft will be ——— aircraft per month lower with the 34-aircraft program than with 51 aircraft. Since only ——— aircraft per month (all services, including foreign military sales) are being produced in the delivery period, this decrease of ——— per month is significant in relation to total production. The contractor's fixed costs, such as sustaining engineering, plant maintenance overhead, and testing, will be spread over fewer production units, thus raising the cost of each unit. For example, the cost of sustaining engineering ($8 million) remains constant with 51 or 34 aircraft.

In addition, our estimates include significant nonrecurring costs for two improvements we plan to make to F–4J's in fiscal year 1970. These nonrecurring costs add approximately $70,000 to the unit cost of each aircraft when prorated against 34 instead of 51 aircraft. One of these improvements is a new environmental control system ($5.1 million) necessary to provide proper cooling of both the crew and complex electronic airborne equipment. The other improvement is a new aircraft wiring system ($1.3 million) designed to carry more current but at the same time reduce appreciably the weight and volume of wiring.

Electronics (unit cost increase of $57,000): This unit cost increase in related to the AN/AWG–10 airborne missile control system. This sophisticated equipment is government furnished. The contractor's nonrecurring costs, estimated at $8 million, will remain constant although procurement is reduced from 51 to 34 units. These nonrecurring costs are estimated at $6 million for sustaining engineering, $1 million for facility maintenance and upkeeps, and $1 for testing and calibration.

Support equipment (unit cost increase of $212,000): Generally, support equipment costs are related to outfitting of aircraft operating sites and not the aircraft procurement quantity. In planning for 51 aircraft, we included $40.1 million for support or $785,000 per aircraft. For 34 aircraft, $33.9 million, or $997,000 per aircraft, is required.

The $33.9 million will be utilized as follows: (1) for special support equipment, $11.4 million is necessary for two new sites (NAS Atsugi and NAS Cubi Point), an increased number of operating aircraft at NAS Key West, and for AIMS and all-weather carrier landing systems equipment for which support equipment has not been previously procured. (One site outfitting, MCAS Cherry Point, was deleted when the program was revised from 51 to 34 aircraft.) (2) The sum of $11.7 million is required for trainers and training, primarily for weapon system trainers at NAS Miramar and Key West to insure that F–4 crews train with equipment configured consistent with operating aircraft. (One trainer, for NAS Oceana, was deleted when the program was revised from 51 to 34 aircraft.) (3) The sum of $1.1 million is required for publications updating to reflect the latest aircraft configuration. (4) The sum of $9.7 million is requested for contractor engineering technical services which includes 323 engineers at 25 F–4 operating sites. (This amount was estimated at $10.2 million in our original submission.)

FUTURE PRODUCTION REQUIREMENTS

Mr. LIPSCOMB. Did you have a tentative contract in existence for 51 aircraft for fiscal year 1970?

Admiral WALKER. No, sir.

Mr. LIPSCOMB. Did this change in any way affect the overall anticipated buy of F-4J's which would have made a difference in the price?

Captain BURTON. Yes, sir. It definitely does. The production would be about ——— per month less.

Admiral WALKER. It would be closer to ——— per month less, sir.

Mr. ANDREWS. Will the line close after you get through these 34?

Admiral WALKER. No, sir. We have additional buys for 1971, 1972, and 1973 in the program of, ——— and ——— aircraft respectively.

Mr. ANDREWS. It seems to me that is all the more reason they should not increase the cost. If the line were going to close it might make a difference.

Admiral CONNOLLY. It will not close.

Mr. ANDREWS. Any other questions?

(No response.)

F-111B/PHOENIX WEAPONS SYSTEM

Mr. ANDREWS. Now we will take up the F-111B Phoenix weapons system.

At the request of this committee the General Accounting Office submitted a report in March of 1969 on the costs and benefits of the F-111B Phoenix weapons system.

According to this report, as of September 30, 1968, the Navy had recorded obligations of $304.7 million for the R.D.T. & E. and procurement of the F-111B aircraft.

This total does not include early development funding of the F-111 provided by the Air Force. Final program costs have not been negotiated.

F-111B TOTAL PROGRAM COSTS

Do you have an estimate of what total program costs might be?

Admiral WALKER. The estimated Navy total cost to date for the F-111B is $335.4 million divided amongst R.D.T. & E. and PAMN. The R.D.T. & E. total is $187.4 million and the PAMN $148 million.

However, these costs include the development and procurement of items which are planned to be utilized in other Navy ongoing programs such as the F-14, the F-30P12 engines, Phoenix missile fire control system, and other avionics.

If the costs for the development and procurement of these items are subtracted out the net cost to the Navy for the F-111B program is estimated to be $115 million.

BENEFITS OF F-111B PROGRAM

Mr. ANDREWS. What have we benefited from the moneys spent in the F-111B program? You mentioned a few of them there.

Admiral WALKER. I think probably our principal benefit as far as the ongoing F-14 program is concerned is the TF-30 engine and the

Phoenix missile system which was originally developed for the purpose of use in the F–111B.

This program now gives us a stage in the development of the Phoenix system which is well beyond that which we would have had if we had started with the F–14.

NAVY LOST COST OF F–111B PROGRAM

Mr. ANDREWS. Getting back to the net loss, you feel that is the loss that will be sustained? Out of the $335.4 million you salvaged $220.4 million in the Phoenix system, with the engines and the F–14, and came out of it with a net loss of $115 million.

Admiral CONNOLLY. That is right. The man who has been living with this steadily for the last 3 years is winding up the Navy's end of the F–111. He is here and these are his figures. He has rationalized them with respect to the utilization we have gotten out of the F–111's for the Phoenix testing, the engines we purchased which can be used as spares for support, and as figured out it comes out to $115 million which were lost costs by the Navy.

NAVY USE OF F–111B AIRCRAFT

Mr. ANDREWS. How many planes did you actually receive, Captain?

Captain SCAMBOS. We have received five R and D airplanes and two production airplanes over the total contract.

Mr. ANDREWS. Total of seven?

Captain SCAMBOS. Yes, sir; that is correct.

Mr. ANDREWS. What do you plan to do with those seven aircraft? First, how many have you lost?

Captain SCAMBOS. We have lost two.

Mr. ANDREWS. You still have five?

Captain SCAMBOS. Yes, sir.

Mr. ANDREWS. What do you plan to do with them?

Captain SCAMBOS. Number one, which was the first prototype—if you recall we had a weight problem with the F–111—this airplane represented that model which did not have weight corrections in it. That has been used previously for early flight test development of the F–111B.

It has since been shipped to the Naval Air Propulsion Center at Lakehurst, N.J., so that we can test the barricade characteristics of swept-wing aircraft.

You know, sir, that abroad the carrier if for some reason an airplane cannot use its normal arresting procedure we have emergency arresting procedures which we call barricade. The barricade essentially straps around the leading edge of the wing and stops the airplane in that manner.

We are using the airplane to test that.

Following that we will use the airplane for gunfire tests, indicating gunfire vulnerability characteristics of the airplane, to give us some knowledge for future aircraft.

Number 2 we used on Phoenix flight testing. We lost this airplane last year as you recall.

Number 3 is currently supporting Phoenix development flight testing at Hughes Aircraft Corp.

Number 4 we lost at Grumman, if you recall, April of 1967.

Number 5 we have fully utilized in flight tests and have now given it to NASA which is putting it into their Ames full-scale wind tunnel to develop further fundamental aerodynamics of swept-wing performance aircraft.

As the production aircraft, we have two–No. 6, which is the first we have bought on the production contract but we felt, and the Congress agreed, that these aircraft, too, should continue in the support of the research and development of this program. We have done some flight tests on No. 6. It has given us some testing information on the TF30–P12 engine installation; and No. 7 is currently at Hughes Aircraft having a Phoenix fire control system put into it to help further flight test development of the Phoenix weapons system because of the loss of No. 2 aircraft.

CALCULATION OF LOSS

Mr. ANDREWS. When you estimate that your net loss is $115 million, you take into consideration the seven aircraft that you got, five of which you still have?

Captain SCAMBOS. Yes, sir.

However, let me explain my rationale. I have assumed for the calculations General Dynamics in the R. and D. has received $62.7 million.

I have said in my rationalization that we will count only two of the five airplanes as being useful to the Phoenix flight test program which supports the F–14.

I completely wrote off every other R. & R. airplane at no value, on the assumption that we would have gotten all the information on swept-wing technology, turbofan engine characteristics, and the flight control system, all from the Air Force program had the Navy not participated at all. I have written off 60 percent of the $62.7 million as lost.

CANCELLATION OF PROGRAM

Mr. ANDREWS. When did the Navy officially disassociate itself from the B program?

Captain SCAMBOS. The Government notified the contractor to terminate work on the F–111B on the 10th of July 1968.

Two days prior to that the Secretary of the Navy asked the Secretary of the Air Force, who was the executive agent on this program, to issue a stop work order to that effect.

Mr. ANDREWS. Was that after you received delivery of No. 7?

Captain SCAMBOS. No, sir; it was not. No. 7 was approximately 90 percent complete and it seemed economic to us to take delivery in that there was a clear utilization for that airplane to put a Phoenix fire control system in it.

Mr. ANDREWS. What did the Navy pay for No. 7?

Captain SCAMBOS. That problem has not been precisely determined at this point. Let me explain why.

There was some work which the Navy wanted continued after July 10, 1968. Completion of No. 7 is one item. Therefore the Navy is ne-

gotiating a follow-on contract with General Dynamics which will support the development of the F–14A. We have not completed negotiations on the contract. When that contract is signed I will be able to tell you what the cost of aircraft No. 7 is.

Mr. ANDREWS. I wish you would put whatever information you can about it in the record.

Captain SCAMBOS. Yes, sir; I would be reluctant even to give you an estimate at this point for fear it might compromise our negotiating position with the company.

(Information requested follows:)

The current unit cost of F–111B No. 7 cannot be estimated at this time since the cancellation costs and the new contract for work continued after the stop work order, part of which is completion of F–111B No. 7, have not been negotiated. Prior to the July 10, 1968, stop work order, the unit cost of this aircraft was estimated to be $13.4 million.

ADJUSTMENTS TO THE $115 MILLION IN LOSS COSTS

Mr. ANDREWS. Is the Navy protesting the failure of the contractor to meet specifications of the F–111B?

Captain SCAMBOS. Yes, sir. On the 14th of December the Government and the contractor signed a settlement agreement and that settlement agreement includes our estimate of approximately $23 million in penalties to the contractor based on target costs and target profits and approximately $16 million in actual costs and actual profits.

Mr. ANDREWS. Do you have any hope of cutting this $115 million net cost to the Navy by actions which might be taken against the contractor?

Captain SCAMBOS. That $115 million figure has been figured after the actions we have taken and contemplate taking with the contractor, sir.

However, the——

Mr. ANDREWS. Then this $115 million figure could be more or less?

Captain SCAMBOS. The $115 million figure, sir, is an estimate after applications of judgment values on my part as to what should be included and what is not included.

Let me say that the $115 million figure includes work in process peculiar to the F–111B which the Air Force may utilize after some rework costs. I did not even consider that as reducing our loss costs, but I wanted to take a very conservative approach as to what is the maximum the Navy would lose in such a program.

The $115 million is the maximum figure.

Mr. ANDREWS. So it could be reduced?

Captain SCAMBOS. Yes, sir; it could.

Mr. ANDREWS. We will ask you again next year. You should have more figures available.

Captain SCAMBOS. Yes, sir; I hope so.

AVIONICS SYSTEM

Mr. RHODES. Captain, in coming to your $115 million total, are you assuming that the Mark 2 avionics system is completely usable and 100 percent effective?

Captain SCAMBOS. It has absolutely no relation to the F–111B, sir. That is only in the F–111A, D, and FB which are Air Force versions.

Mr. RHODES. Do you have an avionics system comparable to that?

Captain SCAMBOS. I would say comparable but not directed to the same mission.

Mr. RHODES. How did you handle that in your account? Did you assume that it was an asset of the Navy which would continue?

Captain SCAMBOS. Yes, sir. I subtracted only from the Phoenix R. & D. some $4.3 million which was spent prior to the termination where we asked Hughes Aircraft to reconfigure the Phoenix fire-control system to fit the carrier suitability changes which we had ordered prior to the termination.

Admiral CONNOLLY. When the Congress indicated it would not finance the F–111 in fiscal year 1969 that was the beginning of Captain Scambos' particulars and the program manager started to clamp down on anything he possibly could going into F–111B. This young man has done a very fine job for the Navy and the country in this program and others, Mr. Lipscomb.

RECOUPMENT OF PROCUREMENT FUNDS

Mr. ANDREWS. The fiscal year 1969 appropriation action by Congress required that a total of $115.5 million of unobligated procurement funds, appropriated in prior years for the F–111B, be applied to Navy fiscal year 1969 procurement requirements, making possible an offsetting reduction in congressional authorization.

According to GAO, $61.7 million of this amount had not been recouped as of December 16, 1968.

Has all this money been now recouped? If not, what is the delay?

Captain SCAMBOS. To date we have recouped $109.4 million in the PAMN account. We estimate that there will be an additional $18 million which we will receive from the Department of the Air Force for F–111B common parts which we have transferred to them for utilization on the ongoing F–111 series.

Another part yet to be recouped in PAMN is six and a half million dollars' worth of penalty which the contractor agreed to pay under this December 14 settlement agreement. He would pay that by July 1 of 1970.

Finally I estimate that the Navy will recover an additional $17 million from the contractor when we have audited his costs and have taken account of the fact that in accordance with the settlement agreement he will receive no profit for all work done on the F–111B prior to July 10, the date of the stop-work order.

If these parts are added it is my estimate within the estimating accuracy that we will fulfill the $151.5 million PAMN recoupment objective.

Mr. ANDREWS. So you do anticipate recouping all of the $151.5 million in one way or another?

Captain SCAMBOS. Yes, sir, but it will probably take 12 to 18 months from now.

Mr. ANDREWS. July of 1970?

Captain SCAMBOS. I say the end of fiscal 1971.

RECOUPMENT OF R.D.T. & E. FUNDS

Mr. ANDREWS. GAO also advised that $28 million of unexpended R.D.T. & E. funds for the F–111B could also be recouped, but that only $8.8 million of that amount had been recouped as of December 16, 1968.

What is the reason for the delay in recovering the remaining $19.2 million?

Captain SCAMBOS. We have recouped $8.8 million as reported. We estimate that from $20 to $25 million additional R.D.T. & E. funds are possible.

Mr. ANDREWS. $20 to $25 million?

Captain SCAMBOS. Yes, sir. I think the GAO report probably is the result of an earlier estimate. I would like to make a short statement here, and that is to remind the committee that the current PAMN and R. & D. recoupment objectives laid on the Navy were based on Navy estimates provided in April of 1968 when there existed a number of major uncertainties about the future of this program. For example, the mode of termination was unknown at that time. It would make a great deal of difference whether the termination was for convenience or default so far as costs recouped are concerned.

Therefore, at the time I placed a strong caveat on the estimates to the effect that they involved possible inaccuracies of as much as 20 percent, plus or minus.

Secondly, the detailed design of the F–14 was not known, and therefore precise utilization of avionics and components under development under the F–111B program could not accurately be determined at that time.

It was considered prudent, however, to plan on continued development of most of those components which could be utilized on the F–14 to minimize termination and restart costs.

Cost of continuing such a program was estimated at $55 million.

We told Congress and they agreed that was probably the prudent way to go.

Now that the termination has been implemented the F–14 detailed design formulated and some informal Navy audits of contract costs made, the Navy F–111B R.D.T. & E. recoupment can be more accurately estimated as a total between $29 and $34 million.

Mr. ANDREWS. Do you hope to recoup all of the $28 million mentioned by the GAO in the R.D.T. & E. area?

Captain SCAMBOS. Yes, sir; our recoupment estimate at this point is $29 to $34 million.

Mr. ANDREWS. We will ask you next year again about these figures.

Captain SCAMBOS. Yes, sir.

PHOENIX MISSILE SYSTEM

Mr. ANDREWS. The GAO report discloses that as of September 30, 1968, the Navy has recorded obligations of $496.1 million for the Phoenix missile system. Current cost estimates reportedly are ——— million for the R.D.T. & E. and ——— million for procurement.

Are these your best estimates today for the Phoenix missile system?

Commander FETHERSTON. In the Phoenix R.D.T. & E. program element we are estimating $412.7 million to complete the development of the Phoenix system in parallel with the schedule which now pertains to the F–14A aircraft. This includes planned funding through fiscal year 1974.

The fiscal year 1970 increment of that planned funding is $17.5 million.

Mr. ANDREWS. What does the procurement estimate include?

Commander FETHERSTON. That is the Phoenix R. and D. only. The Phoenix missile procurement estimate shows no fiscal year 1970 buy contemplated. We have had fiscal year 1968 and 1969 funds appropriated for missile procurement.

Fiscal year 1971 will be the first missile PAMN which is planned

Mr. ANDREWS. The GAO report stated that there was ——— million for procurement as of September 30, 1968. What does that procurement estimate include?

Commander FETHERSTON. I am not familiar with the figure, sir. I will have to look at it and perhaps provide information for the record.

Mr. ANDREWS. What about the R.D.T. & E.?

Admiral CONNOLLY. May we have that question again?

Mr. ANDREWS. The GAO report of September 30, 1968, states that the current cost estimate reportedly is ——— million for R.D.T. & E. and ——— million for procurement.

The question is what does the procurement include?

Admiral CONNOLLY. I have different figures. For example, I have the figure that the total R.D.T. & E. would be $372 million.

Mr. ANDREWS. As against the ——— million of the GAO?

Admiral CONNOLLY. And I have the figure of total PAMN of 42.1.

As the commander says, we have no 1970 buy of Phoenix because we are taking advantage of the fact that the F–14 will be later than planned.

Mr. ANDREWS. You are not planning at this time to procure Phoenix in 1970?

Admiral CONNOLLY. That is right.

Mr. ANDREWS. How much procurement money have you obtained at this time?

Commander FETHERSTON. We obtained 30.5, sir, in fiscal year 1968 and 55.9 in 1969.

Mr. ANDREWS. That is $86.4 million.

Commander FETHERSTON. Yes, sir.

FUTURE PROCUREMENTS OF PHOENIX MISSILES

Mr. ANDREWS. Do you have any estimate of future procurement?

Commander FETHERSTON. Yes, sir. That is probably what GAO is referring to. The number of missiles has changed.

Mr. ANDREWS. Let us get the record clear, then. As of today you have received $86.4 million for procurement of the Phoenix missile system.

You do have further requirements for procurement requests, of course.

Admiral CONNOLLY. The 5-year defense plan calls for ——— Phoenix in fiscal year 1971. However, our request will be, if it stands up, ———. This is for 1971.

Mr. ANDREWS. Do you have a dollar value on that?

Admiral CONNOLLY. ———.

Mr. ANDREWS. That will be in addition to the $86.4 million?

Admiral CONNOLLY. Yes, sir.

Mr. ANDREWS. ———.

Admiral CONNOLLY. Yes, sir.

Mr. ANDREWS. Off the record.

(Discussion held off the record.)

GAO REPORT ON PHOENIX MISSILE

Mr. ANDREWS. Let me read from page 19 of the GAO report to the Committee on Appropriations dated March 14, 1969, dealing with costs and benefits of the F–111B aircraft and costs of the Phoenix missile.

"The Navy had originally estimated in 1962 that the total cost for the Phoenix missile system would amount to approximately ——— million. As indicated by recent Navy development plans costs expected to be incurred have increased to about ——— million.

"The initial cost estimates for R.D.T. & E. and procurement were ——— million and ——— million respectively. Current estimates are ——— million and ——— million respectivley."

Those are the figures we are talking about.

Have you seen this report, Admiral Connolly?

Admiral CONNOLLY. I have not seen it personally.

Mr. ANDREWS. I wish you would comment on it in the record.

Admiral CONNOLLY. I will. We have material which does address itself to this and perhaps our totals are the same.

Mr. ANDREWS. I have read the paragraph from the General Accounting Office report. Take it and see what you can tell us for the record.

Admiral WALKER. As soon as we obtain this report we will certainly study it carefully.

(Information requested follows:)

GAO REPORT ON PHOENIX MISSILE

The "* * * recent Navy development plan * * *" referred to in the March 14, 1969, GAO report was Phoenix technical development plan (WF16–08) dated April 1, 1968. This report is updated annually. The April 1, 1968, report was for Phoenix missile system development keyed to F–111B requirements. With termination of the F–111B in July 1968, the Phoenix development has been redirected to the F–14A. The total R.D.T. & E., N. estimate is now ———. The estimated $6.5 million increase over the figure contained in April 1968 technical development plan appears in fiscal year 1971 and subsequent years since Phoenix fleet introduction was delayed ——— years when it went from the F–111B to the F–14A schedule. Additional development funding has been included for supporting activity at the contractor's plant and at Point Mugu. Correspondingly, the procurement figure in the March 1969 GAO report was for the procurement of ——— missiles. The tentative program objectives for fiscal year 1971 call for ——— production missiles for ——— as the total program.

COST OF PHOENIX LAUNCHER

Mr. ANDREWS. Do the above costs include the design of a new Phoenix launcher for the F–14A aircraft? What will these costs be?

Captain AMES. The above costs do not include the costs of the launcher since that is included in the F–14A development costs.

Mr. ANDREWS. And are part of the aircraft?

Captain AMES. Yes, sir.

Mr. ANDREWS. Do you have any idea what those costs will be?

Captain AMES. No, sir.

Mr. ANDREWS. See if you can put something in the record on that.

(Information requested follows:)

The best estimate for the development of the Phoenix launcher is ——— and the development of the Sparrow launcher is ———. These costs are included in the R. & D. contract signed by Grumman for the development of the F–14.

F–111B FOLLOW-ON CONTRACT

Mr. ANDREWS. The committee noted that recently the Navy began negotiating with General Dynamics for follow-on effort required for the F–111B program approximating $50 million in cost. Will you describe generally the nature and scope of this proposed contract?

Captain SCAMBOS. We are presently in the process of negotiating this contract. The contract includes essentially the completion of aircraft No. 7 as I described previously, the support of aircrafts No. 7, No. 6, and No. 3 while they are flying in support of the Phoenix development system, the spares and supporting equipment for the flying of these aircraft, and finally the continuing of the development of avionics and components which were originally started under the F–111B program where it seemed prudent to continue those developments in light of the fact that they could be used on the F–14.

May I say that the figure that the contractor originally proposed was $48 million. He has since brought that figure down to $40 million. We anticipate at the completion of the negotiation the figure will be somewhat less than that.

Mr. ANDREWS. So it is $40 million rather than the $50 million I asked you about?

Captain SCAMBOS. Yes, sir. That is why I raised the point.

Mr. ANDREWS. Where will you obtain the funds for this effort?

Captain SCAMBOS. Those funds come from fiscal 1968 and prior year F–111B R.D.T. & E. funds.

Mr. ANDREWS. Had you foreseen this requirement or was this something which recently developed?

Captain SCAMBOS. No, sir. We foresaw this requirement, discussed it with the staff of this committee in April 1968, and it addresses part of that $55 million which is in the fiscal 1969 appropriation report.

Mr. ANDREWS. Mr Lipscomb, questions on the F–111B program?

Mr. LIPSCOMB. I have no questions.

Mr. RHODES. I have no questions, Mr. Chairman.

F–14A AIRCRAFT

Mr. ANDREWS. You are requesting in fiscal year 1970 $224.6 million

for six F–14A aircraft and advance procurement funds for the fiscal 1971 program in the amount of $14.1 million.

Is this in accordance with the cost schedule presented to the committee during a briefing on the F–14 earlier this year?

Admiral CONNOLLY. Yes, sir.

Mr. ANDREWS. Are those figures correct?

Admiral CONNOLLY. Yes, sir.

Mr. ANDREWS. We will place in the record, at this point, the briefing given the committee on January 29.

WEDNESDAY, JANUARY 29, 1969.

BRIEFING ON F–14A AIRCRAFT

WITNESSES

VICE ADM. T. F. CONNOLLY, USN, DEPUTY CHIEF OF NAVAL OPERATIONS (AIR)
REAR ADM. R. L. TOWNSEND, USN, COMMANDER, NAVAL AIR SYSTEMS COMMAND
REAR ADM. W. D. GADDIS, USN, OFFICE OF THE NAVY COMPTROLLER, DIRECTOR OF BUDGET AND REPORTS
CAPT. L. E. AMES, USN, OFFICE PROJECT MANAGER, NAVAL AIR SYSTEMS COMMAND
CAPT. L. S. LAMOREAUX, USN, OFFICE OF THE CHIEF OF NAVAL OPERATIONS, AVIATION PLANS AND REQUIREMENTS DIVISION
COMDR. D. B. MILLER, USN, OFFICE OF THE CHIEF OF NAVAL OPERATIONS, AVIATION PROGRAMS DIVISION
G. A. SPANGENBERG, EVALUATION DIVISION, NAVAL AIR SYSTEMS COMMAND
HON. J. S. FOSTER, JR., DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING
HON. R. C. MOOT, ASSISTANT SECRETARY OF DEFENSE (COMPTROLLER)

Mr. MAHON. I wish to welcome our friends from the Defense Department to this meeting this afternoon.

The Committee on Appropriations has not been officially organized for the session. We have been elected to membership on the committee by the House of Representatives, but we have not organized the committee as yet. We plan to do that tomorrow following the election of a couple of new members to the committee by the House today.

We asked you to appear for the purpose of discussing with us the VFX aircraft program of the Navy. This is a program in which we have been quite interested, and very significant things have been developing in regard to it, as you know.

In the Defense bill for fiscal year 1969, certain appropriations were made for this program following its authorization by the Congress.

How would you like to proceed, Admiral Connolly, to present this matter? We are going to be more in the position of members of the Committee on Appropriations listening to a briefing, rather than having a formal hearing by the Subcommittee on Defense, because we technically do not at this time have a Subcommittee on Defense Appropriations for this Congress.

Admiral CONNOLLY. I think we understand the situation, Mr. Chairman.

What we had planned to do was to present to you a summary in chart form presented by the program manager for the aircraft, the features we expect to have in the airplane as compared to other airplanes, Soviet and United States, to show our schedule, to show the schedule of events by which we arrived at this point in time and this place, to give the financial picture connected with the airplane, to explain any questions in connection with either the schedule or the financial plan, and to make clear that we have arrived here by due process in the Navy Department, in the Office of the Secretary of Defense.

INTRODUCTION OF WITNESSES

I have two supporting witnesses here today, two of my bosses—the Honorable John Foster, Director of Defense Research and Engineering, and the Honorable Bob Moot, the Assistant Secretary of Defense (Comptroller).

The chief presenter, Mr. Chairman and gentlemen, is Captain Mike Ames, who has been the program manager for the VFX, now the F–14, sitting here on my left. Mike has been an F–4 squadron commander in the fleet. He did his graduate work at Cal Tech in aeronautical engineering. He has been working in the Naval Air Systems Command for the last 2 or 3 years, first on the F–111B and then on VFX and the F–14.

On his left is Captain Lamoreaux, who also is a fighter pilot of long and successful performance.

Behind is Mr. George Spangenberg, who has been with the Bureau of Weapons and now is with the Naval Air Systems Command for a good number of years, and is recognized across the country as absolutely the foremost expert in evaluating proposals presented by industry and in the selection of the best entry that is proposed.

Admiral Townsend, on my right, is Commander of the Naval Air Systems Command; and Admiral Gaddis, from NavComp, is on his right.

Without further ado, Mr. Chairman, I would like to ask Captain Ames to commence the presentation.

Mr. MAHON. All right, Captain, will you proceed. You will give some background of this?

BACKGROUND OF F–14

Captain AMES. Yes, sir.

(Slide) Mr. Chairman, the F–14 began in October 1967 when Grumman Aircraft submitted an unsolicited proposal. The following month, CNO directed initiation of a Navy fighter study to investigate the proposal and to analyze it in depth. Due to the publicity that was obtained in the press and on television for this proposal, four other contractors asked if they also could submit proposals for evaluation by the Naval Air Systems Command.

The Naval Air Systems Command took all five proposals and combined them into a composite airplane and gave it the generic name VFX. This composite aircraft represented what Naval Air Systems Command thought could be built on time and within the cost by any competent airframe contractor.

The fighter study reported out on the 1st of April, 1968, and their analysis was that the VFX and finally the F–14 was in fact worthy of pursuit. An RFP, a request for proposal, was prepared for release to industry and delivered to the Secretary of the Navy on the 25th of April. We had hoped to get the RFP to industry by the 1st of May.

(Slide.) OSD took the RFP under evaluation, and we actually issued it to industry on the 21st of June last year. By the 17th of July, slightly less than 1 month later, we were on contract for the proposals with the five competing aircraft manufacturers. These included Grumman, Convair, McDonnell, North American, and LTV.

The proposals were submitted on time, on the 1st of October; between October 1, and December 15, these proposals were evaluated by the Naval Air Systems Command.

TWO CONTRACTORS SELECTED

On December 15, the selection authority, Admiral Gallatin, announced the three contractors to be eliminated, keeping in the running Grumman and McDonnell.

Modifications or cleaning up of the two proposals then took place and were resubmitted on January 5. The winner was selected on January 12. The winner was announced to Congress on the 14th and publicly announced later that same day. This would start the 15-day grace period, hopefully ending today, January 29, rather than the January 30 shown here. At that point in time we wanted to go on contract for the engineering development which would result in first flight 2 years later, or January 1971.

(Slide.) This shows in more detail some of the events that took place starting from October 1, to today, or hopefully today, for contract award, January 29. The evaluation took place, from October 1 to December 10, at which time a preliminary report was given to the chairman of the Source Selection Advisory Council, Admiral Townsend. The report to the full Source Selection Advisory Council was given on December 14. The next day the Advisory Council reported to the Source Selection Authority. The following day CNO and the Secretary of the Navy were briefed. The following day D.D.R. & E. was briefed, and we announced the two finalists.

During this period of time, through January 5, the contractors continued to refine their design. The final bid package was received on January 5, and although this shows a short evaluation time, the evaluation continued as the modifications to the design were received.

Also during this period of time, specification negotiations were carried on with both contractors, so at the end of this time we had negotiated detailed specifications with both Grumman and McDonnell. We also continued contract negotiations, so on January 10 both contractors, McDonnell and Grumman, signed a contract.

GRUMMAN SELECTED TO BUILD F–14

On January 11 we again reported to the Source Selection Advisory Council, the following date to the Source Selection Authority, the following date to the CNO, Secretary of Navy and members of the Office

of Secretary of Defense. On January 14, the selection of Grumman was announced, both to Congress and the press, leading to contract award.

(Slide.) As you know, Grumman was selected as the winner.

DESCRIPTION OF AIRCRAFT

This happens to be a picture of the full-scale mockup which is located at Bethpage. These are actual seats installed in the aircraft, and every detail of the model is complete. As a matter of fact, just to show that the aircraft is capable of accepting both the P–12 and the advanced technology engine, the mockup has the P–12 on one side and the advanced technology engine on the other side.

(Slide.) This is a front view of the model, showing one of the outstanding features, and that is the inlet duct system. As a matter of fact, you can stand in front of the airplane and see the compressor faces of both engines. There is nothing on this aircraft to obstruct the flow of air into these engines. It is a straight through shot from the front right out the tailpipe, both from the side and from the top, which I will show a little bit later.

(Slide.) Another thing is the excellent visibility on the aircraft. There is a one-piece canopy. Both the missile control officer and the pilot have unrestricted visibility, down, up, and sideways, and excellent visibility over the nose for carrier landing. It is designed as a carrier aircraft.

(Slide.) This is an artist's conception. You see the ——— Sparrow's carried underneath the fuselage, and that is the configuration shown in the model on the table. Again, you can see the two-dimensional ducts. At this point you can see some ———. They improve the supersonic maneuverability of the aircraft.

(Slide.) This is a view in the full loaded condition showing the PHOENIX. On the underside, under the nacelles of the engines, are ——— gallon fuel tanks and Side WINDER missiles. This would be the configuration normally used for the Fleet defense role.

(Slide.) This view shows the loading for the conventional weapons. ———.

(Slide.) Just to review the configurations that we will be talking about, the F–14A, which will be the first one to fly 2 years from this point in time, in January 1971, will be equipped with a P–12 engine and the AWG–9 fire control system. The F–14B, which will follow the F–14A, and should be operational in late 1973, will include the advanced technology engine currently under joint development with the Air Force and the same AWG–9, PHOENIX weapon fire control system as the F–14A. The AWG–9, of course, has the capability of ———.

The F–14C version, which is actually paced by the ———. It will have the same advanced technology engine as the B version.

PHASEOUT OF F–4 AIRCRAFT

(Slide.) As you recall, the original concept was that the F–4J's would be phased out by the F–111B and the VFAX, which was a complementary aircraft to the F–111B. Half of the F–4's were phased

out by all of the F–111's. As all of the VFAX were phased in, the remaining F–4's would be phased out in———.

The current program shows the F–4's being phased out in essentially the same manner by ———. The F–111B and the VFAX are both replaced by the F–14 series shown on the previous slide, the F–14A, the F–14B, and the F–14C, all with the same airframe.

(Slide.) These are some of the milestones for the F–14A and the F–14B programs. Contract in January 1969 will result in first flight in January 1971, BIS trials in ——— of 1972, to the training squadron in ——— 1972, and the first operation squadron deployed in ——— 1973.

F–14B PROGRAM

The F–14B program is actually an engineering change proposal that is dovetailed right into the A program. Right now we expect to give a go-ahead for an ECP in early ——— and in late ——— by virtue of having the airframe available, we will be able to fly this aircraft with the P–12 engine on one side and the advanced technology engine in the other, even before the advanced technology engine is cleared for flight in both sides of the aircarft. This will give us an early look at the engine, and we will be able to correct any discrepancies that may occur.

The first flight of the F–14B using the engine in both sides of the aircraft will be about ——— with NPE late in ——— and BIS in the ——— training squadron in ——— and deployable in the Fleet in ———.

This is accomplished only by virtue of having the F–14A program precede it.

(Slide.) A more detailed look at what we are planning to do with the aircraft and how the A and B programs phase together is shown here. This is 1971, 1972, and 1973. The current plan calls for the delivery of ——— aircraft per month starting in January 1971. That is ——— and so on. For the first ——— months we deliver ——— aircraft a month. The reason for this delivery rate is to give us a viable flight test program starting with the speed, buildup, flighting qualities, structural, evaluation of the AWG–9, et cetera. This can be done at this rate by virtue of having the P–12 engine developed. If we had started with the new engine, obviously we could not conduct the testing at the same rate, because it would be paced more or less in fits and starts with the powerplant development.

The green portion in the flight test program depicts how the F–14B phases into the A program. In late 1971, No. ——— airplane will install the advanced technology engine for a short period of time for a quick look. In March 1972, No. ——— F–14A, will be used for the initial evaluation of advanced technology engines.

In the meantime, of course, all of the flight testing on the F–14A continues which has to do with the avionics, carrier suitability, weapons, the basic structure of the aircraft itself, since there is no difference between the A and the B in the structure of the aircraft.

This, as I pointed out earlier, results in fleet-deployed F–14A's in ——— 1973 and, if all goes well with the advanced technology engine, 14B following in ———.

REQUIREMENT FOR F–14A'S

Mr. MAHON. How many of the F–14A's do you expect to manufacture, and is the development of the F–14A merely incidental to the F–14B which you really want?

Captain AMES. No, sir. We expect to manufacture ——— F–14A's, and we would take the F–14A even if there were no F–14B because the F–14A, as I will point out later, fulfills everything that we had started out to fulfill. I will get to that just a little bit later.

Mr. MAHON. All right.

Captain AMES. We would take the F–14A even if there were not an an F–14B, sir. It just so happens by virtue of having the same airframe, we are able to get to the F–14B much faster than we would if we were trying to marry a brandnew engine development to a brandnew airframe, hoping they would both arrive at the same point in time successfully.

REQUIREMENT FOR F–14B'S

Mr. MAHON. What is the general thought as to how many copies of the F–14B would probably be required? I realize this figure, may not be readily available at this time.

Captain AMES. The thing pacing the follow-on aircraft, the F–14C, is the ———. As it is funded, so goes the program on the F–14C. Right now, if we were funded this year and next year for the ——— then it would be available in ———. So, it is a sort of continuing program. The performance of the F–14B and C would essentially be the same, because they have the same airframe and the same engine The only difference would be the difference in weight of the ———.

Mr. MAHON. Admiral Connolly, will you want hundreds of F–14B or C?

Admiral CONNOLLY. Mr. Chairman, I thought that was the answer you were reaching for. We would like to go pretty much by what has happened in the F–4. The Marines and the Navy together have received about ——— F–4's over a period of time. Of course, there have been a lot of replacements. We have had losses in Southeast Asia. We feel that in this program, if it is successful—and of course we believe it will be—we will buy this airplane over the next ——— years.

Mr. MAHON. So, it might run up to ——— planes or more?

Admiral CONNOLLY. I would think ——— planes is a fair guess for it, sir.

NAVY OBJECTIVES IN BUILDING F–14

Captain AMES. (Slide.) In answer to your previous question, the F–14A objectives were to build a better airplane than the F–111B as an interceptor, and at the same time build a better fighter than the F–4J and provide follow-on F–14 series aircraft that were superior to all known or predicted threats. We feel that we have accomplished this objective.

(Slide) This is a rather busy slide, but it is necessary if you are to compare the various performance parameters between the aircraft that we are discussing.

The F–14A is the first column. As we said, we wanted to build in the A, a better airplane than either the F–4J or the F–111B. If we

look at the F–14A and we go down through here and find how it compares with the F–4J, we find in all cases that the F–14A is superior to the F–4J. It is superior in maximum velocity. It has superior acceleration. It has a higher buffet margin, which is indicative of its capability to maneuver. It has a higher supersonic ceiling. Its radius is significantly longer than the F–4J. This is with internal fuel only on the F–14, and this is with external fuel on the F–4J.

As far as carrier suitability, the catapult wind over the deck in the ———Sparrow configuration is ——— knots less with the F–14 than with the F–4J, dropping from plus ——— to a minus ——— knots. The landing wind over the deck with ——— pounds of fuel on stores for the F–14A is only ——— knots, as compared to ——— knots for the F–4J. This is directly related to aircraft accidents. The A–6 has somewhere around 25,000 landings now without an accident.

One of the reasons that the A–6 is accident-free is that it has excellent visibility, and it has a slow landing speed.

The spot factor for the F–14 is 1.67, as compared to 1.7 for the F–4J. That means that the F–14 is a smaller airplane aboard ship than the F–4J. As you probably recall, spot factor is related to an A–4E as 1, and other aircraft are compared in spotting factor to the A–4E. The F–111B is almost twice the size of the A–4E.

The single-engine rate of climb is ——— for the F–14, as compared to ——— for the F–4. The approach speed, ——— knots for the F–14, as compared to ——— knots for the F–4J. Under weight empty, of course, the F–14B, even though it spots in a smaller area, is a heavier airplane by virtue of the fact that it not only can carry the Sparrow's and the gun, but it can also do the job of the F–111B in carrying ——— Pheonix and staying on station for fleet air defense at the same time. It can do this job and that job, both. As you can see, in the ——— Phoenix configuration, we have reduced the weight by some ——— pounds over the same configuration as the F–111B, and still we are superior in performance, significantly in acceleration, buffet, and supersonic ceiling. The time on station is ——— for the F–111B, as compared to ——— with the F–14A. The spotting factor, of course, drops from 1.98 on the F–111B down to 1.67 on the F–14.

Other things like single-engine rate of climb, which was a serious problem with the F–111B, ——— feet per minute here as compared to ——— for the F–14A.

All in all, the F–14A has done exactly what we were hoping it would do, and that is be able to replace both the F–4 and the F–111, doing a better job than either one of them.

CONTRACT GUARANTEES

Mr. MAHON. You continue to say the F–14A has done this and that. For clarification, what do you mean by "it has done this"? We do not have the F–14A and it has not accomplished these things. I assume this is your estimate.

Captain AMES. These are the contract guarantees. You are correct, we have not flown it yet. These are the contract guarantees, and these are guarantees that the Naval Air Systems Command feels, in just about all respects, can be fulfilled by this aircraft in their analysis.

Mr. MAHON. The contractor guarantees on the F–111B did not materialize.

Captain AMES. That is correct, but Naval Air Systems Command also did not think they would materialize. The same people who were saying the F–111B could probably not reach that goal are the ones who are saying that this one can.

Mr. ANDREWS. Do you have all those specifications written into the contract, and if any are not met you can reject the plane?

Captain AMES. Yes, sir.

Mr. ANDREWS. Are you prepared to do that, Admiral Connolly?

Admiral CONNOLLY. Yes, sir.

Mr. ANDREWS. You will not take the first one unless it meets all those specifications?

Admiral CONNOLLY. We certainly will not. They have to do this or go close to it or it does not mean a thing.

Mr. ANDREWS. Close to it would be like a Mother Hubbard that covers everything and touches nothing.

Admiral CONNOLLY. If they miss the top speed by ——— or miss the supersonic ceiling by ——— feet, there is no use getting mad about that. If they significantly miss anything there——

Mr. ANDREWS. They know what you want, and they say they can deliver?

Admiral CONNOLLY. That is right. All five of them did very well in these areas. There wasn't a poor design from any one of the five.

Mr. ANDREWS. I just do not want another TFX weight problem to hit us in the face.

Admiral CONNOLLY. We do not want it, either.

Captain AMES. Obviously, if we take the same airframe as the F–14 and replace the P–12 engines with the advanced technology engines, which have increased thrust and less weight, you will have a better airplane in the F–14B when compared to the F–4J and the F–111B. As I said before, by virtue of dovetailing these programs, as soon as that engine is available we can utilize it. We do not have to hope that the airframe will arrive at the right point in time. We have an outstanding airplane in the F–14A, and it will be still better in the F–14B.

Admiral CONNOLLY. We will have.

Captain AMES. Yes. We will have.

F–111B CONTRACT GUARANTEES

Mr. LIPSCOMB. Just for clarification, may I ask for something on the last chart. On the F–111B figures shown on the chart, are those the contract guarantees or is that the F–111B as it turned out before you canceled it?

Captain AMES. That is the way it turned out, the Naval Air Systems Command estimates of the F–111B as it was finally configured.

Mr. LIPSCOMB. Were there contract guarantees written in the contract for the F–111B originally?

Captain AMES. Yes, sir.

Mr. LIPSCOMB. They were not met.

Captain AMES. No, sir.

Mr. LIPSCOMB. Were you assured or did the Navy assure us at that time that the contract guarantees for the F–111B would be met?

Mr. SPANGENBERG. I am sure that the Navy did not assure you the guarantees would be met. The F–111 was never capable of meeting the guarantees.

NAVY CONFIDENT GUARANTEES WILL BE MET

Mr. LIPSCOMB. We are starting on a new program here, and yet there are assurances before the committee at this moment that the contract guarantees can be met on the F–14A. How can you be so sure now on the F–14A when there was such a problem with the F–111B? What has changed that makes your guarantees more perfect?

Mr. SPANGENBERG. These guarantees are based on the knowledge of the F–111, among other things. The estimates are done by the same people. The F–111 numbers that are shown here are the F–111 numbers from the production airplane. That airplane also had not flown. This does not exist in that configuration.

Mr. ANDREWS. You asked something about the Navy guarantee. The Navy is not guaranteeing anything. These are contractor guarantees.

Mr. LIPSCOMB. The Navy's report just gave us a guarantee.

Mr. ANDREWS. It is not a Navy guarantee, is it?

Admiral CONNOLLY. The answer I would like to give is this: In the other planes, these same people Mr. Spangenberg has been referring to, the F–4, the A–7, the A–6, and the F–8, to mention just that many, we did come very close to the expected performance figures, very close. We exceeded them in most cases. We hope we will exceed these. We did not have a hand on the F–111B. We did not have a controlling role to play in that airplane.

Mr. LIPSCOMB. The reason I ask these questions is that I hope, whatever we get into here, turns out to be an aircraft we can use and be confident of. For years we had guarantees of one sort or another that we would have a good plane in the F–111B. This committee kept voting money for the F–111B on somebody's assurance. Now we are getting into a plane that is not much different on the record. There isn't a heck of a lot of difference. How do we assure ourselves that we are not going to come up in 5 years with something that does not meet the guarantees? Is there any way to do this?

Admiral TOWNSEND. Let me talk a minute as the Air Systems Command, if I may. Of course, there is always a certain amount of risk in any research and development program. This is one of the lowest risk programs that we have embarked on.

To reassure you, if I can, at least to this extent, we have had five of the finest aircraft companies in this country working on this airplane. They have all come in on the original go-around and guaranteed that they could meet performance characteristics within this range, not exactly these, because this is the airplane we have now chosen. All of them were acceptable.

We then evaluated that with all of the expertise we had at our command in the Air Systems Command. About 400 people spent months working on this, plus the fact that we asked NASA and other activities to help us in this. All of them agreed that this was a good, low-risk approach.

We then picked the two best ones and sent them back and said, "Refine your proposals, both costwise and technically, and come back." We then reevaluated them and again asked for assistance, and all the expertise we have been able to put on this have agreed these can be met in this time frame at this cost as a low-risk development.

That is about the best I know how we could do it, sir. We are prepared to stand up and say this airplane is capable of being built in this time and for this amount of money. We did not say that about that other airplane.

NAVY SUPPORT FOR F–111B

Mr. MAHON. The Secretary of the Navy, I think—I am not sure; we can check the record—and the Chief of Naval Operations, I think, assured the Congress that the F–111B would meet at least the minimum requirements. I think our hearings are replete with that type of testimony. Nobody ever said that everybody in the Navy thought that this F–111B would work, but it is unthinkable to me that Congress would have appropriated repeatedly large sums of money for the F–111B when being told by the Navy that it would not operate successfully. I think it might be well to check some of these hearings on this.

Mr. SIKES. Mr. Chairman, I remember very clearly it was awfully hard to get an unkind word about this plane from a Navy witness.

Mr. ANDREWS. They kept telling us the contractor said he would meet the specifications, which he did not do.

Mr. MAHON:

> The Moving Finger writes; and having writ,
> Moves on: nor all thy Piety nor Wit
> Shall lure it back to cancel half a line,
> Nor all thy Tears wash out a Word of it.

The testimony speaks for itself.

RECOVERY FROM F–111B CONTRACTOR

Mr. SIKES. What is the history of the effort, if any, to recover from the contractor for the failure to meet these guarnatees? Is anything being done about that on the F–111B?

Captain AMES. As I recall, none of his incentives were met, and he was assessed the amount that was stated in the contract for not meeting his performance guarantees. However, this did not amount to a great deal of money.

Mr. MAHON. I think we need a good and fancy answer, which I am sure, Captain, you would not be able to give in view of your commitment to other things. Somebody in the Department of Defense could give that. I do not imagine you could do it right off the top of your head, could you, Admiral Connolly or Admiral Townsend?

Admiral CONNOLLY. My only answer would be that I came to my current job 2 years and 3 months ago. At that point in time, the Naval Air Systems Command was not providing technical support for the F–111B. As Mr. Spangenberg told us a few minutes ago, in the early stages the team that is now asking you to believe that these figures that Captain Ames is showing you are good, professional figures, predicted that the F–111B would run into difficulty and would run into shortfalls of performance. That was a long time ago, and before my time on the watch.

Mr. SIKES. We are talking about recovery from the contractor for failure to meet guarantees. I want to know if there is any hereafter when a contractor does not do what he says he is going to do. Can we get that information?

Admiral GADDIS. We would have to provide that information for the record, sir. It is a matter of actual fact that termination proceedings are underway to close out the Navy part of the F–111 program, recognizing that this is a part of an Air Force-managed program and not a separate, distinct contract.

Mr. SIKES. Can we have specific information on penalties, if any, that are being assessed against the contractor for failure to meet his guarantees? Presumably we will have to pay him a very large sum for cancelling the contract on him.

Admiral TOWNSEND. Sir, are you talking about the F–111B?

Mr. SIKES. The F–111B.

Admiral TOWNSEND. You see, we did not have that contract. That was out of our hands.

Captain AMES. That is an Air Force-administered contract through the Wright-Patterson Air Force Base. We can attempt to get it from them.

Mr. SIKES. I would like to know what we will pay them for canceling the contract, and what they will be required to pay the Government or what the Government is going to attempt to obtain for failure to meet their guarantees.

Admiral CONNOLLY. Mr. Sikes, with respect to the F–111B, we will provide it for you as to the status it is in now. It has been moving along, and there is an officer in the Navy who works full time on that job, and I will get the latest information and provide it.

Mr. SIKES. Thank you.

(The information follows:)

SETTLEMENT AGREEMENT WITH GENERAL DYNAMICS

On December 14, 1968, the Government and the General Dynamics Corp. signed a settlement agreement for the cancellation of the F–111B program with the following penalty provision imposed on the contractor:

1. No profit will be allowed on any F–111B work performed prior to 10 July 1968 (date of stop work order); this includes all work under both the development and production contracts.

2. The contractor will have ——— million disallowed from his costs. This amount represents 50 percent of the F–111B work-in-process not deemed usable in other F–111 programs.

The net financial effect of these provisions of the settlement agreement is a penalty of ——— million, based on estimated profit and estimated actual cost of approximately ——— million for the F–111B program. (The penalty would amount to ——— million if it were based on the target profit of ——— million and target cost of ——— million.)

For comparison, the penalty provisions incorporated in the original development contract, as related to Navy items, are listed below. (These have been waived by the December 14, 1968, settlement agreement.)

ITEM	*PENALTY (millions)*
Navy No. 8 delivery	$0.875
Navy empty weight	1.750
Navy approach speed	1.312
Navy time to accelerate	.438
Navy combat ceiling	.438
Navy single engine rate of climb	.437
Total incentive penalties for Navy items	5.250

Over and above the actual dollar penalties for work performed, the contractor is further penalized by the loss of F–111B work he would have had. With the cancellation of the F–111B program it is estimated that General Dynamics has lost ——— billion dollars worth of future business with an associated loss of ——— future profit.

PERSONNEL INVOLVED IN F–111B DECISIONS

Mr. MAHON. I wish you would supply at this point in the record the names of the people representing the Services in the decisions which were made with regard to the F–111B. I am sure in working on these programs, while the Air Force may have had the prime contract and did have, there were Navy people associated with these programs. There is no doubt about that.

Admiral CONNOLLY. Yes, sir.

Mr. MAHON. There were a considerable number. All right, supply that for the record.

Admiral CONNOLLY. Yes, sir.

(The information follows:)

For the final phase of the F–111 source selection conducted by the Air Force, the Navy was represented as follows:

SYSTEMS SOURCE SELECTION BOARD

R. Adm. F. L. Ashworth—Voting member.
Capt. T. Washington—Alternate.
Mr. G. A. Spangenberg—Member.
Capt. E. L. Feightner—Alternate.
Capt. J. H. Iarrobino—Member.
Cdr. A. R. Seiler—Alternate.
R. Adm. J. E. Dodson—Member.
Capt. R. F. Kane—Alternate.

U.S. Air Force members

Maj. Gen. R. G. Ruegg—Board chairman.
Maj. Gen. T. A. Bennett—AFLC member.
Brig. Gen. A. T. Culbertson—AFSC member.
Maj. Gen. J. H. Moore—TAC member.

Chiefs of Staff level

Adm. George Anderson—CNO.
Gen. Curtis LeMay—CofS USAF.

All the Board representatives recommended that the Boeing design be selected for the award.

The ultimate selection of General Dynamics for the contract was contrary to the recommendations of all Board personnel.

SIMILARITY BETWEEN F–111B AND THE F–14

Captain AMES. In regard to Mr. Lipscomb's statement that there wasn't any difference between the F–111B and the F–14, actually——

Mr. MAHON. I do not think Mr. Lipscomb said there was not any difference between the two. I would not put words in his mouth. I do not believe he said that. He said something about a similarity.

Captain AMES. It uses the same engines and the same avionics. However, that is where the similarity between the two aircraft ends, both in looks and performance. I will not belabor this point because I am sure you are all aware of this. Maybe I will.

The F–14 emphasizes the Navy fighter mission rather than the low-altitude dash mission. It eliminated the bomb bay which was in the

F–111B, which was of no use to the Navy; this complicated the structure. It optimizes the F–14 for low-cruise drag instead of low-level supersonic dash. It added improved materials and structure by virtue of being designed specifically for Navy use. It has ejection seats versus capsule, which reduced the weight of the aircraft. It has a tandem crew vice side-by-side seating. This reduces the frontal area, the drag and also improves the visibility for the fighter capability.

All of the above changes reduce weight, drag, and fuel required in the F–14.

F–14 EJECTION SEAT

Mr. MAHON. How much reduction in weight and drag did you get in the area of the ejection seat as a substitute for the escape capsule?

Admiral CONNOLLY. A little bit less than a thousand pounds.

Captain AMES. (Slide.) This is an estimate made early in the VFX evaluation, of what weight variations resulted from the various changes. The ejection seat was about 930 pounds as an estimate.

Mr. MAHON. Did this change from the ejection capsule to the ejection seat increase or decrease the safety from the standpoint of the pilot?

Captain AMES. If you eject at extremely high speeds, it decreases the safety. However, Navy history has shown that the added weight of the ejection capsule versus the altitude and airspeed at which ejection takes place, did not warrant carrying that added weight around in the aircraft permanently.

The side-by-side versus tandem——

Mr. MAHON. Did the Navy require this ejection capsule?

Captain AMES. In the F–111B?

Mr. MAHON. Yes.

Captain AMES. I am not sure.

Admiral CONNOLLY. I believe you are right, Mr. Chairman. I believe the Navy did ask for the capsule.

Mr. MAHON. Why doesn't the Navy require an ejection capsule in the F–14B?

Admiral CONNOLLY. It is a major development job to do it for tandem seating. It has not yet been done by anybody. There are definite advantages in the capsule. This is no question about it. You have shirtsleeve environment. If you land in the water, you are contained, not encumbered with a great deal of clothing and equipment. The parachute is not hanging on your back. There are advantages. I am sure that is the way we are going to go as time goes on. But, as Captain Ames has said, we have spent a lot of money on tandem seating. The ejection seats are reliable. They have been used successfully. People have not been obliged to jump out at high altitudes where they are not at their best environment.

Mr. MAHON. Mr. Spangenberg, you were about to say something.

Mr. SPANGENBERG. Yes, sir. The ejection capsule was a trade-off item in the early days of the TFX program. There were Navy people who were pushing the idea of the side-by-side capsule. There were also safety engineers within the Air Force pushing for it. Eventually, it was decided, in the fourth round of the TFX, that it would be a requirement and was specified for the TFX. The side-by-side arrangement lends itself to a capsule. The tandem arrangement does not lend

itself to a capsule because you then have to take into account the fact that you may not have that second man in there, and balance for it. The engineering task is much more difficult with tandem seating than with side-by-side seating.

Captain AMES. The weight and balance of the capsule are very critical. As a matter of fact, with the F–111B we got into the problem of having to balance the capsule in order to maintain the proper weight and balance in the capsule for ejection. Once it is free it is a free-flying body and has to fly like an airplane. As a matter of fact, we were right up against the stops on the size of the rocket motor, and we were on the verge of having to develop a new rocket motor for the capsule. So, it is really a very touchy, technical problem to get one that will work. However, the F–111B capsule, as you know, has been very successful.

Mr. MAHON. Proceed.

Captain AMES. It has been used several times.

Admiral CONNOLLY. With the side-by-side capsule in the fighter, the pilot is on one side and has no visibility on the other side, and it is no good.

COMPARISON OF F–14 TO F–4J

Captain AMES. (Slide.) These are some of the diagrams. These are somewhat difficult to follow, but they are quite important in showing the sustained g capability of various aircraft. Sustained g capability means the capability to sustain a turn at a given g level. If you can pull more g's than someone else at the same altitude and airspeed, you can turn inside of him. If you turn inside of him, you have the advantage in maneuvering one aircraft against another.

This is the envelope of the F–4J. This outer line is the 1–g envelope. That means the ability of the airplane to fly straight and level at a given altitude and airspeed at 1–g. Down at sea level, the slowest possible speed is about ——— knots. As you look at any given mach number here—at mach ——— it is capable of flying to ——— feet. At mach ——— is capable of flying to ——— feet. Out here it shows the maximum speed at any given altitude. So, if you look, say, at 20,000 feet and go all the way to the end of this line, it has a capability of mach ———. It gives the entire envelope. As you pull more g's, you drop down in speed and altitude. This is the 3–g line and the 5–g line.

This is the overlay of the F–14A over the F–4J. The black line is the F–4A, and the purple line is the F–4J at 5–g's. The area shown in yellow is the area that has proven to be the most significant for aerial combat during the last year few years, between mach ——— and mach ——— and from the deck to ——— feet. This does not mean that it cannot occur out of this area, but during the Vietnam war about 90 or 95 percent of all air combat has been conducted in this zone.

In this zone you can see, for instance, at ——— mach the F–4J would be capable of pulling 5–g's up to about ——— feet, or the F–14 nearly up to ——— feet, which means it has a significant sustained g capability over the F–4J.

In level flight, or 1–g level, it overlaps the entire F–4J envelope. At any given altitude or mach at 20,000 feet, for instance, the F–4 is capable of ——— mach number; the F–14, ———.

This shows that the F–14 basically is a better fighter than the F–4J, and this will show again on later charts of roll rate and acceleration.

(Slide.) Overlaying the F–14B over the F–4J shows what you would expect, that the A is better and the B is even better than that. So, there is absolutely no comparison between the F–4J and the F–14B.

(Slide.) Aircraft turn capability is shown here. If you pull more g's, you can turn faster. In other words, the time to turn 180 degrees is a measure of how many sustained g's you can pull. This shows the F–111, the F–4, the F–14A, and the F–14B. For any given mach number, for instance Mach ——— the F–14B would be able to turn 180 degrees in ——— seconds; the F–14A in about ——— seconds; and the F–4 in about ——— seconds; with the F–111 somewhere in excess.

(Slide.) Other things that are important in fighter performance include roll performance. This is the degree of bank that can be obtained in one second versus mach numbers. So, if you take any given mach number, for instance at Mach —— the F–8 in 1 second is capable of rolling ——— degrees. The F–111 can roll approximately ——— degrees; the F–4 about ——— degrees; the F–14A or B, about ——— degrees. The F–14A and B are the same because it is the same airframe. The difference in thrust of the engine has nothing to do with the roll rate.

(Slide.) Acceleration time is another thing that is important in engaging or disengaging the enemy. It is also indicative of excess thrust, the difference between the drag and thrust available in the airplane. You also use that excess thrust in order to sustain a turn at a given number of g's.

This slide shows that at any time after you begin to accelerate from .7 mach—for instances, ——— minutes after start of acceleration from .7 mach, the F–111B would be barely supersonic at about ———. The F–4J would be supersonic at about ——— the F–14A at about ——— and the F–14B at mach ———.

(Slide.) Other things that are important in a fighter include wing loading. If you took just the basic wing of the aircraft and disregarded the fact that the F–14 has ——— built into its basic design, your wing-loading would show ——— for the F–4J; ——— for the F–14A; and ——— for the F–14B. Wing loading means the number of pounds per square foot of wing. You increase the number of pounds per square foot of wing either by increasing the weight of the airplane or decreasing the size of the wing. The larger the wing for a given number of pounds of the aircraft, the better maneuvering aircraft you have.

——— for the F–4J. The differences here are the differences, for instance, the lighter advanced technology engines installed in the F–14B.

ANTICIPATED THREATS

(Slide.) Looking at some of the threats that we anticipate, we have the Fishbed F; ———. This is the latest version of the Mig-21 ———. It is a single-pilot, single-engine plane. ———.

The Flagon-A, which is expected to be operational in 1970, is a single-pilot, two-engine aircraft. ———.

The Foxbat, which should be operational about ——— again is a single-pilot, two-engine aircraft. ———.

Mr. SIKES. Will you tell us about the fire control system on the aircraft we are planning to build? You may have done so, but I missed it if you did.

Captain AMES. No, sir. Later I go into the AWG–9 and its capability and ranges.

Mr. SIKES. All right.

Captain AMES. (Slide.) This is a sketch of the Foxbat which you may have seen before. There is a great deal of similarity, particularly in the front view and the side view of the Foxbat, with the F–14. Notice the straight-through engine inlet duct similar to those on the F–14; again the twin tails and the straight-through path for the air through the engines in the Foxbat.

Mr. SIKES. Are the wings adjustable?

Captain AMES. No, sir; they are fixed wings. This is very similar in its design concept to the F–12. It is a high-altitude, high-speed interceptor. It is not a tactical fighter. Once it gets down out of high altitude and high airspeed regime, ———.

COMPARISON OF THE F–14 WITH THE FOXBAT

Mr. LIPSCOMB. What makes the Foxbat different in its ability from the F–14?

Captain AMES. The basic design concept. ———.

Mr. LIPSCOMB. But the Foxbat and the F–14 appear to the untrained eye to be almost identical. What is the difference?

Captain AMES. This is the point I was going to make. Except for the external view, the similarity ends, because the F–14 was not built as a single-purpose, high-altitude, high-speed airplane only. It was built to do that particular job, but also to be a low-altitude fighter-to-fighter air superiority type aircraft.

Mr. LIPSCOMB. What are you pointing at now?

Captain AMES. I was just pointing in general.

(Slide.) This is the F–14. I was pointing out the similarity in the front.

Mr. LIPSCOMB. I thought you said it was built. You mean it was designed.

Captain AMES. Was designed. Excuse me. I keep getting ahead in the program.

Mr. MAHON. You have worked on this program so long, you have assumed it has already been completed.

Mr. RHODES. Which airplane was designed to be the general-purpose air superiority type?

Captain AMES. The F–14. The Foxbat is a high altitude, high-speed type of aircraft. I will show it in a moment.

Mr. RHODES. With no general-purpose capability?

Captain AMES. No, sir.

F–111B AND F–14 AS MULTIPURPOSE AIRCRAFT

Mr. MAHON. Admiral Connolly, wasn't one of the mistakes made with the F–111B—and I think many of us feel the F–111B was a mistake—wasn't one mistake that an attempt was made to design a multi-

purpose aircraft, and that led to trouble, and didn't the Navy take the position that this multipurpose aircraft approach was not too good?

Admiral CONNOLLY. Your summary of it hits right at the heart of the question, Mr. Chairman.

The difference between the F–111 as a multipurpose airplane and the F–14 is this: We designed the F–14 to be an air superiority fighter, a fighter which, as Captain Ames has been saying, will be able to maneuver with the best that we know that anybody will have in the air superiority flight regime. We are taking from that configuration and those capabilities or characteristics what we get in the air-to-ground one. We are not compromising that one whit. We are just taking what we get.

It turns out when you build the kind of avionics this country has spent a lot of money on, as you well know, we are now getting around in avionics to where we can do what we were for a long time reaching for. This goes two ways. When you build your air superiority fighter, when you build the body of the machine, the powerplant, the visibility and the maneuverability, and you put the avionics system, radar, and computer in it, computers are very versatile with high capacity, radars are capable of detecting at long range, offsetting defensive ECM by the target, they are capable of picking up targets that are below you and above you, and they are also capable of detecting targets on the ground in different modes of the radar circuitry, which is a matter of adjustment.

When you have all this without giving up on your air superiority performance, then you can do the ———. It will not be out of the picture, but it has a missile on it that is capable of traveling ——— miles, and a radar capable of seeing ——— miles. The missile is a very high-performance missile, with capability to deal with the ——— or that you bring into view on the radar in another aspect, say going away but not yet far enough away to be out of shot, you are capable of shooting at it.

If you take those Phoenix missiles off and put Sparrows on, as over in Vietnam today, we expect this F–14 will be able to perform with anything that anybody else has even thought about. If you want to take the missiles off, if you want to send it in to strengthen the attack, we have the air-to-ground capability.

With respect to the F–111, Mr. Chairman, it was built by the Air Force as a very high-speed, low-altitude penetrator. In order to go mach on the deck, it took a lot of strength, strength in the engine, strength in the wing, strength in the structure, strength in the canopy. That was all weight. You try to take that body and adjust it to go to altitude and stay a long time, which was the mission of the F–111B, to be a fleet defense airplane at ——— miles flying protection, and you carry all that weight with you, these are missions that were really not compatible and you could not draw the best of two possible worlds with that configuration.

The Air Force gave up some things to the Navy that perhaps they would not have wanted to. Actually, we had to put more wing on the F–111B in order to have longer endurance. These were missions that were not compatible, but in the F–14 I would like to say again we have only drawn those missions and the only ones we have to do, and they are compatible with the airplane as I have described it.

F–14 MATCH FOR SOVIET FOXBAT

Mr. MAHON. I would like to ask Dr. Foster what your comment is with regard to the question which we have been discussing.

Dr. FOSTER. Mr. Chairman, I believe that the Navy's F–14 multipurpose aircraft, as you refer to it, is actually a match for the Soviet Foxbat on the following grounds:

First, our experience has been that in air-to-air combat there are two phases. One is the initial contact, or first pass, and the second is when the aircraft settle down into a dogfight.

In the initial engagement phase, I believe the F–14, with the AWG 9 Phoenix system, will have an edge over anything we know in the Soviet forces.

Once the fight gets to be a hard maneuvering battle, then, as Admiral Connolly has indicated, there is just no comparison between the hard maneuvering and the speed characteristics of the F–14 and the ——— Foxbat ———.

F–14/PHOENIX CAPABILITY

Mr. RHODES. What is the ceiling of the F–14 with the Phoenix missile aboard?

Captain AMES. The ceiling with ——— Phoenix ———

Mr. RHODES. I remember from the chart it was - - - -. I do not know whether that is right or not.

Captain AMES. This is the cruise ceiling. This cruise ceiling means at reduced engine power. What it would be at full afterburning I would have to check and see. This is actually the cruise ceiling at loiter power. It is ——— compared to ———.

Admiral CONNOLLY. We can give it to you for the record, but I think it is around ———.

Admiral TOWNSEND. Later you will see a chart showing the capability of the Phoenix missile up to higher altitude.

F–14 VERSUS FOXBAT

Mr. RHODES. Assuming that the - - ——— altitude of the F–14 is ——— feet with the Phoenix aboard. The Foxbats are coming in at ——— -. Is there any problem of the Phoenix missile engaging the foxbats with that disparity in altitude?

Admiral TOWNSEND. No.

Captain AMES. I have the slide showing specifically what you have just asked if you would like to see it now.

Mr. RHODES. If the chairman agrees, it would be fine.

Captain AMES. This shows the F–14 lookdown capability from ——— feet. This blue portion is the area through which you can take an aircraft under attack of 5 square meters, the size of the foxbat. If the F–14 were only at ——— feet, it can take under attack aircraft up to ——— feet, and this is assuming that the F–14 actually is subsonic, just sitting there at 0.9.

If the F–14 is accelerating to supersonic speed——

Admiral TOWNSEND. Show the search chart, too, showing the capability of the radar.

Captain AMES. This is the same type of thing assuming that the F-14 is at ——— feet supersonically. It can take under attack anything up to ——— feet and out to ——— miles and ——— as a matter of fact. It can sweep this whole area and use the Phoenix system in this area.

Mr. RHODES. If you are at ——— feet you would immediately accelerate if you caught a blip on the radar, but if Foxbat is coming in at ——— and the Phoenix misses—it is not supposed to but suppose it does—you have a pretty tough fight on your hands, do you not, with the Foxbat coming in from a superior altitude?

Captain AMES. ———.

If there were one target coming in at high altitude and high speed, I suspect you would fire more than one missile to ensure you had a higher probability of success.

If you fired them all and they all missed then———

Mr. RHODES. You have struck out. That is when you wish you had the ejection capsule aboard.

Admiral TOWNSEND. The wing man takes over.

Mr. MINSHALL. You gave us the altitude but you said out to ——— miles.

Captain AMES. Right. It has a little slice out there from slightly over ——— so the Foxbat in this area, this high speed-high altitude would be around this area shown right here.

Also this is assuming that the F-14 is at ——— feet. ———

Admiral CONNOLLY. Dr. Foster remined me that the Foxbat is a lot like the F-12. It is built to get up there at high altitude.———.

The thing also important—look at that yellow line up there at ——— feet. You are going real fast. The minute you come down where the air is thicker and heavier, and you have your lightweight structure, you have to slow down.

We think we have a better compromise of the performance of the airplane and missile combined, than to put it all in the airplane or all in the missile.

Captain AMES. We can look at the envelope on the Foxbat. I showed you the F-14A. Now look at the F-14B.

USE OF PHOENIX MISSILE

Mr. SIKES. Does the target have to be ——— miles away if he is at high altitude before you can engage him with your missile?

Captain AMES. No, sir.

Mr. SIKES. That is what the chart shows.

Captain AMES. You have a time of flight problem with aircraft traveling at very high speeds. You have to be able to detect him far out enough with a long-range radar, assess and fire.

If he is traveling at Mach ———, and you are traveling at Mach ———, and you are closing on each other at a combined rate of Mach ———, in order to fire the missile and let it get there, you have to have a certain period of time other wise you will be too close to him to fire.

Mr. MINSHALL. Suppose you are both going in the same direction? What happens then?

Captain AMES. I would have to break out the envelope showing that.

Mr. MINSHALL. He has a ——— capability, does he not?

Captain AMES. Yes, sir.

Mr. MINSHALL. He could ———.

Captain AMES. Yes, if he were going in the wrong direction. Of course, if he is going in the wrong direction and not coming toward what he is trying to attack it is not serious.

If you are trying to protect an area and you are here and he is coming in here, then you fire on him, if he is out here going the other way it makes no difference where he is going.

In other words, if you are trying to protect an area, you are concerned about those going in and not out.

Mr. RHODES. When you are loitering don't you have to circle? You cannot just loiter going in the same direction all the time?

Captain AMES. No, sir. You would take a station in an area such as this.

Mr. RHODES. If he comes in at the wrong time, he could be coming in in the same direction you are going.

Captain AMES. We would have ——— out there, also.

Mr. MINSHALL. He will know your capability and consequently will have tactics to avoid this. He might try to do just that.

Captain AMES. He might, or he should. If I were a Russian that is what I would do, try to figure out the weak spots and exploit them, just as we do.

Admiral CONNOLLY. I think the Foxbat will be a foe worthy of our steel, but I don't concede that because he is a high altitude-high speed level flight machine, that he owns all the blue chips for the reasons I have given. I think we managed to get a good airplane and an excellent missile system. ———.

Captain AMES. Two airplanes don't chase each other at mach ———. If you are behind an aircraft and he is at mach ——— and you are at ——— you have a slow-closing rate. But meanwhile you are traveling over the earth at a rapid rate. You are running out of fuel and you cannot get back. The tactic of chasing somebody at high altitude and high-air speed is not often used when defending an area where the high-speed attack is coming in, you are going out to meet him.

In that case you have the advantage in the Phoenix system ———.

Mr. MAHON. Proceed.

Captain AMES. This is the Foxbat in green showing the 5g line on the Foxbat and the 5g line on the F–14B. ———

We feel we have adequately covered this area with the Phoenix missile system.

COMPARISON OF F–14 WITH OTHER SOVIET AIRCRAFT

The other aircraft, the Flagon–A, is more of a fighter variety than the Foxbat. The 5g line on the F–14 going along here and a 5g line on the Flagon in this area. ———

The F–14 in this area can pull 5g's whereas the Flagon would be pulling ———.

This same type of pattern carries over with the Fishbed–F, with the 5g line shown here and the 5g line on the F–14 shown here. The same occurs at the 3g for the Fishbed–F and the F–14.

We are showing the F–14 as an air superiority fighter and in the area of normal air-to-air combat it exceeds any of the known predicted threat of the Soviet Union.

Mr. SIKES. Are you using your figures or Russian figures?

Captain AMES. We are using primarily the Defense Intelligence Agency figures.

Admiral CONNOLLY. Our figures.

Mr. SIKES. What degree of reliability can you give to them? Is it a guess or do they have specific information?

Captain AMES. ———.

Admiral CONNOLLY. ———.

SEARCH RANGE

Captain AMES. I believe this tends to answer the question you had earlier. This is the search volume shown for the AWG–9, AWG–10, and the APQ–72. This is a fire-control system in the F–4B and this is a search volume shown here going out to ——— miles. The dark red search volume is the AWG–10 in the F–4J. The lighter pink area going out to ——— miles and out to ——— miles is the AWG–9 which will be installed in the F–14A.

Mr. MAHON. The AWG–9 has not yet been built?

Captain AMES. Yes, sir; the AWG–9 is flying in the F–111B. It is what we have been using to fire some of the first ——— Phoenix missiles.

It will be reconfigured into a fore-and-aft configuration for the F–14.

Mr. MAHON. It really does not exist in the configuration in which it will fly in the F–14?

Captain AMES. No, sir.

This is a recap of what was shown in the previous slide. The APQ has a ——— mile nautical search range with a ——— percent probability of detection. Using the APQ–72, the F–4B was capable of firing the AIM–7E for ——— miles.

The AWG–10, which is in the F–4J, has a search range of ——— miles on a 5 square meter target and the capability of firing the AIM–7E at ——— miles, the AIM–7F up to ——— miles and the AIM–7F out to ——— miles.

The AWG–9 which will be installed in the F–14A has a search out to ——— miles and by virtue of the higher power in the radar itself it can fire these same missiles to longer ranges. What was fired to ——— miles in the F–4 version now can be fired out to ——— miles in the F–14.

The AIM–7F/CW ——— version is ——— miles versus ——— miles. The AIM–7F is ——— miles instead of ——— miles.

The Phoenix, the AIM–54A, can fire to ——— miles in single target track and ——— miles in the multishot track-while-scan. The AWG–9 as you probably know is capable of tracking ——— targets simultaneously. It can display ——— at one time and then we can take under attack ——— targets simultaneously with the ——— Phoenix missiles.

This is a depiction of the capability of the AWG-9 and the Phoenix missile system against small targets such as air-to-surface missiles and surface-to-surface missiles. Some of the larger surface-to-surface missiles are about half the size of a fighter airplane, 2 square meters as compared to a 5 square meter fighter target.

Some of the very small air-to-surface or even some of the surface-to-surface missiles are down to ——— meter, about ——— the size of a fighter.

If we look at the lookdown capability of the F–14, ——— feet firing down to a target at ——— feet, it can take the ——— square meter missiles under attack out to ——— miles, or if you look at the very small target, a ——— square meter, about ——— the size of a fighter plane, it can take this size under attack out to ——— miles in single target track.

If you use the AWG–9 in the multishot mode it ——— the range down to about ——— miles for a small target and about ——— miles for the larger missile target.

This is looking down from ——— feet. You have the same capability looking up. If you look up at a target at ——— feet flying at mach ——— you find the same situation; that with a larger air-to-surface or surface-to-surface missile you can take it out to attack at ——— miles or for the small one, single target track, out to ——— miles.

We have an excellent capability of taking under attack air-to-surface and surface-to-surface missiles. ———.

These two pictures depict the difference between the current technology engines and the advance technology engines. These two engines put out the same amount of thrust, ——— pounds.

The smaller size is obtained by higher, compressor loadings, allowing fewer compressor stages and higher temperatures in the turbine.

MATCHING OF NEW ENGINE TO AIRFRAME

Mr. LIPSCOMB. I am bothered with regard to the airframe. You will match up the P–12 engine and the F–14A.

Then you will have a new engine for the F–14B but the same airframe.

Over the years I remember that it never has been very successful matching up an engine with an airplane if they are not done together.

How do you do it in this case?

Captain AMES. This was the original design concept. In past years the airplane was never designed specifically for another engine. This airplane was specifically designed both for the P–12 and the advance technology engine.

With the exception of dropping the lip to increase the capture area for the larger engine the rest of the aircraft was made completely compatible from the beginning.

Any airplane could have done this if they had known what the follow-on engine was to be at the time they designed the airplane.

Mr. LIPSCOMB. You know what the guarantee is or the contract guarantee is on the new performance engine?

Captain AMES. Yes, sir.

Mr. LIPSCOMB. But you never have tested it nor flown it. You are

doing it on paper. How do you match up an engine with an existing airplane?

Captain AMES. The inlet has a capture area which has to take on a given weight flow of air. You can determine what this is. This sizes the engine.

The TF-30-P12 is sized for ——— pounds. Advanced technology will be ——— pounds per second weight flow. You have to increase the capture area.

The amount you need to increase the capture area can be calculated. There is no secret as to how to increase the size of the hole in the front of the airplane to allow more air to come through. This is no problem.

The diffuser section behind the ramp area is not a critical area. In other words, it has an adequate throat area built into the airplane for the larger engine already.

The reason we got into a problem, and I hate to go back to the F-111B, is that the throat area was too small.

This plane right now is 1,080 square inches. It has adequate throat area built into it from the beginning.

When you go past the diffuser you get to the compressor face. The compressor face of the new engine will be further aft. There is a longer passage of air. This eases the design problem.

The diameter of the engine is not a problem because the advance technology engine is being tailored to fit into this airframe specifically.

You run into troubles only when you design an airframe and then try and put an engine in that wasn't anticipated.

Admiral TOWNSEND. We have put new engines in. We did it with the F-4. We did it in the A4. We changed it in the A3D and a number of the other planes as we got newer engines.

Mr. LIPSCOMB. Have you changed them to the magnitude you are changing this?

Admiral TOWNSEND. Not as much again in thrust because we have not had this kind of breakthrough for some time but we have increased thrust considerably.

Mr. LIPSCOMB. It seems you are changing the size and weight.

Admiral TOWNSEND. Air flow is nearly the same and the speed is the same. The engine is a better engine.

Mr. LIPSCOMB. Basically no change?

Mr. SPANGENBERG. Basically no change.

CHANGE IN AIRFRAME

Mr. LIPSCOMB. You are changing the airframe?

Captain AMES. We will increase the capture area by dropping the lower lip.

Mr. LIPSCOMB. You said you would use the same airframe. You now say there will be a change in the airframe.

Captain AMES. A change to the design of the lip. It will drop some ———

Admiral TOWNSEND A very minor change in the airframe.

Captain AMES. The entire aircraft change, including all the flight tests, is ——— million dollars. This is the magnitude of going from one series airplane to another.

Obviously you would have to change the mounts on the engine because the engine is longer in one case. If the engine mounts are here and you put in a shorter engine then you would have to move them. This is designed in the airplane from the beginning rather than trying to design it in later. The whole concept of the F–14 is to look ahead and design one airframe to do the job. We feel we have been successful.

Have you seen the mockup at Grumman at all?

Some of these questions are difficult to answer with words only, as you can see.

Mr. LIPSCOMB. I thought the contract was just let.

Captain AMES. On the engine?

Mr. LIPSCOMB. I thought they were just designated.

Captain AMES. They were, but they have had a mockup for quite some time.

Mr. LIPSCOMB. Did the other four competitors make mockups?

Captain AMES. LTV and Grumman made full-scale mockups. McDonnell made partial mockups, not a full plane. Convair made partial mockups.

F–14 DESIGNED TO ACCEPT NEW ENGINE

Admiral TOWNSEND. Our request for proposal which went out required the contractors to take this engine into consideration and design the plane so it would be able to take this. There has been a lot of testing and wind tunnel testing done on this already.

Mr. LIPSCOMB. Naturally if you gave instructions to design it that way they would. At the same time we have had at least from those I know plans where the airframe is designed and you have tried to put another engine in and it didn't work out.

Admiral TOWNSEND. The design of this plane lends itself better to this because we have an engine. The F–14A will have an engine. We will fly this until the next engine is ready and then we will put one engine in one side and give it a test before we go to the second engine.

When we say———planes, those are the engines that are to be ready. If that doesn't make it we can stop there. We are not limited by the number. When we say———that is our best estimate at the moment of when this engine will be ready.

Mr. LIPSCOMB. Then you are saying if the engine and airframe do not match up to your guarantees you will keep producing the F–14A.

Admiral TOWNSEND. There is no question but what the engine will be there. It is a fast schedule on the engine. This is the same engine which is the common core for the Air Force. This is a common development.

Captain AMES. This is not like marrying them together with problems. We don't know of any problems. They have been on contract since August. So far they are on schedule. If they do run into problems we will continue to put P–12 engines in until such time as they work out the problems.

When the F–14A's go through the PAR cycle at least the operational planes will be retrofitted. This was all taken into consideration. It was all included in the basic concept.

We think we have a well-thought-out plan on how to get there and we have plugged up most of the loopholes and provided for contingencies.

Admiral TOWNSEND. This is the best opportunity we have had in many years to have an orderly program and move from one modification into the next for a plane that will be with us for many years. This is because we have a new technology engine available. We can get into a high-performance airplane in a much shorter time than ordinarily.

It would be a high-risk development if we were developing both the engine and the plane and perhaps the avionics simultaneously.

Mr. SPANGENBERG. I cannot recall one where we had trouble with an airframe.

Mr. LIPSCOMB. I can remember one with McDonnell about 10 years ago.

Mr. SPANGENBERG. The F–3. This was basically not the airframe-engine compatibility problem, but rather that the engine was no good.

Mr. LIPSCOMB. They never got the engine to work in the airframe.

Mr. SPANGENBERG. We didn't get the engine to work in any airframe.

Mr. LIPSCOMB. It is a rather risky operation, is it not, to build an airframe and try to match an engine to that frame?

Mr. SPANGENBERG. It can be and it cannnot be. We have not had any significant problem in any of the airplanes we have started. We had engine problems with the J–40 and that whole series of planes had problems until they got either the J–71 or the J–57.

However, the A–4 had no problems. We went from a J–65 initially to the J–52. This ended up and now we have something on the order of a ——— percent thrust increase.

We had a similar situation to this there where the hole would fit the next larger sized engine that got developed.

PROCEED SLOWLY AND GET A BETTER AIRCRAFT

Mr. LIPSCOMB. I want to see the Navy get a good plane, but I am not taking this move lightly. I feel we have been a little burned on some of the aircraft.

I am willing personally to take the risk of going slower and being surer as to what we have.

You may feel you have something, but we are just starting on this and we have to ask questions that may seem antagonistic.

Admiral CONNOLLY. Not at all.

Mr. LIPSCOMB. As an individual I want to be sure we are getting an aircraft where we do not have a lot of problems and that the engine matches with the airframe and that we are providing adequate safety for the pilots by doing away with the seat ejection. There are some questions on this program which should be answered.

This is all on paper. You are doing it with a slide rule. Let us be sure.

Admiral TOWNSEND. We may have given you a wrong impression. We consider this at this point a rather low-risk program.

The eventual airplane will be the F–14C in ———. That undoubtedly will be the finest airplane which will exist in that time frame in all of our opinions. However, this plane has been given more attention

and looked at by more experts and been worked on and evaluated by more experts than any other plane we have ever started.

We start out with a rather low-risk item. That is, we have an engine that is flying now. That engine is ready to go.

We have an avionics system which we will be able to go into production on this spring. The risk here is the airframe. This airframe is well within the state of the art by any good airframe manufacturer's standards.

We end up with that airplane as the F–14A.

Then having that plane, we fly it and test and we are able to go with that airplane until a new engine comes along which we can put right in that same plane with very little change.

Then we have the F–14B and the F–14B is an outstanding fighter.

The F–14C is just an improvement over the avionics system to give it more maintainability and more reliability and there is no real urgency to it, so we are going step by step in the way I think you mean us to go. Each step is a pretty low-risk step.

As far as these various items of safety of the pilots and all the other things, these have been very carefully evaluated by each of our groups of experts in all areas—in the safety area, avionics, propulsion, and so on. They all agree this is the best way to go.

Certainly we don't want anything that is not safe for our pilots. We just don't think that in an airplane of this speed and this performance and this capability we are quite ready to take the risk to go to that type of ejection. We know the other will work and that is why we decided on it. This is carefully thought out.

In each area it has been the same way.

Mr. SIKES. Is this an aircraft that will be capable of durability and improvement in its day as the F–4 has been in its day and is now?

Admiral TOWNSEND. I don't think there is one of us who is not thoroughly convinced that this is the F–4 of the future or better.

Furthermore another thing is this: This plane has a fire control and a missile system in it that is right now far ahead of anything we know of in this country or elsewhere.

COMMITTEE LEARY OF GLOWING REPORTS

Mr. MINSHALL. Admiral, I have sat on this subcommittee for 10 years now and I am also on the transportation subcommittee that considered an airplane called the SST. We had all kinds of glowing reports on that plane. Here we have had glowing reports about various missile systems, specifically about certain aircraft, the B–70 and the TFX, the F–111, and so on. We get a little nervous and we want to be sure we are right.

I won't say anybody has intentionally misled us but we have gone down the primrose path at the taxpayers' expense on many of these programs and that is why we are looking at this very carefully.

Admiral CONNOLLY. No argument about that.

Mr. MINSHALL. Admiral Connolly said something about a great bird which he was sold on. I hope your credibility on this is a little better.

Admiral CONNOLLY. Will you please yield on that?

Well, I won't try to win that one.

Mr. MINSHALL. You have the research and development man here, Dr. Foster, for whom I have high regard.

Doctor, you have been quiet. What do you think of this thing we have on paper?

COMMENTS BY DR. FOSTER ON THE F–14

Dr. FOSTER. Sir, I can quite understand the Navy's enthusiasm for this. I think they have worked extremely hard to try to understand the threat and appreciate the situation that is likely to exist in the future. They have done their very best with the present technological techniques to design an aircraft that will meet the threat.

I must at the same time say that we should be cautious; because I think despite the best efforts of the professionals in the Navy and the contractors we will have difficulties. We may have some problems in the repackaging of the AWG–9 avionics system. However, although troublesome, I don't expect these difficulties to be major. Also I have some concern that the new engines, as desired by the Navy, represent a significant advance in engine technology. While we will have proven the feasibility of these engines in a demonstrator program, I feel sure there will be engine-related problems which could well delay the introduction of the F–14B version.

I believe we should proceed with the P–12 version of the TF–30 engine. However, as a hedge against slippage in the advanced technology engine program, I feel it would be wise to provide also—at least for the next few months—the option to use the A–32 version of the TF–30 in all F–14A's.

I think that the Navy Air Systems Command's conservatism is well taken. The Navy estimates are not as glowing as those of the contractors. The estimates have been degraded by the Navy because they don't believe the performance is likely to be quite as high.

With regard to the engines, I think it is very important to understand that the Navy itself realized it had a major problem. They had a P–12 engine, and, because of the urgency of meeting the threat, they wanted to take advantage of that engine and the Phoenix/AWG–9 missile system. Nevertheless, in order to be able to take advantage of the major improvements that are being made in engines, they had to have an airframe design that would permit a radical change in engines.

I believe there is general consensus that they were quite successful in that objective.

That aircraft that you see does permit radical changes in the engine installation. Thus while I have some concern about meeting the schedule indicated, I have concurred in the Navy's overall approach in the F–14 program.

Mr. ANDREWS. Dr. Foster, were you ever enthusiastic about the F–111B?

Dr. FOSTER. Sir, when I came to Washington——

Mr. ANDREWS. I was here from the time it was conceived until the time we were told it was dying or dead. I have yet to see a Navy man who had any enthusiasm for the F–111B. It is an open secret here that the F–111B was forced on the Navy and they were made to take it and they objected every time they had an opportunity.

Did you ever get real enthusiastic about the Navy version of the F–111B?

Dr. FOSTER. Sir, I don't recall any wild enthusiasm. I do recall a very determined effort on our part to see if we could not possibly develop an airplane that would be satisfactory for the Navy mission.

Mr. ANDREWS. To overcome the shortcomings and make the contractor live up to the specifications?

Dr. FOSTER. Yes, sir.

Mr. ANDREWS. Which the Navy required before the first one was ever put together.

Dr. FOSTER. Yes, sir. It was my plan to make every effort possible to fly it, find out what was wrong, fix it and fly it, until we had and aircraft that would perform the mission the Navy wanted it to perform.

Mr. ANDREWS. But it never could be done.

SPEED OF THE F–14

Mr. SIKES. Apparently this projected aircraft will be limited because of material, and so on, to a speed of about Mach ———. Is that correct?

Dr. FOSTER. ———.

Admiral CONNOLLY. We will be able to go higher than that but that is this plane right now, ———.

Mr. SIKES. You are building tomorrow's aircraft. Will you build enough of tomorrow into the aircraft? Will it be too slow 10 years from now to be an effective aircraft?

What do you think, Dr. Foster?

Dr. FOSTER. I do not believe that, for the Navy's purpose, the difference in Mach ——— and Mach ——— warrants additional costs.

Mr. SIKES. You are saying that you do not think additional speed will be that important 10 years from now?

Dr. FOSTER. That is what I believe.

Mr. SIKES. Is that the Navy's attitude?

Admiral CONNOLLY. We agree completely with what Dr. Foster is saying. Maybe Dr. Foster does not know this and perhaps he does, but it is possible, and not expensive, either, to allow this plane to develop just as we developed the F–4. We are not flying the same F–4 today that we had 10 years ago. We improved its speed and we have improved its altitude and weapon-carrying capability and acceleration. We expect to be able to grow this plane in the same way. One of the ways we can grow will be in the speed range if it is necessary.

It costs a lot of money to build a Mach ——— fighter. We don't have any experience of air battles at ——— feet between two contesting fighters. In Korea some of the fights started at ———. More often than not they ended up at ——— and some at the deck. The winner was the one who could do it below and not above.

I don't know what mission the Foxbat will perform at ——— feet, what mission of meaning. ———.

——— If we wanted to lighten up our plane and put the advanced technology engine in it and show a high speed run with it we could do that, too.

ABILITY TO CHANGE ENGINES

One point, Mr. Lipscomb. We have completely changed the engine in the A–7 from a TF–30 to a TF–41 from Pratt & Whitney to an Allison. We did that in the last few months. We are delighted with the performance of the TF–41. It is a completely different engine.

Mr. LIPSCOMB. Different size and weight?

Admiral CONNOLLY. And different thrust.

Mr. LIPSCOMB. The design is still approximately the same?

Admiral CONNOLLY. Yes.

Mr. LIPSCOMB. This is a real technical step forward to be able to change an engine like this.

Captain AMES. There was a great deal of concern about this particular point and as the development of the aircraft proceeded that concern disappeared. OSD had a great deal of concern about doing this.

Dr. Foster expressed this a year ago, in fact. I think that most of those people who were concerned, after they saw how it would be done, have all agreed now it is no problem.

The engine manufacturer says it is no problem, the airplane manufacturer says it is not, Naval Air Systems Command says it is not. It is actually in the mockup there.

There is no known reason why it will not work 100 percent satisfactorily. The engine fits the airplane. The air flow has been compensated for in the capture area of the inlet.

CONSIDERATION OF INTERFACE PROBLEMS

Admiral TOWNSEND. One thing to the business of the threat.

As you can imagine, selecting a contractor for this job was difficult because we had five good companies working on it. One of the reasons that the company which won did win was because of the completeness and the thoroughness. We were really amazed at how thoroughly they had gone into these so-called interface problems. Many times when you run into trouble on an airplane in putting it together, it is in integrating the avionics into the airframe, or putting a weapons system on a plane, getting a separation, putting engine into the plane, and in going into this in depth, we found that Grumman had gone into great detail with each of these major subcontractors—with Hughes in the AWG–9, Raytheon with the Sparrow, and so on. It left us with a great feeling of confidence.

Mr. LIPSCOMB. They had a lot of reason to do it with care. They had been working with the F–111B long enough to know.

Admiral TOWNSEND. Still in the areas where they had not been working, such as the Sparrow with Raytheon, they went into those interfaces with the same thoroughness.

NAVY OVERCONFIDENT ON F–14

Mr. MAHON. We are approaching the time when we will have to conclude for the afternoon. I think it is obvious to witnesses that the Committee on Appropriations takes this question of the wisdom of proceeding with this aircraft very seriously.

During the past 15 years the Department of Defense has canceled development programs prior to completion after spending about $8.6 billion.

When these programs were originated, in many cases the committee was told with great confidence that success would be achieved with various projects, and I now speak very generally.

One of the reasons we are so concerned about this project is that perhaps as much as ——— billion is involved. We do not, therefore, want to see a big mistake made.

We believe in this committee that you will have a great deal of trouble with this new aircraft. We believe you are putting your best foot forward, that you are very optimistic and very enthusiastic and very sincere about this aircraft. This is understandable.

However, we know from experience, and there have been no exceptions, that when a new aircraft is constructed it has all manner of bugs and problems and it seems for a time that it will not work at all.

It could be that if the F–111B had been pursued to inclusion in the fleet it could have been made into something reasonably acceptable. I have some doubt about that but we never will know what could finally and ultimately have been done with the F–111B. However, I think this should be gone into.

We are talking about this ——— billion package. There will be trouble and we know it. We want you to understand that we do know it.

We are just proceeding with a feeling of caution because so much is involved.

If you read last Sunday's newspapers you read a very scathing indictment of the Defense Department. It was claimed the Department was very inept in securing dependable weapons systems, and so forth. I am not going to go into that. I am sure this article was somewhat misleading but there is some element of truth in it.

COMMITTEE NOTIFIED PRIOR TO AWARD OF CONTRACT

In providing funds for the VFX program in the Appropriations Act of 1969 the members of the conference committee and the conference report requested that the Appropriations Committee be notified of the cost and design characteristics of the aircraft selected 15 days before the airframe development contract was signed.

On the 14th of this month such notification was received from the Secretary.

Secretary Ignatius, at my request, extended the 15-day period by 4 or 5 days so that the committee might have a better opportunity to evaluate the proposal. This grew out of problems involving the investigative staff and the unavailability at a certain given time of certain information.

ADDITIONAL QUESTIONS ON F–14

We called you here today to find out in some detail just what you propose to give the Nation for this ——— billion.

We have a series of very penetrating questions other than those which already have been asked. I do not know what your full response to these questions will be. We want them to be responded to with meticulous care.

(The additional questions and answers follow:)

DUAL MISSION AIRCRAFT

Mr. MAHON. The Navy, for the most part, in objecting to the development of the F–111B, held that it was a mistake to try to develop one aircraft for several missions. The F–14 proposal would combine the Navy requirement for a fleet air defense aircraft carrying the Phoenix missile system with an air superiority dogfighter aircraft carrying the Sparrow missile system. Has anything been lost in each of these missions through the design of a multipurpose aircraft?

Admiral TOWNSEND. The F–111 was designed to satisfy both the primary Air Force attack mission requiring supersonic performance at low altitude, and the primary Navy fleet air defense high altitude, loiter mission. These missions imposed fundamentally opposing design requirements on the airframe and propulsion system. Since the Air Force requirements dictated the design, the resulting Navy performance was compromised. Philosophically, the F–111 was asked to satisfy two primary missions with equal design emphasis and therefore conflict ensued.

The Navy F–14, however, is being designed and with emphasis on the primary air superiority mission, with little compromise because of the mission requirements. This air superiority mission requires dogfighter performance superior to the threat to be realized at a radius of ——— miles from the carrier, a distance compatible with the Navy attack aircraft to be escorted.

The fallout capability resulting from this air superiority mission emphasis with "proper" sizing also enables the fleet air defense mission to be accomplished. This is achieved by utilizing external fuel tanks and adding the Phoenix missiles to the fighter fuselage with readily removable adaptors or pallets. Thus, both Navy mission requirements are met without adversely affecting the design for the primary air superiority mission and with no resulting conflict in design emphasis and overall mission priorities.

Mr. MAHON. Is the F–14 the best performing air superiority fighter aircraft that the state of the art will permit the development of at this time?

Admiral TOWNSEND. The achievement of long-term air superiority requires the proper combination of system performance in order to provide tactical options to meet the changing environment. The balance achieved in the F–14 between performance, system integration, and two men provides adequate performance plus long-range standoff missile capability. A two man crew allows tactical flexibility in a variable ECM environment. The F–14A utilizes the TF30–P–12 engine, the most advanced engine that has been developed to date. The AWG–9 is the most advanced and versatile fire control system being developed in the free world, and to our knowledge in the Communist world as well. Minimum weight is achieved due to the structural arrangement and the use of state of the art materials. The F–14B and F–14C will maintain long-term air superiority capability through easily achievable evolutionary changes. While pure airplane performance might be increased by sacrificing carrier suitability, strength or other features, we are convinced that the F–14 is the best performing air superiority fighter that can be developed at this time to meet our overall requirements.

Mr. MAHON. Is the F–14 the best performing fleet air defense aircraft that the state of the art will permit the development of at this time?

Admiral TOWNSEND. The F–14 represents the best performing fleet air defense aircraft that can be designed to operate in the carrier environment. The carrier environment includes not only its flying and deck handling qualities but its utility in the overall defensive/offensive picture. Although the fleet air defense configuration of ——— Phoenix missiles is technically defined as an "overload" condition, what this really means is that the g. capability of the aircraft at combat gross weight is reduced only from ——— g. to about ——— g. This reduction is insignificant, particularly as operational tactics with a ——— Phoenix load do not call for high g. maneuvers. The design philosophy of the F–14 family of aircraft provides for evolutionary growth for both the air superiority mission and the fleet air defense mission. The F–14B and F–14C will represent important advances in terms of carrier compatibility, loiter time, and time to accelerate.

The F–14 with external fuel and ——— Phoenix will be able to loiter on a CAP station at ——— miles from the carrier for over ———.

Studies show that the AWG–9/Phoenix system is highly effective for the fleet air defense task, and over ——— as effective as current single shot Sparrow systems.

In summary sir, I would say definitely yes, the F–14 is the best fleet air defense aircraft that the state of the art will permit development of at this time.

Mr. MAHON. To what extent are the proposed F–14 performance specifications lower than those originally setout for the F–111B? Range, loiter time, ceiling, et cetera?

Mr. SPANGENBERG. The F–14 performance specifications are lower than those originally specified for the F–111B in only two cases. The combat ceiling now specified is ——— feet vice ——— feet originally asked for in the F–111B. The specified loiter time on CAP station with ——— Phoenix missiles has been reduced from ——— hours—without a combat allowance—to ——— hours—with a combat allowance. In both cases, the F–14 performance figures are higher than those actually achieved by the F–111B. All other F–14 performance specifications are equal to or higher than those originally laid down for the F–111B.

Mr. MAHON. To what extent did the use of the Phoenix missile system dictate the design and cost of the F–14?

Mr. SPANGENBERG. The AWG–9 missile control system is an integral part of the F–14 design and has obviously influenced the size, weight and cost of the design. If the question is intended to solicit a comparison between two airplanes, one with an AWG–9 system, and one with some less capable system, the following may be of help. Studies have shown that by careful design tailoring, the gross weight increase has been held to about 1 percent and the cost increase to about 10 percent over an airplane incorporating a digital version of the AWG–10 fire control system. The vast difference in capability between the two systems overshadows such differences.

Mr. MAHON. Certain Navy officials have advised that the Phoenix missile system, with its multitrack capability, involves too great a workload for the pilot and requires a missile control officer. According to Air Force officials, a second man would add 5,000 pounds and

$500,000 to each of its proposed F–15 aircraft. Would the second man be required if the Phoenix system is not used?

Admiral CONNOLLY. In 1954 the Navy reached a tentative conclusion that a two-man crew was required to accomplish the all-weather fighter mission when it established the requirements for the XF4H–1, now known as the F–4. In 1955, a competitive situation was developed by initiating the single place, Sparrow equipped, F8U–3 project. A choice between these two high successful airplane developments was forced on the Navy in 1958. With the choice of the two-seat F–4, the era of Navy single seat fighter development ended.

Then, as now, a weight and cost penalty was associated with the requirement for two men. These disadvantages were more than offset by the much greater capability of the two-man airplane, particularly under adverse conditions. Today, electronic warfare developments have made the tactical environment much more demanding, re-emphasizing the necessity for a two-man crew even if there were no Phoenix system and only the Sparrow were carried. Experience in SEA has confirmed that the help provided by the second man with his additional sensors is invaluable in the combat maneuvering environment.

Mr. MAHON. I am told that pilots who have flown in combat in Southeast Asia have stated that the U.S. needed a light, uncomplicated, highly maneuverable fighter aircraft. Is the F–14 this kind of aircraft?

Admiral CONNOLLY. The F–14 is that kind of aircraft to the extent that it will be highly maneuverable and, while it will have a sophisticated weapons control system, it will also have a high degree of reliability, flexibility and versatility that we have never achieved before in our aircraft. As to being light, I think that you would have to compare weight to power available. The key to a good fighter is to have a balanced, well-proportioned aircraft with a good thrust to weight ratio to provide high speed, good range, outstanding acceleration and the aerodynamic characteristics to insure the best possible maneuverability. These attributes are essential to beat the enemy. Regardless of the weight of the aircraft, if it is not in balance it will never be a great fighter. Therefore, I think the lightweight versus heavyweight fighter is somewhat irrelevant. When the F–4U, Corsair was developed, we did not decide to build a heavier fighter. Rather, we said, let's build to meet the needs of a possible war in the Pacific and let's build for high performance. The result was a fighter heavier than had ever been seen before—anywhere. It had a longer service life than any other fighter with the possible exception of our present-day F–4 whose day is far from over. The F–8F, on the other hand, was developed to outduel the Japanese Zero. Even though it was a pilot's dream, it had little potential and short service life. This I want to emphasize again: We are designing the F–14 to meet the threat—to the best degree that we have the vision to see or anticipate. Aircraft size is not relevant to performance.

F–14 COMPARED WITH SOVIET AIRCRAFT

Mr. MAHON. Data have been supplied which indicates that most new Soviet fighter aircraft (Flogger A, Flogger B, Foxbat, and Faithless) have ——— than that proposed for the F–14A. Why would it be pro-

posed to develop a new fighter aircraft ——— which does not exceed that of existitng Soviet fighter aircraft?

Admiral CONNOLLY. It is, of course, impossible to design any one fighter which excels in each of its characteristics over all other fighters. The U–2 was a prime example of designing a special purpose machine. Its ceiling, far in excess of any other aircraft at the time it was put into service, allowed it to survive until a counter air-to-air weapon was developed by the Soviets.

In a similar manner, the F–14 will use its Phoenix and Sparrow missiles to handle those threats which, by virtue of specialized design, may be able to fly beyond its own envelope. ———. The F–14 now represents an optimum balance between weight, cost, performance, and capability.

Mr. MAHON. How can we gain air superiority unless we design aircraft which not only exceed the performance characteristics of presently known Soviet aircraft, but which are designed to exceed new aircraft which the Soviets will probably develop in the next 5 years?

Admiral CONNOLLY. Our experience, backed up by many studies and analyses, shows that the effectiveness of an air superiority fighter is determined by vehicle performance parameters — energy for maneuverability (P's), wing loading, visibility, roll rate, radius, combat ceiling, time to accelerate, and so forth — and by the effectiveness of the air-to-air weapons carried. We believe that the F–14A represents the optimum balance between vehicle performance, weapons, and many other parameters — such as vulnerability, flexibility of weapon mix, interaction with combat support environment, and so forth — that determine the overall effectiveness of a fighter within the weighted value of various mission profiles. In the F–14B and F–14C we will have a combat thrust to weight ratio greater than ——— which will give these airplanes much higher air-to-air combat performance than any present or projected Soviet fighters.

We plan, of course, to introduce the F–14B at the very earliest possible time.

It is important to realize that an air superiority fighter aircraft cannot be simply described or compared on the basis of any single performance parameter. A high performance fighter should be judged as a "balanced" weapon system and the overemphasis of any single parameter can lead to many erroneous conclusions of relative merit. For example; maximizing thrust to weight leads to a rocket-like solution, maximizing low wing-loading leads to a glider, maximizing visibility leads to slow observation platform and maximizing max speed and altitude leads to interceptor like performance. A comparison and evaluation of tactical fighter capability is at best extremely complex and requires insight and experience in the balancing of total weapon system parameters. We feel this "balancing" has been done in a thorough manner in terms of realistic technological forecasts for engines, avionics, aerodynamic design, materials, and structures. Of particular importance, in the design philosophy of the F–14, has been the emphasis on systematic growth in performance of an evolutionary family of aircraft to meet the estimated changes in the threat through the early 1980's.

Mr. MAHON. There has been much discussion of the new MIG–23, or Foxbat. This aircraft is believed to have a speed of mach ——— and an ——— ceiling. ———. The Foxbat ——— which, with its high

altitude, give it a ——— capability. Is the Navy satisfied to build a new fighter aircraft with ——— the Foxbat?

Admiral CONNOLLY. The F–14 series, by virtue of its well rounded performance and its greatly superior weapon system, is expected to be superior to Foxbat (in terms of kill capabilities) over the entire range of conditions, ———. If Foxbat operates at mach ——— and ——— feet, its weapon system will be markedly ——— by the F–14's AWG–9 Phoenix system.

COMPARISON WITH U.S. AIRCRAFT

Mr. MAHON. Compare the performance characteristics proposed for the Air Force's FX aircraft with those of the F–14.

Admiral CONNOLLY. The differences in the characteristics between the Navy's F–14 and the Air Force's F–15 are based upon the needs of the two services. In order to understand adequately the significance of these differences in specific system characteristics, it is necessary to understand the differences in the needs against which the two systems are being designed. These needs or requirements of each service are best described in the approved DCP's for the two aircraft. The DCP's also carry the rationale upon which the Department of Defense has approved each program. It is our understanding that the F–X DCP No. 19 approves the Air Force's aircraft and DCP No. 60 was the basis for the current approval for the Navy program. Attached are copies of the DCP's for the committee's use and understanding of the needs and characteristics of both the Air Force's approved F–15 (FX) and the Navy's approved F–14 (VFX–1) programs. These are outlined on page 8 of the DCP No. 60 and on table 4 of DCP No. 19.

(*Staff note:* The documents referred to above were submitted to the committee, but they are classified.)

Mr. MAHON. Your charts indicate that the F–14 will replace the F–4J at a cost of probably ——— billion. The maximum speed of the F–4J is ———. That of the F–14 A and B is ———. The supersonic ceiling of the F–4J is ——— feet, the F–14A is ——— feet, and the F–14B ——— feet. Do improvements of this seemingly small range justify an investment of ——— billion?

Admiral TOWNSEND. The Navy believes that the F–14 is a "balanced fighter", with planned growth, that is far superior to the F–4J in countering the enemy threat. There are many fighter parameters in addition to speed and combat ceiling which must be considered such as visibility from the cockpit, winds required to operate, maneuverability, et cetera. For example, the roll rate of the F–14 at supersonic speeds is ——— that of the F–4J. The F–4J can sustain a ——— "g" maneuver up to altitudes of ——— feet while the F–14B can sustain ——— "g's" at ——— feet.

Cockpit visibility for both the pilot and CMO in the F–14 aircraft is much superior to the F–4J. In carrier suitability, the F–14 requires about ——— kts. less wind to operate than the F–4J with comparable loading conditions. This improvement will reduce carrier accidents and impose lower restrictions on the carrier maneuvers for launching and retrieving aircraft. The mach ——— speed of the F–14 represents a ——— knot speed advantage over the F–4J at mach ———. The

greater maximum speed of the F–14 also reflects improved acceleration and rate of climb over the F–4J. The range of the F–14 is markedly superior to the F–4J, providing either greater operational radius or greater combat time at the same radius. On internal fuel the F–14 has a combat escort radius of ——— n.m. while the F–4J has a radius of only ——— n.m.

When the overall advantages of the F–14 are considered, including improved combat performance, longer range, better carrier suitability, vastly improved weapon system, and growth capability, the investment is considered well worthwhile. With today's technology, we know of no way to build a better fighter than the F–14 which will meet Navy requirements and defeat the enemy threat in future years.

ADVANCED TECHNOLOGY ENGINE

Mr. MAHON. The F–14B, with the advanced technology engine, is predicted to have much better performance than the F–14A. How confident are you that the advanced technology engine can be developed on schedule and with the characteristics proposed?

Admiral TOWNSEND. We have a high degree of confidence that the advanced technology engine can be developed on schedule to the performance levels specified if continuously and fully funded. Both General Electric and Pratt and Whitney are experienced companies who have demonstrated competence over an extended period of time.

Both companies have completed extensive demonstrator programs which have successfully completed tests at technology levels consistent with that to be utilized in the advanced technology engines. For example, Pratt and Whitney has successfully run combustors and turbines more than ——— hours over ———° F. They have also demonstrated the thrust-to-weight ratio specified for the advanced technology engine under the Air Force lift cruise engine program. General Electric Co. has run successfully at ———° F. under the AMSA engine program and at ———° F. on combustor and turbine tests. General Electric demonstrated a thrust-to-weight ratio within 3% of that specified for the advanced technology engine under the Air Force lift cruise program.

The schedule for the engine is based on extensive historical data from past engine developments. For example the average engine has taken 60 months from initial design to military qualification tests without preceding demonstrator programs. It is considered that the Navy advanced technology program is consistent with this past history when the preceding demonstrator programs are taken into account. In the event that some unforseen technical problems are encountered which cause a slip in the advanced technology engine the F–14A production would continue until the advanced engine became available. The flexibility of the F–14 design allows retrofit of the advanced engine into the F–14A as a relatively simple matter.

Mr. MAHON. Is it within the state-of-the-art to successfully cool turbines when turbine inlet temperatures reach the ——— degrees contemplated in the advanced technology engine?

Captain AMES. Yes, sir; Pratt and Whitney has successfully run combustors and turbines more than ——— hours over ——— ° F.

General Electric Co. has run successfully at ——— ° F. under the AMSA engine program and at ——— ° F. on combustor and turbine tests. Actually, the metal temperature of the cooled turbine in advanced engines for the F–14 is less than that in some uncooled turbines flying in both military and commercial aircraft today.

Mr. MAHON. Is the proposed thrust-to-weight ratio within reasonable limits of the state-of-the-art.

Captain AMES. Yes sir; Pratt and Whitney has successfully demonstrated the thrust-to-weight ratio specified for the advanced technology engine and General Electric demonstrated within 3 percent of the value specified for the advanced technology engine under the Air Force lift cruise program.

Mr. MAHON. If the advanced technology engine fails or slips significantly, what will be the effect on the F–14 program?

Captain AMES. In the event that some unforeseen technical problems are encountered which cause a slip in the advanced technology engine the F–14A production would continue until the advanced engine became available. The flexibility of the F–14 design allows retrofit of the advanced engine in the F–14A as a relatively simple matter if required.

Mr. MAHON. What is the proposed cost of development of the advanced technology engine?

Captain AMES. The estimated cost of the development program which will result in engines qualified for both services in $363 million. ($181.5 million Navy and $181.5 million Air Force.)

Mr. MAHON. How confident can we be in your estimate that the engine will cost approximately ——— each?

Admiral TOWNSEND. The approximate ——— average unit production cost is based on the current design of the engine, plant loading, and expected learning curve effects offset by a 4 percent per year inflationary trend.

Mr. MAHON. In testing the F–111B, the Navy found that the TF–30 family of engines were "unresponsive," that the thrust response is too slow for carrier operations. Why do you now want this engine in the F–14A?

Captain AMES. Aircraft handling characteristics during carrier operations depend on both engine thrust response and the vehicle mass.

Early versions of the TF–30 family were slow to accelerate and, when combined with the heavy F–111B, produced an "unresponsive" aircraft.

Acceleration time, for the TF–30 to go from low thrust to high thrust, has been reduced by ——— for the P–12/F–14A version. This improved thrust response, particularly when installed in a 4 ton lighter landing aircraft will yield a responsive F–14A aircraft. It is of interest to note that another model of a TF–30 engine, installed in the A–7, has had no thrust response problems and is operating successfully in the service environment.

Mr. MAHON. Since both the Navy and Air Force need a new air superiority aircraft, why can the Air Force wait for the advanced technology engine while the Navy cannot?

Admiral CONNOLLY. In actuality neither the Air Force nor the Navy can afford to wait. The Air Force is moving as fast as possible with the development of the FX weapon system which requires a new engine and AMCS development as well as a new airframe. With

a philosophy of improvement by evolution, the Navy will use the existing AWG-9 and TF-30 engine to attain a replacement for the F-111B to provide a major improvement in fleet and force air defense. The minimum-change-installation advanced engine, the then thoroughly tested avionics system, and the new airframe are confidently expected to provide a highly improved air superiority capability against Soviet tactical air capabilities from the mid-1970's through the early 1980 time period.

CREW ESCAPE CAPSULE

Mr. MAHON. In the F-111B program, the Navy, according to our information, insisted that crew survivability be enhanced by incorporating an escape ejection capsule in the aircraft even though the capsule added considerable weight. The ejection capsule is said to be successful. No such capsule is planned for the F-14. Why did the Navy change this requirement?

Admiral CONNOLLY. First, let me say that an escape capsule is desirable not only for enhancing crew survivability but from crew habitability as well. In the formative stages of every new manned weapon system, the tradeoffs between weight and complexity versus increased survivability are always carefully considered in light of the mission requirements.

In the F-111 case, the original joint Air Force and Navy requirements in 1961 permitted either ejection seats, encapsulated seats, nose capsules or encapsulated pods. Of the six designs submitted, three had side by side seating, with one of these (McDonnell-Douglas) having a capsule. In the second round (May 1961), General Dynamics incorporated an escape capsule while Boeing proposed ejection seats with a capsule as an alternate. For the final round, the requirement was changed to require a capsule development as part of each contractor's basic proposal. Eventually, McDonnell-Douglas, the original proposer, became the capsule subcontractor for General Dynamics. During the early negotiations, there were proponents in both services for each of the various means of escape. The Air Force had encapsulated seat experience with the B-58, and capsule experience with the B-70, while the Navy had nose capsule experience with the D-558, as well as a pod development with Douglas for the F4D-1.

For the F-14, the required tandem seating greatly magnifies the problem of installing a capsule. The longer length and mass distribution lead to greater stability problems upon ejection. The total weight penalty is much higher than for a side by side arrangement. The time required to develop a tandem capsule would require a schedule slip.

The Navy is as interested in aircrew survivability as anyone. I have before me the figures for Navy ejections for calendar year 1967. There was only one ejection above 30,000 ft. and one ejection above 500 knots airspeed. The total number of ejections was 197, 171 were successful. State-of-the-art ejection seats give up a capability to successfully egress at zero airspeed and zero altitude. A very high percentage of escapes from aircraft in trouble are under controlled conditions and well within safe envelopes of ejection seats. The percentage of successful ejections is rising every year and now approaches 90 percent.

CONTRACT AWARD

Mr. MAHON. We have been told that the "unsolicited proposal" of the Grumman Aircraft Corp. of October 1967 was the basis for the Navy fighter study parameters for the VFX, that the fighter study concluded that the VFX should be pursued, and that the Grumman data was also the basis for the informal guidelines issued to the five competing contractors in November 1967. To what extent did the Navy's use of this Grumman data give Grumman an advantage in the competition?

Admiral TOWNSEND. The use of Grumman data in helping to formulate the guidelines in November of 1967 gave no advantage to Grumman in the actual competition that began in June 1968. The fact that a realistic and consistent set of design parameters was provided to the other competitors allowed them to concentrate their efforts on a point design without duplicating the extensive parametric work normally required.

Mr. MAHON. Was the Grumman proposal really "unsolicited" or was it requested by the Navy, formally or informally?

Admiral TOWNSEND. The Grumman "proposal" was truly unsolicited, although VFAX study work which preceded it was strongly influenced by the Navy. It will be recalled that the five contractors were all involved for at least 2 years in VFAX study efforts working toward a solution of the overall Navy fighter requirements.

Mr. MAHON. Did the Navy, after receiving the Grumman proposal, ask three more airframe contractors to submit "unsolicited proposals" in accordance with guidelines supplied to them by the Navy?

Admiral TOWNSEND. The contractors were not asked to submit "unsolicited" proposals, but all were made aware of the situation, that an attractive fighter solution appeared possible, that a competition would probably result, and we would welcome their participation in providing sound technical data to the Navy Fighter Study Group.

Mr. MAHON. Data submitted indicates that the McDonnell version of the F–14 was lighter in weight, carried more fuel internally, had more rapid acceleration from Mach ——— to Mach ——— and required less wind over deck for landing than the proposed Grumman plane. The maximum speed at ——— feet was only Mach ——— less. The unit cost of the McDonnell aircraft was ——— less. If this information is correct, why was the Grumman aircraft chosen

Admiral TOWNSEND. The McDonnell proposal for the F–14 was attractive, but the Grumman design was better. In the air superiority role, the Grumman F–14 had superior speed, climb, acceleration, and maneuverability. Over all, the choice between the final two contractors was clear, based on the substantial technical and operational superiority of the Grumman design, its lesser development risk and greater growth potential, having given due consideration to the cost proposals.

It should be noted that the referenced ——— cost difference is computed using ceiling price options. Based on engineering development cost and estimated option target prices, the total program cost should be about the same for both McDonnell and Grumman. The ceiling prices will be subject to review and downward negotiation at the time of exercise of each option.

Mr. MAHON. The "spot factor" or room required by an aircraft on deck is important to the Navy since carrier space is quite limited, according to your testimony. The "spot factor" has been given as one criteria in which the Grumman aircraft is preferred to the McDonnell aircraft. How can the Grumman spot factor be better when the Grumman plane is ——— feet in length as compared to ——— feet, ——— inches for the McDonnell plane, a 2 foot, 7 inch difference, and the Grumman plane's wing is ——— feet, ——— inches as compared with ——— a five foot difference. The overall size of the McDonnell plane appears to be smaller.

Mr. SPANGENBERG. The spotting factor comparison between the two designs showed a small advantage for Grumman of 1.67 versus 1.70 (no tail folding utilized on either design). The dimensions noted in the question are for the airplanes in their "wings extended" condition rather than the "wings swept" condition used for spotting comparisons. In determining these figures, the maximum number of airplanes carried on a CVA–59 class carrier is determined using three-dimensional models on a model carrier. The slight advantage for Grumman is considered valid.

Mr. MAHON. How did the time given the five original competitors and the two final competitors in contract definition compare with time permitted competitors in other recent aircraft programs?

Mr. SPANGENBERG. The contractors had over 3 months from official issuance of the RFP on June 21 to proposal submission on October 1. This is a reasonable period and is actually longer than was given on the competitions from which the following evolved: A–7, OV–10, TH–57, CH–53, CH–46, X–22, UH–1E, and the F–111B. These are all the programs for Navy airplanes since 1960.

Mr. MAHON. Our information indicates that although the request for proposal was provided the five aircraft contractors on June 21, 1968, the "specific operational requirements" for the F–14 which documented the requirements for, and the performance parameters of the F–14 was not issued by the Navy until September 25, 1968.

(a) How could the five aircraft contractors be expected to prepare a proposal without the "Specific operational requirements" proposed for the aircraft?

(b) Were the "Specific operational requirements" ever furnished to all five contractors?

(c) If the five contractors did not receive the "Specific operational requirements," then it would appear that the contractors other than Grumman were designing against the Grumman unsolicited proposal of October 1967. It that correct?

Mr. SPANGENBERG. A contractor does not require a specific operational requirement (SOR) in order to prepare a design proposal, the requirements for which are completely defined in the RFP. Normally, the Navy does not furnish SOR's to its contractors, and did not in this case. The specifications, containing the technical requirements for the design, were made available to all bidders on April 29, 1968. These detailed requirements completely superseded the original guidelines derived from the October 1967 Grumman study. All contractors, including Grumman, were on an equal footing with a new design base.

Mr. MAHON. Did the very short time periods reportedly given the competitors aid Grumman substantially since much of their work had already been done by October 1967, and the other companies had to start work in June of 1968? If contract definition had been extended 6 months, could the Navy have probably obtained a better aircraft?

Mr. SPANGENBERG. The time given the competitors was not considered short, either in absolute terms or in comparison to previous practice. Some of the contractors involved did invest a greater effort than others in the period between December 1967 and June 1968. The Navy has no evidence or reason to believe that a better fighter would have resulted from a 6-month longer CD effort, although certain of the designs might have been more nearly competitive with the winner.

Mr. MAHON. We are told that the McDonnell aircraft would have been ——— percent titanium by weight. The Grumman aircraft would have only ——— percent titanium. Even though titanium is about five times as expensive as aluminum, the unit cost of the McDonnell plans was ——— less. Titanium has many advantages over aluminum. It has a higher strength-to-weight ratio; a higher limit of fatigue failure: a higher corrosion resistance rate; and a weight advantage. Why don't you prefer a plane made of better material at a lower cost?

Mr. SPANGENBERG. The Navy fully appreciates the merits of titanium in aircraft construction and this was carefully considered in the Navy evaluation of the competitive proposals. The Navy does not actually specify the amounts of materials to be used in any airplane design. The choice is made primarily by the contractor after detail trade-off studies of weight, producibility, and cost. Titanium will be used in those applications where the study results show it to be most advantageous. Overall, the technical and operational superiority of the Grumman proposal made it the clear choice.

Mr. MAHON. Does the proposed contract provide for cancellation in the event of nonavailability of funds? What termination costs are provided?

Admiral TOWNSEND. The proposed contract for ——— aircraft is to be funded with R.D.T. & E. funds. This contract provides for the amortization of certain tooling and test equipment costs over the first 42 aircraft.

In the event of nonavailability of production funds, the total price of the first ——— aircraft is increased by ———.

At no time, however, is the Government's termination liability greater than the total amount which will have been appropriated and obligated at the time of termination.

PHOENIX MISSILE SYSTEM

Mr. MAHON. The Phoenix missile system has been under development, I believe, since 1962 and, according to the latest schedule, it will not be introduced into the fleet until 1973, some 11 years later. I am told that while there have been ——— successful test firings out of ——— attempts against a simulated ——— it has yet to be tested against a simulated or actual ———.

Hughes officials advised our staff they have not been directed to test the system against ——— targets with a ——— the target charac-

teristics of ———. In fact, the Navy had directed Hughes to undertake a study with the objective of determining, among other objectives, the performance of the Phoenix against ———. While this study is not yet complete, an interim report provided our staff indicated ———.

Mr. MAHON. What confidence do you have at this time for a successful development of the Phoenix missile against the —— or even ———.

Admiral CONNOLLY. The Phoenix missile system has now completed, with unprecedented success, approximately ——— of an orderly, planned, development flight-test program which we expect to complete during ———. The missile system design has been optimized to meet the Navy operational requirement for a fleet defense weapon system. ———. Missile firings against target drones simulating supersonic aircraft are planned later this year. Tests of the missile system in captive flight tests have been successfully conducted against manned supersonic aircraft during the past 2 years.

Missile firings against actual supersonic aircraft have not been included in the contractor's development flight-test program only because of the high cost of such target aircraft. ———. ———. Similarly, the missile launch range, which is determined by the range product of the airborne radar transmitter and missile receiver, is similarly a function of the target size.

Among other improvements being made in the Phoenix missile control system, to be used in the F–14A, is an ———.

The Navy is confident that the Phoenix missile system will be successful against supersonic aircraft and cruise and air-launched missiles.

Mr. MAHON. The record shows that there have been delays in the Phoenix program as well as cost overruns. Will you discuss generally the nature of the problems encountered thus far?

Captain AMES. Early in the Phoenix program, problems were encountered that caused cost overruns in the development of the rocket motor and in the airborne missile control system computer. The rocket motor developed by Rocketdyne experienced "burn through" of the motor casing which delayed pre-flight rating tests by 9 months. Although this problem was solved, a competitive development was undertaken as a backup. The alternate motor by Aerojet is now available and has resulted in a competitive environment with attendant advantages to the Government.

The other problem, more difficult and costly, came from the computer developed by Litton. Although the original design called for a computer weighing ——— early developmental units could not be made to function properly and were heavier and larger than specified. A competition was held and an alternate computer manufactured by Control Data Corporation was selected for use in the Phoenix weapon control system. The new computer weighed less than ——— lbs., was much smaller, and cost less than that projected for the original.

The capacity of the new computer is responsible for the ability to incorporate the Sparrow, Sidewinder, and gun as well as the Phoenix, in the F–14A aircraft.

The additional funds required by these early difficulties produced a stretchout in the program. This stretchout, in addition to the engineering associated with the successful alternate developments, is the primary cause of cost overrun experienced.

We now have a firm financial plan and schedule for completion of the development program.

Mr. MAHON. Hughes officials advised our staff that they do not believe the presently proposed schedule could be improved and that, in fact, the schedule would require uncompromised support to be met. In the event that further unanticipated delays preclude timely integration of the Phoenix with the F–14, what effect would there be on the overall F–14 program?

Captain AMES. A slip in the Phoenix schedule could delay the F–14 program if the problems were of a serious nature. Moderate slippage could be absorbed by reorientation of the flight test program leading to board of inspection and survey trials. To reduce the probability of delays, provisions have been made to insure timely completion of the program as follows:

(*a*) Backup equipments are available in the computer, antenna gimbal, and power supply areas in the event of difficulty with these components.

(*b*) Provisions have been made to expedite the qualification of the Phoenix system by careful monitoring and parallel efforts in the environmental test program.

(*c*) Proven design techniques are used and changes are minimized to hold down schedule risk.

Seven F–14A configured developmental models of the AWG–9 system will be delivered for test and evaluation 1 year ahead of the pilot line production models to be installed in the first F–14A's. This sequence of events should allow time for required changes without causing a program delay.

Mr. MAHON. With the problems and delays encountered in the Phoenix program, can you be confident of a successful interface between the Sparrow III and the AN/AWG–9 missile control system?

Captain AMES. The Sparrow missile interface, using ——— has been accomplished in two major weapon systems; the Aero 1A and the AWG–10 now in fleet use in the F–4B and F–4J aircraft. As a result, basic design considerations such as providing Sparrow guidance signals through the weapon system have been solved and can be followed in the AWG–9 Phoenix system. Furthermore, there are improvements being designed for the AWG–9 to further exploit Sparrow missile capabilities such as adding ——— of the launch envelopes. Progress to date indicates that such improvements can be incorporated without delaying the schedule or increasing the development risk.

Mr. MAHON. Will you provide us with the total cost to date, as well as the anticipated costs, for developing the Phoenix?

Captain AMES. The total cost through fiscal year 1968 for developing the Phoenix missile system is $344 million. The anticipated costs for fiscal year 1969–73 are as follows: ———

Mr. MAHON. What have the cost overruns been to date in the Phoenix development program?

Captain AMES. The estimated cost overrun to date is 113 million. As described in answering an earlier question, the cost overrun is mainly the result of early development difficulties with the computer and the rocket motor and consequent stretchout of the development program.

All overruns have been funded to date. Because of the firm financial plan, and schedule, we do not anticipate any further overruns.

Mr. MAHON. If it appears that the Phoenix system be successful, why hasn't the Air Force proposed its use in air defense of the continental United States?

Dr. FOSTER. The Air Force considered the F–111B configuration of the Phoenix system for the F–106X air defense interceptor. That configuration was rejected because weight, power, and space requirements were excessive for the F–106X.

The Phoenix was not considered for the F–12B since the ASG–18/AIM–47 system had already been developed and operationally tested in the YF–12A.

Although the Air Force has not included the present Phoenix system as a fire control/missile system option for an interceptor, the Air Force has proposed that Phoenix system technology be considered in any new air defense system for the Conus. The proposed plan for the F–12B interceptor specifically states that any improvements made in the AF ASG–18/AIM–47 and Phoenix (AWG–9/AIM–54) development programs will be considered in the synthesis of the final weapon system for that aircraft.

The F–106X improved interceptor study also includes consideration of components of the Phoenix AWG–9/AIM–54 and ASG–18/AIM–47 development programs.

Mr. MAHON. How much weight will the proposed modification of the Phoenix control system to include control of Sparrow and the gun add to the system?

Captain AMES. During the reconfiguration of the AWG–9 for the F–14A a weight reduction of about ——— was realized. This reduction was attained, even with the addition of the Sparrow, Sidewinder, and gun capabilities, by better packaging of components, microminiaturization, and recently developed improvements in the transmitter and other major elements. Control of Sparrow effects ——— pounds in the new weight ——— of the Phoenix system.

STATEMENT OF MR. MOOT ON THE F–14

Mr. MAHON. Mr. Moot, you in your capacity as the representative of the Department of Defense might be able to make a comment in regard to this program.

This is a new program. We have a new administration, a new Secretary of Defense. It would be unrealistic and improper to expect the new administration and the new Secretary of Defense to come up with suggested major amendments to the budget at this time.

What probably will be the course of action, not the result, with respect to the F–14?

Mr. MOOT. Mr. Chairman, the normal sequence of action from now on would be as follows: This contract would be awarded for the airframe for $60 million. The R.D.T. & E. work would continue. There is no legal liability for additional work beyond this amount, beyond $180 million including the contract definition for fiscal year 1969.

We would then come up with our regular procurement hearings, and at that time, the new administration would have looked

at this program and would have an answer in terms of the ongoing program insofar as the committee is concerned for procurement.

In terms of the research and development I am sure you appreciate better than I do that Mr. Laird's research expert is with us today, and he is the man who has looked in depth at this particular aircraft, so while Mr. Laird and Mr. Packard have not looked at it in its current configuration in depth, they will; they are however, at this time relying on Dr. Foster.

Mr. MAHON. So what you are saying is that the new administration will have a look at this program before it gets very far along?

Mr. MOOT. Yes, sir, it is on the list for the current review.

Mr. ANDREWS. The total amount of liability incurred so far is $130 million? I refer to the contract being signed.

Captain AMES. Yes, sir.

Mr. ANDREWS. There will be no financial obligation on the part of the Government beyond $130 million?

Captain AMES. No, sir; $40 million will be on the airframe contract.

Mr. ANDREWS. Did he not say $60 million?

Captain AMES. It is $40 million for this year. The remaining amount of $130 million is for contract definition, avionics, engine, et cetera; $40 million is associated with the contract with Grumman for this fiscal year.

Mr. ANDREWS. How much of the $130 mllion has been appropriated to date?

Captain AMES. We have had it all appropriated but it has been deferred; $60 million was deferred by your committee.

Mr. ANDREWS. Will there be a request in the 1970 budget for additional money over and above $130 million?

Captain AMES. $450 million including $175 million in R. & D. and $275 million in production money.

Admiral CONNOLLY. That is what the new administration will be looking at.

Mr. MAHON. I do not know what the attitude of the Committee on Appropriations will be. My present attitude with respect to this matter is, that we probably should express to you our concern about the matter, but we probably should not take any formal action with respect to this matter. We cannot let you get into this gigantic program without expressing our concern over many of the uncertainties which appear on the horizon.

Mr. MAHON. We thank you very much for your cooperation and assistance, gentlemen.

CONTINUATION OF HEARINGS OF MAY 12, 1969

Mr. ANDREWS. When was the letter contract for the F-14A awarded and when will it be definitized.?

Captain AMES. That contract was awarded to Grumman on February 3, 1969, and this was a definitized contract at that time.

F–14A R.D.T. & E.

Mr. ANDREWS. How much are you requesting in fiscal year 1970 for F–14A R.D.T. & E. and how does this compare with the fiscal 1969 R.D.T. & E. funds?

Captain AMES. We requested in the budget $175 million of R.D.T. & E. and in 1969 we had $130 million.

Mr. ANDREWS. Up $45 million?

Captain AMES. Yes, sir, up $45 million.

Mr. ANDREWS. How many prototype aircraft will be delivered from fiscal year 1969 and fiscal year 1970 R.D.T. & E. funds?

Captain AMES. Six, sir.

Mr. ANDREWS. What is the total number of prototype aircraft to be delivered under the R.D.T. & E. program?

Captain AMES. Six.

F–14A PRODUCTION AIRCRAFT

Mr. ANDREWS. You are requesting PAMN funds for six production models of this aircraft in 1970, when at the same time you have not received delivery of a prototype aircraft for testing. Are we not moving too fast on the F–14A, particularly from the standpoint of funding production aircraft this early in the program?

Captain AMES. We do not feel we are moving too fast, sir. We have a considerable amount of testing underway both from the static and fatigue tests model, wind tunnel tests, and so on. We feel quite confident that by the time we go on contract for the production models we will have most of the major problems worked out and we should proceed on that schedule.

If we bought only R. & D. aircraft and completely tested those before we went on contract due to the long leadtime of going into production we would have a gap in production of some 18 to 24 months, which would not be an efficient or economical way of doing this.

Mr. ANDREWS. Is this an area where you are getting a few dividends from your experience with the F–111B?

Captain AMES. Yes, sir; there are certain areas, particularly in the swing wing technology which was quite successful on the F–111.

We have information on the avionics which is normally a high risk item.

We have the TF–30P12 which is essentially developed and flying currently in numbers 6 and 7 F–111B's, so the only areas we are going in completely from scratch is on the airframe itself.

Mr. ANDREWS. While this is a far cry from a "fly before buy" approach, why not slow down production until the R.D.T. & E. portion of the program is farther downstream?

Captain AMES. The two major reasons are delay in delivery and significantly increased costs caused by gapping between R. & D. and production efforts.

Mr. ANDREWS. Admiral Connolly, I believe you said when you were

here before discussing the F–14A that there is no doubt in your mind but that you will get what you want.

If all goes well and if funding is on time when would you expect to have F–14A aircraft delivered to the Navy for use?

Admiral CONNOLLY. April of 1973, sir.

F–14A COSTS

Mr. ANDREWS. Have your cost estimates for this aircraft changed in any way after the committee was briefed or since you prepared the estimates which are before us at this time?

Admiral CONNOLLY. No, sir.

Mr. ANDREWS. In what areas have these estimates changed and what are the new costs for each?

Admiral CONNOLLY. No changes.

Mr. ANDREWS. Has the basic unit cost of the airframe changed?

Admiral CONNOLLY. No change, sir.

Mr. ANDREWS. What known changes will be made to the airframe to cause an increase in cost?

Admiral CONNOLLY. Same answer, no changes.

Mr. ANDREWS. Why did you fail to include an amount for airframe changes in your previous estimate?

Admiral CONNOLLY. We encountered changes as we went down the line. We intend to make provision out of the existing funding.

Captain AMES. There are no known changes other than the incorporation of the advanced technology engine which was always in the original concept of the F–14.

Mr. ANDREWS. Why did you fail to include an amount for airframe changes in your previous estimate?

Captain AMES. Airframe changes are included in the estimates for the flyaway costs.

Mr. ANDREWS. You do anticipate changes but you do not know today what they will be. Is that right?

Captain AMES. Yes, sir.

Admiral CONNOLLY. We have made certain provisions for those changes we know about. There are no other changes we now contemplate. We have not gone far enough to encounter changes.

CHANGES IN COST ESTIMATE

Mr. ANDREWS. Why has the estimated cost of avionics special support equipment increased more than 100 percent since your previous estimate?

Admiral CONNOLLY. It has not happened.

Mr. ANDREWS. You say there has not been a 100-percent increase since the previous estimate. Is that right?

Captain AMES. That is right. I am trying to determine what you are using as a base line.

In April of 1968 we gave an estimate of costs. I am not sure what the previous estimate is that you are referring to.

Mr. ANDREWS. Now the question is why has the estimated cost of avionics special support equipment increased more than 100 percent since your previous estimate?

Mr. Lipscomb has a question on this.

Mr. LIPSCOMB. These questions will apply to the other answers which you have given as to no change in regard to airframe and other items.

Our records show that for avionics the official submission was $12 million. The latest Navy program estimates on avionics is $26,655,000.

Captain AMES. The original submission added up to $275 million. Actually when we originally submitted the budget it was for $338 million for fiscal 1970. This was a fully funded and viable program.

We were then told we had to get it down to a $275 million maximum.

We went back and reevaluated all the line items in an attempt to buy those items we had to have, procure long lead items, and we came up with a new breakout in order to get it within the confines of $275 million.

The current estimate of what we need in the various divisions of P–1 and advanced procurement and spare parts is $248 million in P–1 costs, $353,000 in advanced procurement, and $26 million in investment spares and spare parts.

It was necessary to reorient the line items to get the most efficient use out of the austere funding profile which was forced upon us.

There was not an increase in the cost of various avionics. It was the amount of equipment that we decided we should buy at this particular point and time.

Admiral CONNOLLY. That again is special support equipment where the change took place and not in the airplane avionics or electronics.

Captain AMES. That is the amount of special support equipment to support the avionics, including the AWG–9 system.

I can give you a complete breakdown of the 26.6 and what we are buying with that specifically. I do not happen to have it with me.

(The information follows:)

The funds will be used to procure spares as follows:

Type of spares:

	Million
AWG–9 spares and repair parts	$12.4
Engine spares (12 spare engines)	9.0
Other spares and repair parts	5.0
Total	26.4

Mr. MAHON. The committee shall stand in recess until 2 o'clock.

AFTERNOON SESSION

Mr. MURPHY. Admiral Connolly, before we recessed this morning we were discussing cost estimates of the F–14A aircraft.

CHANGES IN F–14A COST ESTIMATES

The committee has information indicating that within the total estimate of $275 million, there have been changes since the official submission by the Navy.

For example, the cost of the airframe was a total of $111,717,820, and the latest Navy program estimate is $116,749,998.

Admiral GADDIS. Yes, sir.

Mr. MURPHY. There were no funds for airframe changes, and now there is a total of $8,800,200 for this.

Within support costs, the original was $12 million, and it is now $26.665 million for avionics and special support equipment.

For publications, it was $2.351 million. It is now $6.994 million.

There was nothing for training parts originally, and it is now $2.315 million for this item.

Factory training was $1 million. It is now $1.408 million.

Repair and repairables was $648,980. It is $832,800 now.

For advance procurement for the next year, it was $14.4 million. It is $353,000 now.

Investment spares was $36 million, and it is now $14 million.

These were the items we were discussing before we left to determine whether these have in fact changed since the committee was originally briefed on the F-14.

Admiral CONNOLLY. I would like to ask the program manager. As you already know, the total has not changed. These are changes within the $275 million.

Captain AMES. Without going back to May of 1968—I will first go back to May of 1968—at that time we had a priceout which was the one used for the Navy fighter study. It was in calendar year 1968 dollars, and it was backup for the fighter study.

The budget submission that I prepared on the 12th of August 1968, was based on the May 1968 priceout escalated to fiscal 1970 dollars.

At that time, the original program cost in 1968 dollars, calendar year, was $270.3 million.

Escalated to fiscal 1970 dollars, this came out to be $292.4 million.

In addition, we added investment spares and advance procurement, so on the 12th of August there was a submission of $365.1 million.

There were some changes made within NavAir which changed this amount by reducing the advance procurement, and came up with a total investment cost of $341.6 million.

On the 30th of September, NavCompt rephased SSE spares across the board for all aircraft. This then reduced the total program investment cost to $337.9 million, and this was our submission which we sent forward to OSD.

OSD then reduced total program costs from $337.9 million to $275 million, and asked us to adjust our program accordingly to get it within those constraints.

This was extremely austere funding. It was a bare bones approach. Every line item had to be in the right place or we could not continue the program without slippage.

Someone, and I am not sure who, arbitrarily took $36 million of that $275 million and assigned it to investment spares and spare parts.

This was in excess of what we could assign for that particular line item without slipping the program.

They told us to take the remaining amount of money and divide it into the remaining line items in order to come up with a program based on $275 million. It was impossible to come up with a program without slippage.

That is why it showed up zero for spare parts, which was unrealistic, and one of the items that dropped down from the previous program

was avionics SSE, which was previously discussed. That changed from $37 million down to $12 million.

This would not buy adequate avionics SSE.

The program that you are currently looking at, also for $275 million, was different from the one which was originally submitted for the same amount. Line items such as airframes, avionics SSE, other items as trainers, publications—they changed, as you just pointed out.

In order to come up with a reasonable program, a viable program with which we could live and still stay within $275 million, we had to take the amount of money available and put it into the P–1 gross costs, advance procurement, and the investment spares and spare parts in a specific way.

The way we want to distribute the $275 million is $248.3 million in P–1 costs; $353,000 in advance procurement; $26.4 million in investment spares and spare parts.

To answer the question of why there were differences between the original submission of $275 million and the current submission totaling $275 million, as I previously stated, the original submisson was an unrealstic program which was brought about by assigning too much money to investment spares and spare parts.

F–14A INVESTMENT COST

Mr. ANDREWS. Where is the $275 million on the chart? You keep talking about it, but I do not see it here.

Captain AMES. $275 million is the total investment cost. It is the $224 million which is P–1, plus advance procurement and spare parts, which is not shown there.

Admiral GADDIS. Added to that $224 million would be $14.4 million in the advance procurement line item, and $36 million in the spare parts line item, which would make the cost come up to $275 million total.

Mr. SIKES. In what budget are those additional items?

Admiral GADDIS. In the PAMN program, but in separate P–1 line items.

Mr. ANDREWS. Why did you not put them all in one place? It costs $275 million.

Captain AMES. Yes, including advance procurement and investment spares and spare parts.

Mr. ANDREWS. Is that for 6 planes?

Captain AMES. Yes, sir.

Mr. ANDREWS. Would that $275 million make the unit cost run higher than $37.4 million?

Captain AMES. Yes, sir. All the other programs are on the same basis you saw before. They show program gross costs less advance procurement and investment spares and spare parts. All the slides are on the same basis.

Mr. ANDREWS. I do not think you answered my question. If you figure your request at $275 million rather than $224.6 million, will that make the unit cost run higher than shown there on that chart at $37.4 million?

Captain AMES. Yes, sir. I did not make that slide, but I am quite sure that is based on the $224 million divided by 6.

Admiral GADDIS. That is correct.

Admiral CONNOLLY. The other thing I want to be sure I understand is that this is a reallocation of effort and not a rise in each of these areas.

Captain AMES. That is right. There is no difference in the costs we are quoting now, except for minor fluctuations, than there was in May of 1968. There has been no substantial increase in cost of anything.

PROVISION FOR COST ESCALATION

Mr. ANDREWS. That is another thing I cannot understand, with a 4-percent inflationary, built-in cost.

Mr. SIKES. How did you do it?

Captain AMES. How did we do it?

Mr. SIKES. Yes.

Captain AMES. How did we maintain costs the same as they were? We estimated the costs and stated in May of 1968 those were calendar year 1968 dollars.

Our total program which was presented since that time included escalation of 4 percent per year in PAMN. That was included and taken into account.

Mr. SIKES. You have had no construction costs or change orders yet? Maybe that has something to do with it.

Admiral CONNOLLY. That is right.

Captain AMES. We have taken into account a certain amount for changes every year in our program.

When we submitted the total program, we included changes, unknown changes, in that program.

Mr. ANDREWS. Will escalations continue for the next year as they have for the last few years, and would it be proper to say we can add 4 percent to this cost?

Captain AMES. That is included in there for fiscal 1970. We feel the money shown there——

Mr. ANDREWS. Fiscal 1971?

Captain AMES. We have already included it in the program for fiscal 1971 at 4 percent above 1970.

Mr. ANDREWS. You have the 4 percent cranked into the figure for the life of the contract?

Captain AMES. All the way through 1978 or 1976.

Admiral CONNOLLY. These are 4 percent higher than the 1969 costs.

Mr. SIKES. Mr. Murphy?

ADVANCED PROCUREMENT FUNDS

Mr. MURPHY. The official Navy submission for advance procurement for next year was $14.4 million.

According to this document, however, the lastest Navy program estimate for advanced procurement is only $353,000 for next year.

What is the correct figure?

Captain AMES. $353,000 is the correct figure.

Mr. MURPHY. Why is $14.4 million being requested in P–1?

Captain AMES. As I say, we agreed to try and get our program into $275 million. Someone other than the program office arbitrarily broke out $36 million and assigned it to spares and spare parts, and $14 million was assigned to advance procurement.

As soon as I found out about it, I pointed out that that was the wrong breakout in order to maintain a schedule based on $275 million.

The breakout that I am requesting now is the one that we would like to see in the budget.

(Off the record.)

Captain AMES. In response to Mr. Lipscomb's question, the $12 million was an effort to get the total program into an unrealistic boundary. The $22 million, which is in our current priceout, is the realistic amount of money. It does not constitute an increase in cost of SSE.

There has been substantially no increase in cost in the SSE for the past year.

Mr. MURPHY. As I understand it, then, you do not need $14.4 million for advance procurement money, but you need it to fill out the rest of this changed program within the $275 million total.

Captain AMES. That is right. We need $248.3 million in the gross P-1 costs. We need $353,000 in advance procurement, and we need $26.4 million in investment spares and spare parts.

COMPARISON OF F-14A WITH F-111B

Mr. SIKES. From the standpoint of configuration, what are the primary differences between this plane and the F-111B?

Captain AMES. Some of the major differences are that it has a tandem cockpit rather than side-by-side seating.

It has no bomb bay such as in the F-111B.

It has twin vertical tails rather than a single tail.

The engine arrangement places the engines well out in the fuselage allowing a straight-through shot for the engine airflow.

It has trimmers on the forward edge of the wings for improved supersonic maneuverability, and in the 6 Phoenix configuration it is approximately 14,000 pounds lighter.

Mr. SIKES. These changes were recommended by the Navy during the lifetime of the F-111B? Did you seek to get this built into the F-111B?

Captain AMES. No, sir. It was not practical. It would have taken a complete redesign of the aircraft.

Mr. SIKES. Why has the basic unit cost of the airframe changed?

Captain AMES. The basic unit cost from the sheet you have before you? It did not change.

The $116.7 million represents a ceiling price of $80 million for the airframe plus $36 million of tooling.

AIRFRAME CHANGES

Mr. SIKES. What known changes will be made to the airframe?

Captain AMES. The one primary change we envision right now is the incorporation of the advanced technology engine. There may be some minor changes to the inlet area to increase the capture area of the inlet.

Mr. SIKES. Will this be a considerable item from the standpoint of cost?

Captain AMES. No, sir. Originally in the contract which was signed, there was a clause stating that incorporation of the advanced technology engine, including all associated flight tests, would be $14.6 million. We expect that the incorporation of the larger advanced technology engine will be substantially the same price.

Mr. SIKES. Have these changes now been included in the cost estimates before us?

Captain AMES. No, sir. That $14.6 million is not in the cost estimate of the F–14A. It is included in the F–14 B and C R. & D. line item, which is a separate line item in the budget.

Mr. SIKES. There is a very substantial increase in the cost of publications. Staff studies indicate 200 percent or more. Is that true?

Captain AMES. No, sir. That goes back to the same problem we had of trying to put the program into an unrealistic boundary which was created by assigning too much money to investment spares and spare parts. That allotted only $2.3 million or $2.4 million for publications, which was inadequate.

We have now increased that to $4.3 million.

Mr. SIKES. Will there be a penalty involved in terms of increased costs or program delays if the TF30–P–100 is later selected for the F–14A?

Captain AMES. Yes, sir.

Admiral CONNOLLY. With the P–100, the decision has been made that it will not go into the airplane. That whole line of thinking has disappeared. It was decided by Mr. Packard and Mr. Laird not to put it in.

Mr. SIKES. For completion of the record, at what point in time would the options to use the P–100 in the F–14A become unacceptable from a cost and/or schedule standpoint?

Admiral CONNOLLY. In our judgment, it became unacceptable the minute we calculated the costs and the effects and the delays and everything connected with it. The Navy did not think that was a good idea at all.

Mr. SIKES. You think that is behind us, that problem?

Admiral CONNOLLY. I am sure it is, sir.

ADVANCED TECHNOLOGY ENGINE

Mr. SIKES. Will the Navy decision to increase the thrust of its version of the advanced technology engine to about ——— pounds create a departure from the common core approach in this engine development program?

Captain AMES. No, sir; it will not affect it. We will stick to the common core and use the high-thrust end of the range, and the Air Force is planning on using the lower thrust end of it. It remains to be seen how that comes out.

Mr. SIKES. Has appropriate consideration been given to the relative merits of the increased thrust as opposed to the possible loss of commonality with the Air Force version of the advanced technology engine?

Admiral CONNOLLY. We think the answer to that is yes. Both the Air Force and the Navy will get two fine engines, and we will save money by sticking to this common cast generator, and we will save money on test time, save money on fabrication. I think it is a good idea.

Mr. SIKES. Why two engines?

Admiral CONNOLLY. We admit right from the start and we believe right from the start that our experience with 2-place airplanes and 2-place fighters and our desire to have at least ——— nautical miles of radius in order to escort our attack airplanes to the beach, in order to defend the fleet as far away from the fleet as makes reasonable sense, we believe that building an airplane around this kind of a situation is a very smart way for us to go. So, if you build a bigger airplane, you need more thrust in order to hold everything else in balance, and we believe we have done that. We will have good performance, excellent performance all around.

We could not do it on the small engine of the Air Force.

Mr. SIKES. Is their requirement such that they do not need as much engine as you need?

Admiral CONNOLLY. I do not want to sound like I know all about the Air Force business, because I do not, but they are building the airplane for one pilot and they are building it to go about ——— nautical miles, whereas we are building for two and ———. This is really the basic difference.

Mr. SIKES. If the P–100 were used in all F–14 series aircraft, would it provide sufficient performance to obviate or substantially reduce the need for the advanced technology engine in the F–14 program from an economy standpoint?

Admiral CONNOLLY. We looked at that very carefully, Mr. Sikes. The cost of the P–100 engine, its development, involved a large sum of money. It is an engine which is not at the beginning of its growth and development. It is almost ——— pounds heavier than the advanced technology engine, and it would come out with a thrust of about ——— pounds per engine lower than the advanced technology engine of our choice. We just thought it was a very poor idea to go ahead with it.

Mr. SIKES. Will the P–12 engine be modified in any way for the F–14 A aircraft?

Admiral CONNOLLY. Only with respect to the nozzle suited to the F–14. We will not modify the engine; no, sir.

Mr. SIKES. What guarantees has the Navy obtained from the airframe and/or engine contractor that the engines in the F–14 program can be changed from the longer, heavier TF–30 engine to the shorter and lighter advanced technology with minimal matching problems and without incurring an unacceptable aircraft weight penalty?

Admiral CONNOLLY. From the very start of the idea of the F–14, this was most carefully studied. It was part of the proposal from the contractors who showed us exactly how they put the advanced technology engine in.

In fact, the mockup at Grumman showed the P–12 on one side and the advanced technology engine on the other.

We do not anticipate any trouble. We know that in all new things you can get into trouble, but we see no trouble that gives us cause for concern at this point in time.

AWG–9 FIRE CONTROL SYSTEM

Mr. SIKES. Is the AWG–9 fire control system for the Phoenix missile behind schedule?

Admiral CONNOLLY. Yes, sir.

Mr. SIKES. How far behind schedule?

Admiral CONNOLLY. I have a prepared answer here.

Mr. SIKES. It has been updated from your same answer last year?

Admiral CONNOLLY. It is behind the schedule we selected for the F–111, but not behind schedule for the F–14.

We took advantage of the longer period of time. We did not buy any Phoenix missiles in this year's program, either.

I have a much longer answer.

Mr. SIKES. Submit it for the record.

(The information follows:)

AN/AWG–9 FIRE CONTROL SYSTEM

The AN/AWG–9 reconfiguration program has paralleled the F–14 contract definition and engineering development efforts and is on schedule. Phase 1 of the AWG–9 reconfiguration effort consisted of defining the required engineering changes and provided a data package for the F–14 aircraft contractor competition. This phase was completed in August, 1968, on schedule. Phase 2 included the completion of the initial design and met its December, 1968 milestone of passing a successful Government design review. The contractor is now in phase 3 which comprises the balance of the reconfiguration effort including the delivery and testing of reconfigured AN/AWG–9's. Progress to date on phase 3 has been on schedule. The milestone for submission of specifications in May has been met. Future significant milestones are as follows:

a. System deliveries of ——— reconfigured AN/AWG–9's during ———

b. Complete drawing release: ———

c. Conduct roofhouse evaluation of first system: ———

d. Conduct unit level environmental tests of system 2: ———

e. Complete installation and begin flight tests of system No. 3 in TA–3B in ———

f. Install system No. 4 at systems integration laboratory, Naval missile center by ———

g. Conduct system level environmental tests on system No. 5 from ———

h. Conduct reliability tests on system No. 7 from ———

i. Allocate system No. 6 for parallel ground support equipment modification in time frame AN/AWG–9 reconfiguration.

Mr. SIKES. What is the status of the adoption of this fire control system to the F–14A?

Admiral CONNOLLY. The Hughes Aircraft Co. is engineering the change from a side-by-side seating, as it was originally designed, to a tandem seating.

In addition, we are making the AWG–9 capable of controlling Sparrow, Sidewinder, and a gun, which it was not designed to do for the F–111. We have that, and are just changing it to fit a narrower forward section.

Mr. SIKES. Have there been any problems that were unanticipated on the adaptation of the Phoenix system to the new aircraft?

Admiral CONNOLLY. None to my knowledge.

Captain AMES. No problem in the reconfiguration of the AWG–9 to the F–14.

Mr. SIKES. There has been no additional slippage?

Captain AMES. No sir.

Mr. SIKES. Have there been unanticipated problems in connection with the adaptation of the Sidewinder and the Sparrow III missile and the gun with the AWG–9 fire control system?

Captain AMES. The only problem now is an incompatibility of the AIM–7F Pulse Doppler missile with the AWG–9 which will take some flight modifications to the AIM–7–F. Other than that, there are no problems.

Admiral WALKER. The problem is one which exists within the missile rather than within the aircraft.

Mr. ANDREWS. What is the additional estimated cost for modifying the AWG–9 to the F–14A?

Admiral CONNOLLY. $129 million, sir.

MISSILE AND AVIONICS INTEGRATION FACILITY

Mr. ANDREWS. Does the Navy or Hughes propose to construct test sites or special test facilities for the AWG–9 Phoenix missile system?

Admiral CONNOLLY. The answer to that, sir, is no. There is an integration facility, an integration laboratory being established in order to compatibly combine the F–14 avionics system and missile system.

Mr. ANDREWS. How much will that cost?

Admiral CONNOLLY. I am not sure there is any cost connected with it.

Captain AMES. We do not have a cost on the facility. There is some money planned to support this integration laboratory.

Mr. ANDREWS. How much and where can it be found?

Captain AMES. $4 million total in R. & D., Phoenix R. & D. money, of which $1.6 million is in fiscal 1970.

F–14A CONTRACT

Mr. ANDREWS. Is the development of the F–14 still in accordance with the schedule presented to the committee, or has there been any slippage?

Admiral CONNOLLY. There is no slippage, Mr. Chairman. I had a conversation with the president of the company and the project manager of the company on Friday night, assuring me that all work scheduled is going on schedule and is not behind, nor are there any cost overruns and, so far, no problem they cannot solve.

Mr. ANDREWS. Are you still confident of your cost estimates, or do you now foresee possible cost overruns?

Admiral CONNOLLY. We have a contract with Grumman which runs through 1973 where, if they run over in costs, it is on their backs as far as cost increases are concerned.

Mr. ANDREWS. You have that 4 percent inflationary increase cranked into the basic contract?

Admiral CONNOLLY. Each year this rises by 4 percent.

I would like to add one thing. With the history of the way things have been going, it is such that you have to be careful when you say nothing will happen. We do not see anything else that will happen.

Mr. ANDREWS. Suppose costs level off next year? Would the Navy get the advantage of that deescalated cost?

Admiral CONNOLLY. Yes, sir.

Mr. ANDREWS. Do not the changes in estimates we just discussed earlier forebode cost overruns sometime in the future?

Admiral CONNOLLY. That is the point I wanted to make. Those are reallocations of effort. I realize that you are reaching for this sort of a conclusion, but it is my understanding that it is entirely a reallocation of effort, and does not connote that these things are already rising and we are taking it away from something else to pay for it.

Mr. ANDREWS. You have cranked into your contract 4 percent for inflation. Suppose inflation for one of these contract years will be 10 percent. Who would pick up the check for that extra 6 percent of inflation?

Admiral CONNOLLY. It is my understanding the contractor is hooked for that through 1973. The contractor in this case—we have a fixed contract with Grumman and fixed contract with Pratt & Whitney, and we will pin Hughes down this summer.

Mr. ANDREWS. In other words, they have been pinned down to a 4-percent increase for inflationary influences.

Admiral CONNOLLY. That is my understanding.

Captain AMES. They are pinned down to a ceiling price.

Mr. ANDREWS. Of 4 percent?

Captain AMES. That ceiling price was based essentially on a 4-percent inflationary rise.

Mr. ANDREWS. If the inflationary rise were 10 percent, 6 percent more than you figured on, who would pay the 6 percent? Would the Navy have to come up to 10?

Captain AMES. No, sir. The contractor would pay it up through fiscal 1973.

Mr. ANDREWS. All right.

Captain AMES. In the last three lots, there is an adjustment for unusual inflation or deflation. For the first three lots for fiscal 1973, no matter whether the economy goes up 10 percent or more, he pays the difference.

Mr. RHODES. Suppose it does not go up 4 percent? What happens?

Captain AMES. Captain Harvey can explain that.

Captain HARVEY. We call this a fixed-price incentive contract, where you put a contract and the ceiling for the first 3 years is at 125 percent by lots.

You have a first lot, and then you have some seven other lots which are the production lots. When you exercise an option for them, it is done each year.

The way it is planned is that if it goes above the target, we and the company share in the loss. If it goes below the target, we and the company share in the savings.

Mr. RHODES. So if the inflationary cost, as the gentleman from Alabama mentioned, is higher than 4 percent, there is a loss, and the company shares in the loss with the Navy?

Captain HARVEY. Yes, sir.

Mr. RHODES. And, conversely, if there is a savings, it is shared?

Captain HARVEY. Up to the ceiling. Above the ceiling, they pay all of the loss.

Admiral WALKER. I wanted to emphasize that.

Mr. RHODES. I am thoroughly confused.

Captain HARVEY. The ceiling is at 125 percent of the target price.

Mr. RHODES. How do you arrive at the target price?

Captain HARVEY. Based on cost estimates.

Mr. RHODES. In the cost estimate do you have an increment for inflation?

Captain HARVEY. Yes, sir.

Mr. RHODES. You take 125 percent of that. That is your ceiling. So, if the inflation is above 4 percent but does not go above the ceiling, then the Navy pays for the inflation. Is that right?

Captain HARVEY. A share of it, sir. You have a 70–30-percent share.

Mr. RHODES. Then if the cost does go above the ceiling, then the contractor is stuck for that?

Captain HARVEY. He pays 100 percent of it.

Mr. RHODES. If the price goes below the target——

Captain HARVEY. He shares and we share. We get 70 percent of the savings and he gets 30 percent.

Mr. RHODES. Down to the target, you pay——

Captain HARVEY. He gets his full profit on the target. That is an incentive to keep the price low, sir.

Mr. RHODES. I am sure it works out just fine.

Mr. SIKES. How many F–14's will be funded in fiscal year 1971?

Admiral CONNOLLY. Our plan is for ———.

COMPARISON OF F–14A WITH THE F–15

Mr. SIKES. Can you compare for the committee the F–14A with the proposed Air Force F–15 aircraft from the standpoint of a superiority air-to-air fighter aircraft?

Admiral CONNOLLY. The F–15 is not yet defined, as the Air Force has not received proposals from the competing contractors. However, with respect to some of the requirements that were set forth in the F–15 request for proposals, the F–14 generally meets or exceeds the values at lower altitudes and slightly under the F–15 requirements at the higher altitudes.

The F–14 exceeds the F–15 mission radius. The F–14 is carrier-suitable, whereas the F–15 is not.

Further, the F–14 has a long-range multishot missile. This should prove to be very valuable in air superiority tactics, whereas the F–15 has another kind of radar missile control system.

The main thing, Mr. Sikes, is that the F–15 will not be built to be arrested or catapulted or come aboard at as low a speed as the F–14. In all probability, it will not have a swing wing.

SEPARATE FIGHTER AIRCRAFT FOR NAVY AND AIR FORCE

Mr. SIKES. Prices have gone right through the ceiling, and we shudder when we think of the final costs of these new systems, though we recognize we must have them.

Is it necessary that we fund two separate superiority fighter aircraft, one for the Navy and one for the Air Force?

I know that our experience with the TFX was unfortunate, but is there still a possibility that one aircraft could be developed which would meet the requirements of both services?

Admiral CONNOLLY. Well, Mr. Sikes, I believe that it is possible to build an airplane that will meet the Marine requirements and the Air Force requirements and the Navy requirements. I believe this as a man who has been in the business a long while.

However, in order to do this, the land-based airplane would have to accept certain weight penalties and certain increases in cost connected with being carrier suitable, capable of being arrested, capable of being catapulted. We cannot possibly do without an airplane.

Our mission conceptions are different. We visualize that it is more important to be able to go far and fight the battle further away. The Air Force, I think for just as good reasons of its own, believes that they can do what they have to do with an airplane which does not have the same radius or they can use their tanker concept for longer range.

NAME FOR THE F–14A

Mr. SIKES. Every aircraft should have a name. This is still the F–14A. What will we call this one, the Connolly Charger?

How about the Mahon miracle?

Admiral CONNOLLY. Modesty prevents my calling it the Tomcat, but that is what was proposed for it, and we were almost ready to sign, seal, and deliver the name. Actually it came from Tom Moorer.

We got pretty enthusiastic about it. The Tomcat is a remarkable fellow. He is not just a nice gentleman, but he keeps the neighborhood in order and he protects the denizens and citizens of his area. He is a good night fighter. He always makes it home. He always comes home if he is without a leg, ear, or something. He always makes it back.

Then, of course, when the fighting is over, he has a pretty good idea of how to relax.

Mr. SIKES. Questions on the Tomcat?

1970 PROCUREMENT OF F–14A

Mr. LIPSCOMB. Admiral, at this point I am not quite clear as to why it is necessary that we go into a procurement of six procurement aircraft in fiscal year 1970.

Admiral CONNOLLY. In order to answer just such a question for our bosses and for the Secretary of Defense and John Foster & Co., we had a study of all the combinations at which you could buy the airplane to get the program started, to carry it, develop it, and finally build up to the production rate of ——— a month, which is the maximum one we are thinking about.

It turned out that getting started the first year, having the first flight in January of 1971, buying ——— a month—you know, we will buy ——— a month, if we get the funds to do it, for ——— months. We have a test program which has been carefully put together, and we have a chart to show it, if we should be called upon to do it.

This arrangement for our logic has met every one of the many, many quetsions which have faced us along the way. It makes progress

at a good rate but not too fast. It allows you to do all the tests in stability and control, engine performance, weapon release, avionics performance, carrier suitability, and do it in an orderly fashion before you ever start building up your rate of production and get to the board of inspections survey trials and are satisfied you have no problems which would give you a big backfit and a lot of correction.

Also, the longer you take to build an airplane, the more you contribute to the obsolescence of the concept and the capability.

It has been so long since we built a new figher in this country. That is my other answer to the F–15. It seems we should be building two fighters in this country at this time.

That is all I have on that, sir.

QUESTIONABLE NEED TO BEGIN PRODUCTION

Mr. LIPSCOMB. We have almost completed going through the experience of the F–111B. Some of the testimony today on this F-14 is similar to what we heard about going ahead with production models on the F–111B.

If this committee had gone ahead as per the requests of Department of Defense on production of the F–111B we would have gotten much deeper into that program than we did.

It just seems prudent to slow down a little bit on production models and use R.D.T. & E. aircraft to the maximum before going into production, particularly in fiscal year 1970.

Nothing I have heard yet about the testing and engine retrofit or anything else says we have to go ahead with that production this year.

We recognize the need for the plane and we are supporting it. However, let's not get burned.

Admiral CONNOLLY. These six airplanes this year are all R.D.T. & E. airplanes.

Mr LIPSCOMB I am not talking about the R.D.T. & E. You have six here for procurement, production aircraft. You have six R.DT. & E. and six production aircraft.

Admiral CONNOLLY. Mr. Lipscomb——

Mr. LIPSCOMB. R.D.T. & E. aircraft I am not quarreling with.

Admiral CONNOLLY. We are going to use the first 15 or 18 airplanes all in the R.D.T. & E. purposes. However, these will be reverted back to service-type airplanes.

The only reason you see production money is that the impact of a large program like this on the R.D.T. & E. budget is such that it has a tendency to squeeze out all other things that the Navy—and it would be true in the other services—wish to do in the R.D.T. & E. area.

We used to buy our airplanes entirely out of PAMN money, right from the beginning, the first plane. This is just the use of the PAMN appropriation rather than the R.D.T. & E. appropriation because this has such a swallowing-up effect on R.D.T. & E.

POSSIBILITY OF DELAYING PRODUCTION

Mr. LIPSCOMB. What would happen to the program if you did not have these six production models for fiscal year 1970?

I have heard some reference to the fact it would set you back a year.

Admiral CONNOLLY. Maybe the program manager would be better at this than I, sir.

Captain AMES. As Admiral Connolly mentioned, these six production airplanes will be used temporarily to supplement the first six R. & D. aircraft, and they will be used in an integrated flight test program of 12 aircraft.

If we eliminated six of those, these tests would then have to be done in series with the first aircraft. In other words, you would run a certain number of tests on No. 1 airplane, and then you would have to reconfigure it for some other type of test and put it into series, which would extend the program out another 2 years, so you would actually have a 2-year-or-better slip in the program if you eliminated these six.

Mr. LIPSCOMB. What would happen if you requested eight R.D.T. & E. aircraft instead of just six?

Captain AMES. You would extend the program out, but you would not slip it quite as much.

Mr. LIPSCOMB. Is it not a fact that by putting these into the production category you are doing something with your production line?

Captain AMES. No, sir. If we built 12 R. & D. planes at the rate of ——— a month, it would be no different, so far as production lines are concerned, than if we built six R. & D. planes and six production airplanes, still all at the rate of ——— a month.

The first 18 aircraft are delivered at the rate of ——— a month, and whether you procure them with production money or R. & D. money has no effect on the way they are produced at the plant.

DOD REDUCTION TO NAVY REQUEST

Mr. LIPSCOMB. What did the Navy recommend to the Department of Defense in this program?

Captain AMES. They recommended the program you see here, six R. & D. and six production planes.

Mr. LIPSCOMB. But that was not in the amount of money.

Captain AMES. No, sir.

Mr. LIPSCOMB. You got cut.

Captain AMES. We recommended a total of $310 million in R. & D., and $338 million in PAMN for fiscal 1970.

They told us to put our program within the bounds of $275 million in PAMN, and $175 million in R. & D., for a reduction of some $200 million in this fiscal year.

Admiral GADDIS. The point that is significant, Mr. Lipscomb, is the fact that it requires the ———-a-month production of the aircraft utilized in the research program to complete that research program in sufficient time to achieve fleet introduction of the first aircraft squadron in April of 1973. That is our target.

That is tied to the threat and the need for the new aircraft during the early 1970's.

This could be done with 12 R. & D. aircraft, but it is possible for the last six of these aircraft in the R. & D. test series to be so configured that they can be fully operational fleet aircraft and, therefore, eligible for funding in the procurement appropriation.

As a matter of actual fact, the acceptance of the last 6 of the research series reduced our fit of total program buy by 6 aircraft at the end of the line.

PROCUREMENT OF 6 AIRCRAFT

Mr. LIPSCOMB. I may have missed a point, but when do you start delivery of the R. D. T. & E. aircraft?

Admiral GADDIS. January of 1971.

Captain AMES. And ——— a month thereafter for the first ——— months. The first 6 will be R. & D., and from there on they will be production aircraft procured with production funds after the first 6.

The first 12 will actually go into the R. & D. program.

Mr. LIPSCOMB. What makes it so important that you get 6 in procurement at this time?

Captain AMES. It is a 12-plane R. & D. program. If we got only 6, we could not conduct the R. & D. program that culminates in fleet operational capability in April of 1973.

Mr. LIPSCOMB. Why do you have to fully fund all 12 in this budget? Why not fund 6 in this and 6 next year?

Captain AMES. They would not be delivered. There would be a gap in production.

You see, there is an 18-months leadtime required, so that the fiscal year procurement is actually delivered in the following calendar year.

Therefore, if we procure in fiscal 1970, they are delivered in calendar year 1971. If we did not procure them until next year, we would have 6 aircraft, a gap in production, and then pick up production at some later date.

This is very costly, besides delaying the flight test program.

TEST AND EVALUATION PROGRAM

Mr. RHODES. What is the advantage to calling the other 6 aircraft "production aircraft"? It would be a lot easier for us all to understand if you just called all 12 of them R. & D. As the Captain says, they will be used in R. & D. anyway. What is the gimmick? I do not understand it.

Admiral CONNOLLY. They are really test and evaluation. They are the last half of the R. & D.

There is no real research and development going on with these planes. They will be tested and evaluated. You buy them at ——— a month. If you buy 6, then you have 6 months where there are no planes coming to you, so you have to wait until the next period.

Mr. RHODES. Are you doing this for accuracy of expression so that the words are more effective of the actual use of the plane?

Admiral CONNOLLY. Each one of these has a specified test purpose to fulfill. It is already designed for it, the first 12 plus the next 6. The first 18 planes will all be engaged in tests at the contractor's plant, tests at Patuxent, or tactical development in the VX squadrons. Every one of them has a precise function.

When they finish these precise functions, we will try to get all of them back into the fleet, because airplanes cost so much now, we just cannot let them be in R. D. T. & E.

Mr. RHODES. Including the first 6 R. & D. planes?

Admiral CONNOLLY. The probability is that the first 6 will stay in R. & D., but even there we might be able to convert two of them at least into training.

We have to get past the point where we keep large numbers of airplanes in R. & D. They are too expensive.

Mr. RHODES. I could not agree more.

Captain AMES. This procurement is in accordance with existing instructions as to what aircraft will be procured with what funds. Aircraft that will be temporarily used in the test program and then converted, and have the intention of being operational aircraft will be procured with production funds, and this is what we are doing.

The intent is to use the six production aircraft in the R. & D. temporarily, and then return them to an operational status.

Therefore, in accordance with existing instructions, they should be procured with PAMN funds.

Admiral GADDIS. We make a point because there is a DOD instruction which requires operational capability and ultimate operational status of items procured in procurement appropriations, and we have certified this to the Secretary of Defense, that these will be operationally capable.

SPARE PARTS REQUIREMENT IN EVENT OF PRODUCTION CANCELLATION

Mr. LIPSCOMB. If by any chance you did not get the production aircraft, would it make any difference in your spare parts procurement for fiscal year 1970?

Captain AMES. Our funding in the first 2 fiscal years of R. & D., fiscal 1969 and 1970, has been so austere we have not been able to procure spares and spare parts for the R. & D. airplanes during those first 2 years.

We are going to procure spares and spare parts in fiscal 1971 to support those aircraft.

You see, we have been cut down each fiscal year to the absolute minimum. Because of this, the spares and spare parts have been affected.

Mr. LIPSCOMB. You are buying R.D.T. & E. spare parts in the PAMN budget for spare parts?

Captain AMES. No, sir. We buy spares and parts for the——

Mr. LIPSCOMB. If by any chance the production aircraft were not put in the program this year, would it make any difference in your fiscal year 1970 spare parts procurement?

Captain AMES. Yes, sir; in R. & D. spares.

Mr. LIPSCOMB. For the record, would you put that amount of money in, reduction in the spare parts request?

Captain AMES. You mean if there were zero production aircraft, how would it affect the spare parts line?

Mr. LIPSCOMB. Suppose by some chance it was felt that these aircraft were all R.D.T. & E. aircraft and should go into the R.D.T. & E. budget. Would it make a difference in the spare parts procurement in any way, either in PEMA or R.D.T. & E. budget?

Captain AMES. The PAMN spares would be reduced to zero and the R. & D. budget would assume the cost. Since PAMN spares are under-funded by about $10 million anyhow, because of the constraints placed on our fiscal 1970 procurement, it would not reduce the procurement requirements.

TOTAL PROGRAM FOR F–14A

Mr. ANDREWS. Admiral, you told us before, but I would like to have it in the record here—what is the total program that you are thinking about for the F–14A, total number and total money involved?

Supply the information for the record, if you do not have it available.

Admiral CONNOLLY. The number we expect to buy over the course of the airplane?

Mr. ANDREWS. Length of the contract and total number you plan to purchase, and the total dollar value.

Admiral CONNOLLY. Through fiscal year 1975, if Navy procurement objectives are approved and funded, we expect to buy ———. The total price would be ——— billion. The currently approved 5-year defense program through fiscal year 1974 totals ——— aircraft for a price of ——— billion.

Mr. SIKES. How much is the unit cost?

Admiral CONNOLLY. Take ——— and run it into ——— billion, and it works out to be about ——— million each.

Mr. ANDREWS. That is down from the estimated cost——

Admiral CONNOLLY. That is not flyaway, but program costs. That includes support, technical support, and all the rest of it.

Mr. ANDREWS. That is down from the estmated cost of $37.5 million.

Admiral CONNOLLY. Yes, sir. The first two F–4s cost $63 million apiece. It was not until we got the first 500 that the price got down below about $8 million.

Mr. ANDREWS. And you could expect to get the follow-on planes cheaper than the ——— million?

Admiral CONNOLLY. After the learning curve, it will get down, but never below $5 million. I think we have seen our last $5 million——

Mr. ANDREWS. You said ——— million a moment ago.

Admiral CONNOLLY. If you keep on coming down the learning curve, it gets only so far.

These are flyaway prices, which do not include the special support and technical support.

If we buy 463, which is in our present contract, the price is $8.1 million.

Mr. SIKES. Questions, Mr. Rhodes?

Mr. RHODES. No questions.

Admiral WALKER. There is one point I want to ask the F–14 project manager to mention briefly in connection with this program.

Captain AMES. I happened to think if we do not pick up the option for lot No. 2, which is the first six production aircraft, the whole contract is terminated as far as the firm ceiling prices for all years, plus it moves all of the tooling costs into the R. & D. contract and increases the R. & D. contract by $55 million. These are quite important side effects.

Mr. SIKES. The contract is based on a total of 12 aircraft and not six?

Captain AMES. Option for all follow-on production lots depends upon picking up the option for lot 2 which is the first 6, production aircraft, plus the fact that that lot 2 includes the tooling costs for both R. & D. and production aircraft which would then be moved into the R. & D. contract and increase it by $55 million.

This is what allowed us to get firm ceiling prices for 6 years by going with this option program.

Mr. RHODES. Does that not merely mean that you charge to money for R. & D. now and recoup it later insofar as the charges against production are concerned? Money has to be charged against something, anyway. It will not cost the Government $55 million more for the total program than it would otherwise cost if you did not go into production.

Captain AMES. If we did not pick up the option for the lot 2 production airplanes all the terms and conditions of the contract which affect the follow-on buy, 463 planes, are then void and you start off with new negotiations.

Mr. RHODES. Which may or may not be as advantageous as your present contract?

Captain AMES. It would be in a noncompetitive environment so it undoubtedly would be less advantageous.

The other thing is that if you decided not to pick up any further production options the cost of the tooling that is now in the production contract which covers both R. & D. and production airplanes would be shifted to the R. & D. contract.

Mr. RHODES. On the other hand if you had the 6 planes and for some reason or other the plane was a turkey, then you would not be stuck with the cost of 12 aircraft.

Captain AMES. That is true. This is a success-oriented project.

Mr. RHODES. So was the F–111B.

Captain AMES. Yes, sir.

Admiral CONNOLLY. So was the A–7 and the F–4.

(*Clerk's note*: See pages 445–456 for a further discussion of the contract terms for procurement of the F–14A aircraft.)

CH–46E/F SEA KNIGHT HELICOPTER

Mr. SIKES. Last year we had a lengthy discussion concerning the number of problems which had plagued the CH–46 helicopter, problems which resulted in a rash of serious accidents, and we discussed your efforts to correct the situation.

Will you tell us how you progressed on this problem?

PROBLEMS WITH SEA KNIGHT

Admiral WALKER. Last year's problems with the CH–46 Sea Knight were in two major areas.

One problem was related to the structural strength of the aircraft and the other problem was rotor blade failure.

The structural problems were discovered in Vietnam operations and were partially corrected by a phase 1 modification consisting of strengthening the aft pylon and ramp structure.

This modification was designed and accomplished in the shortest time possible because the CH–46 was essentially grounded in Vietnam awaiting its completion.

The phase 2 portion of the program, based on flight tests and more detailed analysis, provides improved transmission mount, increased landing strength, and related structural supports.

Kit deliveries started in December of 1968 for installation in the Naval Air-Rework Facilities and will be completed in mid-1970.

There were 352 aircraft planned for the retrofit program and as of May 6 this year 61 have been completed.

Installation and production aircraft started in January of 1969.

The fiscal 1970 budget includes relatively low recurring costs for production and $1.4 million for contractor team exort to support kit installation.

The structural problem appears to be solved and operational use of the helicopters indicates they are standing up well under combat conditions at this time.

Mr. SIKES. Has the Army had the same kind of problem with their companion chopper?

General MCCUTCHEON. Some kinds of problems but not the same kind. Their helicopter was designed a little different from the 46.

Mr. SIKES. Have all the problems in connection with this helicopter been solved?

Admiral WALKER. I feel that the problems have either been solved or that this two-phase program will accomplish the solution.

Mr. SIKES. Have any new problems developed?

Admiral WALKER. No, sir.

SEA KNIGHT MODIFICATION PROGRAM

Mr. SIKES. As of January 1, 1969, you had ——— CH–46F helicopters yet to be delivered and in fiscal year 1970 you are requesting $109.5 million to buy 60 more, the E model.

Are we ready to buy more of this type of aircraft when you are asking for $6.6 million to modify part of your CH–46 fleet after receiving $20.6 million for this purpose in fiscal 1969?

Admiral WALKER. I feel we are, sir. The ones we are considering for order have the fix incorporated prior to delivery.

Mr. SIKES. How many will be modified with the $6.6 million?

Admiral WALKER. In 1969 68 aircraft. In 1970 it will be 280 modified.

Mr. SIKES. Will that complete the modifications?

Admiral WALKER. The fiscal year 1970 funding will complete the structural modification program.

SEA KNIGHT MODIFICATIONS

Mr. SIKES. For the record tell us the nature of these modifications.

(Information requested follows:)

The modifications on the CH–46 were in two major areas. One problem was related to the structural strength of the aircraft and the other problem was blade failure.

The structural problems were discovered in Vietnam operations and were partially corrected by a phase I modification consisting of strengthening the aft pylon and ramp structure. This modification was designed and accomplished in the shortest time possible because the CH–46 was essentially grounded in Vietnam awaiting its completion.

The phase II portion of the program, based on flight tests and a more detailed analysis, provides improved transmission mount, increased landing strength, and related structural supports. Kit deliveries started in December 1968 for installation in the rework facilities and will be completed in mid-1970. There are 352 aircraft planned for the retrofit program and as of May 6, 1969, 61 have been completed. Installation in production aircraft started in January

1969 (fiscal year 1968 procurement). The fiscal year 1970 budget includes relatively low recurring costs for production, incorporation, and $1.4 million for contractor team effort to support kit installation.

The structural problems appear to be solved and operational use of the helicopters indicates they are standing up well under combat conditions.

The other major problem area was concerned with blade failures. These failures were due to manufacturing defects and the failure of quality assurance procedures to detect them. Additionally, combat damage caused blade failures which could not be detected prior to ultimate failure in flight. Improved inspection methods at the manufacturer's plant and at rework facilities and inspections in the field similar to the method used on CH-47 Chinook were undertaken. These methods, procedures, and equipments have not adequately solved the problem and the contractors' performance has not been completely satisfactory in arriving at required solutions. For over 2 years, a built-in blade inspection method has been under technical study by the contractor which would give an indication to the ground/flight crew prior to takeoff of a crack caused by fatigue, battle damage, or other causes. The contractor's work in this blade inspection method continues and is the presently planned solution to the problem.

PROCUREMENT OF E MODEL

Mr. SIKES. Why do you propose to go to the E model in fiscal 1970? Have you not been buying F models heretofore?

General MCCUTCHEON. The model we had been buying has been the 46-D. These were equipped with the T-5810 engine and it had none of the other equipment.

We came up with the designation CH-46E when we decided to put the Dash-16 engine and the SCNS into the airplane.

The engine slipped, so then we came up with the designation F assigned to the aircraft. It would still have the Dash-10 engine but have the SCNS put in.

Now with the Dash-16 engine available and the SCNS we will go back a step to the E.

Mr. SIKES. How many of the E model will you buy in the fiscal 1971 program?

General MCCUTCHEON. We cannot tell right now. The number in the 1970 budget was an attrition buy to replace losses in Southeast Asia and elsewhere.

If the same policy continued that number would be based on the attrition which takes place between now and this time next year.

Admiral CONNOLLY. ——— is the answer.

Mr. SIKES. Questions on the Sea Knight?

Mr. ANDREWS. To what Army chopper is this comparable?

General MCCUTCHEON. It lies between their UH-1H and CH-47. It is not as capable as the Chinook as far as payload but more capable than the UH-1H.

CH-53A/D SEA STALLION HELICOPTER

Mr. SIKES. Turning to the CH-53A/D Sea Stallion helicopter, you had a request which was eliminated in fiscal 1970 for 24 additional CH-53 helicopters. How was it determined that these were not actually required.

General MCCUTCHEON. The original estimate was again based on attrition. The attrition is reviewed monthly.

It turned out we did not lose as many as had originally been forecast so the twenty-four were not required this year.

AH–16 Hueycobra Helicopter

Mr. Sikes. The Navy has over ——— UH–1 Iroquois helicopters in its inventory. Has the Navy experienced any reduction in directional control in this aircraft which can be considered an unsafe condition?

General McCutcheon. No, sir. The aircraft is not considered unsafe.

Mr. Sikes. Has the Navy modified or does the Navy propose to modify any of these helicopters by moving the tail rotor from the left side of the tail pylon to the right side?

General McCutcheon. The Navy has not and does not plan to move the tail rotor on any helicopter in the current inventory.

Mr. Sikes. The reason I asked these questions is because the Army proposes to so modify ——— AH–16 at a cost of $1.6 million to correct an unsafe condition caused by the tail pylon in its present configuration blocking the flow of air to the tail rotor. The Navy has over ——— AH–16 and AH–1J Hueycobra helicopters on order. Will the tail rotor be on the right side of these aircraft?

If not, does this mean these AH–1J Hueycobras will have to be modified at a later date instead of having this unsafe condition corrected during production at a considerable savings?

General McCutcheon. The Navy has ——— AH–1J and ——— AH–1G aircraft on order. The AH–1J's will have the tail rotor on the right side of the helicopter since the twin engine configuration requires additional directional control. Conversely, the ——— AH–1G's will have the tail rotor on the left side since this was an off-the-shelf buy from the Army. No consideration, at this time, is being given to changing the tail rotor on the AH–1G.

MARINE REQUIREMENT FOR HUEYCOBRAS

Mr. Sikes. Last year you testified concerning an urgent need for AH–16 Hueycobras for the Marines in Vietnam. When this need could not be fulfilled by the Army, the Navy made an abortive attempt to buy an OV–12 aircraft to satisfy that requirement.

We all are aware of the demise of the OV–12 proposal

Now in fiscal year 1970 you are not requesting funds for Hueycobras. What has happened between last year and now to change your mind on the Hueycobra?

Admiral Connolly. The Secretary of Defense directed that the Army provide us with additional helicopters for our Riverine forces and together with the OV–10's we borrowed from the Marine Corps we have a force of helicopters which is meeting the requirements for the Riverine warfare operation.

Although we are sustaining some losses we are not requesting helicopters for that need until we have more attrition and see that we do need more.

TRANSFER OF ARMY HUEYCOBRAS TO THE MARINES

Mr. Sikes. How many did you borrow from the Army?

Admiral Connolly. We really started light borrowing. We got ——— to begin with.

Then in two successive borrowings we acquired another ———. I believe, so that is ——— plus ——— which is ——— aircraft altogether.

I am not quite sure about the second borrowing.

Mr. SIKES. Were these made available after you had attempted procurement of the OV–12?

Admiral CONNOLLY. Yes.

Mr. SIKES. Is this the reason you do not require the OV–12?

Admiral CONNOLLY. Yes, sir.

Mr. SIKES. So you have borrowed aircraft but you have not made plans to pay back at this time. Is that correct?

Admiral CONNOLLY. That is right, sir. This information states that a total of ——— UH–1's have been borrowed from the Army. That is what I thought it was.

Mr. SIKES. As I recall it, at the time you came here for reprograming you had been told that the Army had none to spare. Is that correct?

Admiral CONNOLLY. We couldn't get a helicopter from anybody, from the Army, Marine Corps, or industry. That was the whole reason we started casting about to do the job.

Mr. SIKES. And the Army was directed to make them available?

Admiral CONNOLLY. Yes, sir; they were directed to do so.

Mr. SIKES. It seems to me that this offered a rather useful opportunity to see what that type of plane would do in Riverine warfare, the OV–12. Do you still feel that was the case or did you have some misgivings about substituting that plane for helicopters?

Admiral CONNOLLY. We always wanted the Helo first because of its ability to hover over the spot and keep it under surveillance. However, the need was great. Desire to help those people was strong. At that time the OV–12 looked good and I have not changed my mind about that.

Mr. SIKES. Questions on the Hueycobra?

(No response.)

UH–1N IROQUOIS HELICOPTER

Mr. SIKES. Turning now to the UH–1N Iroquois Helicopter.

The Navy has changed its proposal for 40 UH–1L helicopters to 62 UH–1N helicopters.

What brought about that change?

Admiral CONNOLLY. ——— of these are being requested for the Marines for light transport duty to replace the UH–1 attrition.

The other ——— are to be employed by the Navy in combat support roles and nonaviation ships.

Twin powerplant configuration will result in an increased mission reliability, payload and flight safety, and the present greater growth potential than the single engine predecessor.

Mr. SIKES. The 1–N helicopter is an original buy which has not been approved for service use. Is that correct?

Admiral CONNOLLY. It will be approved for service use in ———.

Mr. SIKES. Meantime you are buying 62 of them. Is that realistic?

Admiral CONNOLLY. It is an improved Huey and we have gotten a lot of good service from Huey's.

Mr. SIKES. You anticipate no problems in so far as approval for service use is concerned?

Admiral CONNOLLY. We think this is a good risk.

Mr. SIKES. Are they armed?

Admiral CONNOLLY. General McCutcheon?

General MCCUTCHEON. In the UH-1N we will put door guns in it such as we have on the present ones.

The U.S. Air Force is getting some and also the RCAF.

Mr. SIKES. All with door guns?

General MCCUTCHEON. Yes, sir. The Navy's will not be armed.

Mr. SIKES. Is the Navy considering the use of the OH-6A Cayuse helicopter as a new light airborne multiple package system called LAMPS to be based aboard destroyers for ASW use?

Admiral CONNOLLY. We are looking at a suitable helicopter for this multiple-purpose helicopter for our surface ships. I am not familiar with the Cayuse as being a prime candidate.

Admiral GADDIS. In the research and development program a number of helicopter platforms are being considered but none has been decided on as yet. The program is in very early stage.

Admiral WALKER. No model of helicopter is exempt from participation and consideration in terms of competition for eventual aircraft.

Mr. SIKES. Questions on the Iroquois?

Mr. ANDREWS. Does the Army have this chopper?

General MCCUTCHEON. Not the twin engine one.

Mr. ANDREWS. They have one named Iroquois.

General MCCUTCHEON. But a single engine. It is the same family but there are several different model numbers.

Mr. ANDREWS. Made by the same company?

General MCCUTCHEON. All made by Bell.

P-3C ORION AIRCRAFT

A-NEW AVIONICS SYSTEM

Mr. SIKES. The committee has noted in recent press articles that the Navy may be experiencing problems with the A-NEW avionics system for the P-3C Orion aircraft. Tell us about the problems.

Admiral CONNOLLY. This has not slipped from the schedule promulgated 2 years ago when the communications system were added to the master configuration list.

Fleet introduction was and still is planned for September of this year.

Initial deliveries of production P-3C's for the prefleet introduction training program has been set for May of 1969.

To date all significant milestones have been met ahead of schedule. The first production aircraft delivery is scheduled for May 12 of 1969 and will be made on May 9, which means it was May.

This aircraft has completed flight test acceptance by the Navy.

All equipment is on board with the exception of DIFAR. This equipment manufactured by Magnovox is the only equipment missing from the aircraft of significant importance. The initial equipment should be delivered in August of 1969 and will be immediately incorporated in the fleet introduction training program.

The fleet introduction is planned to commence on schedule with

or without DIFAR. A minimum of 4 months will be required for each fleet squadron to learn how to operate and maintain this prior to any attempt at operational deployment.

DIFAR production milestones are already met and are such as to preclude any real probability that DIFAR equipment will not be available at the time of initial operation and deployment.

Mr. SIKES. Have you any slippage?

Admiral CONNOLLY. Not at this time.

Mr. SIKES. Has the Navy decided to reduce the specifications for the A-NEW avionics system in order to qualify the P-3C aircraft?

Admiral CONNOLLY. No; nor is reduction planned. In fact in certain areas, to insure equipment compatability, specifications have been made more rigorous. Hardware and software integration of the A-NEW system has been uniform and enjoying outstanding success.

Mr. ANDREWS. You have ——— P-3C Orion aircraft on order and only one had been delivered as of January 1, 1969. Will these all have the A-NEW avionics package?

Admiral WALKER. Yes, sir; all P-3C's will have the A-NEW package installed when delivered.

Mr. ANDREWS. How many do you expect to get?

Admiral WALKER. ——— P-3C's are included in the 5-year defense program.

Mr. ANDREWS. You have received delivery of only one?

Admiral WALKER. Yes, sir; one has been delivered and we pick up delivery at the rate of ——— per month starting this month.

Mr. ANDREWS. It will take about ——— years to complete the contract?

Admiral WALKER. That is not quite correct, sir. There is a separate contract for each year's program. Deliveries of the planned program will continue through ———.

Mr. ANDREWS. How much does the plane cost? It says ——— million on the chart.

Admiral CONNOLLY. That is close.

Admiral WALKER. Gross program unit cost in fiscal year 1970 is ——— million.

ORION RETROFIT

Mr. MURPHY. Admiral, I think you just stated that the ——— on order, ——— still undelivered, will have the A-NEW avionics package. Will these be put on the production line or will you later have to retrofit and modify these aircraft?

Admiral WALKER. A-NEW will be installed on the production line.

However, I believe there will be some small number that will be actually delivered for training purposes to the replacement squadron without some equipment but they will be retrofitted within a matter of very few months.

Mr. MURPHY. At what additional cost?

Admiral WALKER. No additional cost. The airplane can be flown to the factory and the equipment installed in a matter of hours.

All the brackets and wiring will be in the aircraft so it is just a matter of sliding the equipment in when this retrofit is accomplished.

Delay is caused by equipment being behind schedule.

ORION ADVANCED PROCUREMENT

Mr. RHODES. What is the advanced procurement for the P–3? You had $23.6 million in this budget for advanced procurement.

Admiral WALKER. Breakdown of the $23.6 million for advanced procurement for the P–3C shows $2.2 million for engine, $2.1 million for accessories, $18.6 million for electronics, $0.4 for armament, and $0.3 for instruments.

Mr. RHODES. Is electronics the A–NEW system?

Admiral WALKER. Principally, yes. All but about $5 million is for electronics.

Mr. RHODES. Am I correct, from the picture you put on the screen this looks for all the world like an Electra?

Admiral WALKER. It is a military version of a Lockheed Electra.

Mr. RHODES. You really do not need a lot of money for advanced procurement when you buy an off-the-shelf model like this except for the more sophisticated electronic equipment.

Admiral WALKER. Yes, sir. About four-fifths of the advanced procurement money is electronics.

Mr. RHODES. What is there about the engine that caused you to spend $2.2 million?

Admiral GADDIS. The leadtime. Engines have the same production leadtime as the aircraft and must be installed in the aircraft 1 month before the aircraft is completed. Therefore, sufficient engines must be procured in advance to provide engines for the first month's worth of aircraft in that fiscal year's buy. In this case $2.2 million worth.

Mr. SIKES. How many of these aircraft do you propose for the fiscal 1971 program?

Admiral WALKER. ———

Mr. SIKES. In 1970 you are asking for funds for 23 of these aircraft at a cost of $198.5 million.

If you are experiencing serious problems with this aircraft would it not be advisable to stretch out this procurement and delay the proposed fiscal 1970 buy?

Admiral WALKER. We are not experiencing any problems with the P–3C program, Mr. Chairman, so we see no reason at all to consider a stretchout.

In fact, this is probably a good program from that point of view.

Mr. SIKES. Questions on the P–3C?

(No response.)

AIRLIFT AIRCRAFT

C–2A GREYHOUND AIRCRAFT

Mr. SIKES. On airlift aircraft, C–2A Greyhound, how many of these does the Navy have in its inventory?

Admiral CONNOLLY. ——— in the Pacific and ——— in the Mediterranean.

Mr. SIKES. You propose to buy eight in fiscal 1970 at a cost of $36.8 million. Where will they be based?

Admiral CONNOLLY. ——— planned to augment the ——— in the Mediterranean and ——— for the continental United States to cover Western Hemisphere contingencies and training requirements. These aircraft will not be kept on board carriers at this particular time.

Mr. SIKES. What is the companion aircraft in the Air Force inventory for this one?

Admiral CONNOLLY. It would have to be one of their medium-sized transports. I don't think the Air Force has a medium-sized transport.

As you know, this is carrier-suitable.

Mr. SIKES. You last procured this aircraft in fiscal 1965. There have been many improvements in aircraft since that time. Is it realistic to again purchase this type of aircraft?

Admiral CONNOLLY. Yes, sir; because it is so much better.

We were not allowed by OSD to buy C–2's in the years since 1965. We wanted to.

We have the C–1 which is much smaller and less capable and much slower. It was not until this year we were able to get C–2's back on the purchasing list.

We do not have another airplane which can do anywhere near as well as the C–2.

The C–2 is a good plane, carries a good load, has good speed and good range.

We think we can build a better such plane and we plan that one of the versions of the S–3 will be a carrier-on-board-delivery aircraft but we have not gotten that far with our work yet.

COST OF C–2A

Mr. LIPSCOMB. Where did the unit cost for this C–2A Greyhound come from, $4.6 million?

Admiral CONNOLLY. That is program cost including publications, technical assistance, program support costs, and so on. It is largely product of a small buy.

Mr. LIPSCOMB. What did we pay for them back in the last purchase in 1965?

Admiral WALKER. The gross program unit cost in 1965 was $3.8 million.

In 1966 is was $3.6 million.

In 1970 it is $4.6 million.

Mr. LIPSCOMB. If I understand correctly, the last buy on this ran $3.6 million as the unit cost?

Admiral WALKER. That is right.

Admiral CONNOLLY. And went to $4.6 on this buy.

Mr. LIPSCOMB. A $1 million increase in unit cost.

Mr. SIKES. Did you have to set up a new production line?

Admiral CONNOLLY. Yes.

Mr. SIKES. What will be delivery dates?

Admiral CONNOLLY. Starting in ———.

Admiral WALKER. The first delivery in ———

REQUIREMENT FOR C–2A

Mr. LIPSCOMB. What brings about the requirement now of this C–2A?

Admiral CONNOLLY. We have been working with the first COD for a long time. Those airplanes have been getting older and older. Their replacement has been planned for a long time. It has taken us this

long since the last five and until this year to convince the Systems and Analysis people that we have a legitimate reason for this.

Why do these planes pay off? It is because expensive items like engines do not have to be purchased in as large numbers and stowed aboard ship. We are supplying engines to meet the needs of the engine changes for the air wing aboard our carriers. We could not put engines on the C–1.

Admiral GADDIS. I would note we reduced our pipeline requirements for aircraft engines in support of the carriers by $7.5 million in this budget on the basis of getting this additional capability to have carrier on board delivery of engines with the C–2. That is a reduction in our fiscal 1970 buy.

Mr. LIPSCOMB. When do you expect to get these in the inventory?

Admiral GADDIS. We will have them in ———. The 1970 production engines also would have been delivered as a replacement to inventory in ———.

Mr. LIPSCOMB. There never has been a line on this aircraft. $4.6 million unit cost seems very expensive and that does not involve all the other costs.

Admiral CONNOLLY. Flyaway cost is $4.3 million.

Mr. LIPSCOMB. Spare parts are not in the $4.6 million.

Admiral CONNOLLY. That is the only thing not in it.

Mr. LIPSCOMB. $4.6 million is still $1 million more than the last buy and it seems expensive.

Admiral CONNOLLY. Had we bought them when we wanted to in the earlier years we would have maintained the production schedule and taken some advantage in the learning curve. We would have bought them in years when they were not as expensive and we would not be here with a $4.6 million request.

All our experience and all the studies of cost effectiveness showed that if you have good, fast, capable logistics support you save money.

TRAINER AIRCRAFT

Mr. SIKES. Your fiscal year 1970 program for trainer aircraft is $110.2 million. This is $26.8 million more than last year's program. The fiscal year 1970 request will provide 104 trainer aircraft for the Naval Air Training Command and the Naval Test Pilot School.

T–2C BUCKEYE AIRCRAFT

Mr. SIKES. In the last 2 fiscal years the Navy has been funded a total of $55.9 million for ——— T–2C Buckeye Aircraft. In fiscal year 1970, you are requesting $16 million for 24 more of these basic trainers. How many T–2C's are in your inventory and under contract?

Admiral CONNOLLY. The current inventory of T–2A/B/C aircraft is ——— aircraft. This includes 12 of the ——— T–2C aircraft that are under contract.

Mr. SIKES. Is the attrition of these basic trainers that high to justify continued procurement of these aircraft at this rate?

Admiral CONNOLLY. Attrition due to accidents is not that high, but the T–2A's currently used in the training command are at the end of their service life and must be retired.

Mr. SIKES. What was the reason for the $600,000 cost overrun in fiscal year 1969 on the T-2B aircraft?

Admiral WALKER. It is a result of unanticipated increased labor and material costs experienced by the airframe manufacturer. This increase was due to the settlement of aerospace labor/management wage contracts at amounts higher than originally projected coupled with increased overhead rates due to decreased workload.

TA-4J SKYHAWK AIRCRAFT

Mr. SIKES. You were funded ——— TA-4J Skyhawk advanced trainers in fiscal year 1969 and you are requesting $86.9 million in fiscal year 1970 for 75 more. Why do you need this many in fiscal year 1970?

Admiral CONNOLLY. The TF-9J, which is now the Navy's advanced jet trainer, is approaching the end of its safe service life. The TA-4J is the approved replacement. To support the planned annual training rate of 1,065 jet pilots, an inventory of ——— aircraft is required for the undergraduate pilot training command. The planned annual utilization of TA-4J aircraft is 650 hours.

T-38A TALON AIRCRAFT

Mr. SIKES. You are requesting $4.4 million in fiscal year 1970 for the procurement of five T-38A Talon jet trainers. Is this your first buy of this aircraft?

Admiral CONNOLLY. These five planes, Mr. Sikes, are for the test pilot school at Patuxent. The U.S. Naval Test School provides several aircraft types in support of its task of training fleet pilots and naval flight officers to conduct aircraft trials and tests.

The T-38 aircraft will fill a requirement for five instrumented, two-place supersonic aircraft with low procurement charges low logistics support, maintenance effort, and operating charges.

Collateral tasks for these planes will be to act as chase aircraft during tests of service fighters and attack planes.

Mr. SIKES. Finish that response for the record.

(Information requested follows:)

Other collateral tasks of the T-38A include jet transition and the indoctrination of engineering personnel.

This will be the first procurement of this aircraft by the Navy.

Mr. SIKES. This is the same as the T-38 and the F-5 which has been in production for a number of years for the allied forces. Is that right?

Admiral CONNOLLY. Yes. We are buying it because it is the lowest cost plane we could get suitable for these purposes.

Mr. SIKES. What type aircraft has the Navy test pilot school been using heretofore?

Admiral CONNOLLY. The older service types, the F-6, the T-1.

Mr. SIKES. For the record tell us why you are changing to the T-38 type aircraft.

Admiral CONNOLLY. Yes, sir.

(Information requested follows:)

We are changing to the T-38 type aircraft for two principal reasons; one is for increased effectiveness and the other is for economy of operations. The

aircraft now in use, with the exception of the F–6, are low performers which are not very effective in training today's test pilots. These pilots should be oriented toward the high speeds and performance of the upcoming aircraft that they will be testing.

All of the aircraft, and in particular the F–6, are expensive to maintain and operate and they are becoming more so each year. This is primarily due to their age and lack of spare parts. In most cases these parts are no longer manufactured.

Mr. SIKES. Do you propose to combine this procurement with the Air Force program or will the Navy deal directly with the manufacturer?

Admiral CONNOLLY. With the Air Force.

Mr. SIKES. I presume this will not fill the Navy's requirements?

Admiral CONNOLLY. Yes, sir.

Mr. SIKES. Questions?

(No response.)

OTHER AIRCRAFT

P–3 MAGNET AIRCRAFT

Mr. SIKES. You are requesting $8.6 million for a special mission version of the P–3 aircraft to enable the Navy to improve its capability to collect and evaluate oceanographic data. What is it that this aircraft will be able to do that a ship or submarine cannot do equally as well?

Admiral CONNOLLY. The magnetic survey aircraft have a unique capability, and are called on to operate over land as well as over the sea in response to military requirements. The over-water mileage covered by the aircraft annually, would require at least three ships operating full time. These ships would have to be large enough to remain at sea for extended periods and withstand very rough sea conditions. Their investment and operating costs would far exceed that of the aircraft. Further, instrumentation for standard ships does not exist for the underway collection of the vector magnetic field values collected by the aircraft. Only the total earth's field value could be obtained, and while such ship data is used to meet certain requirements, it does not fulfill our needs.

Mr. SIKES. Is this the total future requirement for this type of aircraft?

Admiral CONNOLLY. Yes, the Navy has no plans at present to procure additional aircraft for Project Magnet. However, we do plan to request aircraft for the related oceanographic mission.

Mr. SIKES. What has the Navy been using to meet this requirement?

Admiral CONNOLLY. The P–3 magnet (RP–3C) replaces the two aircraft now assigned to magnetic surveys. An NC–54R will be phased out upon the RP–3C delivery in ———. The second magnetic survey aircraft, an NC–121K, will be transferred out of the program the following year ———.

MODIFICATION OF AIRCRAFT

Mr. SIKES. Your aircraft modification program for fiscal 1970 is $325.9 million, or $75.4 million less than your fiscal year 1969 program.

INSTRUMENT LANDING SYSTEM

In fiscal 1970 you are requesting modification funds to provide an instrument landing system for the A–4's, RA–5C's, A/EA–6A's,

A–7A/B's, F–4's, and F/RF–8's. Why are these aircraft now being provided with this capability?

What is the magic about this particular time?

Admiral CONNOLLY. We have been working on this to my knowledge for almost 10 years. We have it in a state now where the fleet believes in it, pilots believe in it, and where it can be trusted and expected to bring down airplanes that are in trouble or in bad weather, and safely and automatically bring them aboard ship.

We are very proud of this achievement.

Mr. SIKES. You should be. This is a monumental achievement, is it not?

Admiral CONNOLLY. It really is.

Mr. SIKES. You are just now in position to utilize the results of your efforts?

Admiral CONNOLLY. We did the initial work with the F–4. We shifted to the A–7 and now are picking up this other plane. It is an incremental affair and we will continue at a price we hope we can manage each year until we get them all.

Mr. SIKES. How many a year would be required to get them all, that is all those you propose to retrofit?

(Information follows:)

The following is the installation schedule for retrofit of automatic control and landing systems equipment and instrument landing systems equipment:

Aircraft installation schedule for retrofit of automatic control and landing systems (ACLS) equipment (AN/ASW–25, one-way data link)

Fiscal year:	Number of aircraft
1970	125
1971	308
1972	200
1973	-----
1974	-----

Aircraft installation schedule for retrofit of instrument landing system equipment (AN/ARA–63, SPN–41 receiver/decoder)

Fiscal year:	Number of aircraft
1970	745
1971	1,297
1972	492
1973	-----
1974	-----

Mr. SIKES. Is this needed for the A–4's as well as the other aircraft?

Admiral CONNOLLY. We think it is because we know we will have the A–4's for quite a long time but not all A–4's or all F–8's will get these. We will put them in the latest models only.

Mr. SIKES. What is the total cost of this modification by aircraft types?

Admiral CONNOLLY. The total cost in fiscal year 1970 is $18 million broken down as shown on this chart:

Aircraft type	Number of aircraft	Total cost in thousands
Instrument landing system:		
A-4	81	$1,013
RA-5C	45	562
A-7	204	2,800
F-4	300	4,250
F-8	229	1,375
Automatic carrier landing system (1-way data link):		
RA-5C	15	915
A-6	74	4,514
F-4	36	2,592

Mr. SIKES. Do any of the planned new procurements, for which fiscal year 1970 funds are being requested, include the installation of instrument landing systems during their production?

Admiral CONNOLLY. I am sure we are doing it in the A-7's and F-4's.

Fifteen 4-J aircraft have been equipped.

Four fiscal year 1969 aircraft will be configured with this equipment as will all fiscal year 1970 aircraft.

Mr. SIKES. Questions on modifications?

(No response.)

A-4 SKYHAWK AIRCRAFT MODIFICATION

Mr. SIKES. You have a request for $18 million for modification of the A-4 aircraft. How many of these aircraft by model will be modified?

(The requested information follows:)

The following table portrays each major modification, its cost, and the number of A-4 aircraft to receive the modification this year.

Description of modification	Numbers aircraft	Total cost (in thousands)
Replace avionics package with improved equipment	———	$4,200
——— suppression shields	———	1,737
Fire suppression provisions for A-4C/E/F aircraft	———	1,330
AN/APR-25 radar warner	———	933
Instrument landing system and monitor for automatic carrier landing including AJB-3 Mod	———	1,013
IFF MK X systems (AIMS)	———	2,969
Incorporation of improved seat/man separation system to provide positive separation of pilot from seat after ejection	———	1,886
Provisions for installation of strike camera	———	623
Dual launch adapters to provide ———	———	101
Incorporation of ——— to increase weapons delivery effectiveness	———	1,903
AN/APN-154 radar beacon including aircraft provisions	———	666
Improvements to AJB-3A attitude indicating gyro, including aircraft provisions	———	684
Total A-4	..	18,045

Mr. SIKES. How long do we plan to modify this aircraft from cost-effectiveness standpoint?

Admiral CONNOLLY. The only A-4's we are buying this year are for the Marines. I will have to admit that the modifications are very good and will give the plane a lease on life. The A-4 seems to have a very long useful service life.

Mr. SIKES. When do you anticipate it will be replaced by the A–7?

Admiral CONNOLLY. We are in process of doing this in the Navy now. We are not buying any A–4's for the Navy.

Mr. SIKES. Are the modifications planned for the A–4 being incorporated into the new A–4 production aircraft?

Admiral CONNOLLY. Yes, sir.

Mr. SIKES. Are funds for this purpose included in the $68.6 million for procurement of 49 of these aircraft?

Admiral WALKER. Yes, sir.

Mr. SIKES. Do you have the amount at your fingertips?

If not provide it for the record.

(Information requested follows:)

Fiscal year 1970 aircraft modification items are provided for in fiscal year 1970 A–4M production aircraft at an estimated unit cost of $75,000.

A–4 MODIFICATION COST OVERRUNS

Mr. SIKES. During the period fiscal year 1966 through the first half of fiscal year 1969 you have experienced cost overruns in making A–4 modifications amounting to $26.7 million.

Generally, what has been the problem in modifications to the A–4?

Admiral WALKER. $25.7 million in A–4 modification program cost increases were reported to the Senate Armed Services Committee. This is an aggregate total of fiscal years 1966 through 1969 and provides primarily for increased operational capabilities rather than cost overruns.

A breakdown of the years 1966 through 1969 follows:

In fiscal year 1966 we have $9.2 million involved. This increase is the result of three reprograming actions providing for a net increase of $6.7 million and miscellaneous adjustments totaling $2.5 million.

The major increase was for financing electronic countermeasure provisions and equipment for A–4 aircraft deploying to Southeast Asia.

This is the program called Shoe Horn, sir.

Mr. SIKES. Questions on the A–4?

Admiral WALKER. I have more information which I will supply for the record.

(Information referred to follows:)

The following details the fiscal year 1967 through fiscal year 1969 portion of the A–4 modification increase of $26.7 million.

Fiscal year 1967 ($—2.9 million).—The $2.9 million decrease is the result of several minor cost and program decreases.

Fiscal year 1968 ($+10.0 million).—The $10.0 million increase is primarily attributable to DD 1415 fiscal year 1968–126 (revised) which provides three A–4 modifications for $10.4 million to enhance operational effectiveness in Southeast Asia. These modifications were for electronic countermeasures equipment (two items) and uprated engines. This increase has been offset by a $—0.4 million decrease as the result of minor program changes.

Fiscal year 1969 ($+9.4 million).—The $9.4 million increase reflects DD 1415 fiscal year 1969–36 for $10.1 million, providing for incorporation of three modifications to increase Southeast Asia effectiveness and a safety of flight modification. This increase has been offset by $—0.7 million in minor program adjustments.

RA–5C VIGILANTE AIRCRAFT MODIFICATION

Mr. SIKES. You are requesting $8.3 million for modification of the RA–5C aircraft, including $3.2 million for air intake duct enlargement to increase engine thrust. Why is this modification necessary?

Admiral CONNOLLY. This modification provides a widened inlet duct to obtain optimized engine performance and wing root fillets to substantially improve the low speed flying qualities of the RA–5C aircraft. The new intake and fillet will be the same as are incorporated on new production aircraft, thereby giving all RA–5C aircraft the same handling characteristics. The change will be incorporated during PAR by removing sections of the present inlet duct and installing prefabricated new production ducts and fillets.

Mr. SIKES. How many RA–5C aircraft are currently in the Navy inventory and how many of these will be modified?

Admiral CONNOLLY. As of April 1, 1969 ——— RA–5C's were in the Navy's active aircraft inventory. In fiscal year 1970, six categories of modification will be accomplished in RA–5C aircraft. The number of aircraft to be modified varies by category from ——— as follows:

	Number of aircraft	Total cost
Instrument landing system (ILS) and monitor for automatic carrier landing (second increment)	———	$562
One-way data link to provide an all-weather carrier landing capability (final increment)	———	915
IFF MK–X system (AIMS) (second increment)	———	1,129
Simplified KS–69A panoramic stabilization system installation (first increment)	———	760
Aircraft provisions to modify air intake and addition of wing root fillets (first increment)	———	3,160
Modifications to camera and flasher system to provide improved night photographic capability (first increment)	———	1,777

Mr. SIKES. Will the aircraft procured in fiscal year 1968 and fiscal year 1969 be so modified? If so, where are the funds to accomplish this work?

Admiral CONNOLLY. The fiscal year 1970 procurement aircraft will be delivered with these six modifications installed. The remaining aircraft will be modified with fiscal year 1971 funds.

Mr. SIKES. Will the funds requested in fiscal year 1970 for 10 RA–5C aircraft permit the incorporation of these modifications during their production?

Admiral CONNOLLY. Yes, sir.

A–6A/EA–6A AIRCRAFT MODIFICATION

Mr. SIKES. One of the largest single requests for aircraft modification is $25.8 million for the A–6A and the EA–6A aircraft. We have been modifying this aircraft at a rather high rate—$50.9 million in fiscal year 1969 and $65.4 million in fiscal year 1968.

I would like to have an explanation of the reasons for this.

Admiral WALKER. I have a detailed breakdown of the A–6 modification program.

Mr. SIKES. Provide it in detail for the record.

(Information requested follows:)

A-6/EA-6 MODIFICATIONS FOR FISCAL YEAR 1968, 1969, AND 1970

Modification	Number of aircraft	Total cost (thousands)
Fiscal year 1968 AN/APR-25 radar warning receiver	———	$1,074
Aircraft provisions for AN/APR-25	———	3,480
Aircraft provisions for 1-way data link to provide an all-weather carrier landing capability	———	2,015
Aircraft provisions for installation of AN/ALQ-100	———	2,335
Improve reliability and bombing accuracy of avionics systems to an acceptable level for combat operation (3d increment)	———	1,725
Convert A-6A to EA-6A (refinancing)	———	3,736
Reliability improvement program (installation only)	———	17,200
AN/APR-27 radar warning receiver (final increment)	———	483
AN/ALQ-89 ECM pod	———	1,200
AN/ALQ-51 ECM set modification to AN/ALQ-51A	———	1,069
AN/ALE-29A chaff dispenser	———	392
Aircraft provisions for AN/ALE-29A	———	1,000
Install APR-25	———	80
Project TRIM	———	6,000
Provide standard arm delivery capability (mod I)	———	21,976
AN/ALQ-76 ECM package for EA-6A	———	1,474
Installation of armor plate kits (labor only)	———	113
Aircraft provisions for AN/ALQ-51 mod including installation	———	122
Fiscal year 1968 subtotal A-6	———	65,474
Fiscal year 1969 Zero/zero escape system (1st increment)	———	2,409
Approach power compensator for control of air speed for effecting a safe carrier landing (1st increment)	———	274
IFF MK X system (AIMS) (1st increment)	———	1,348
One-way data link to provide an all-weather carrier landing capability (3d increment)	———	4,490
ALQ-89 ECM pod	———	4,247
AN/APR-25 radar warning receiver	———	1,070
AN/ARC-105 SSB HF communications	———	474
Backup flight control system	———	923
Project TRIM	———	21,151
Aircraft provisions for electronic emitter location system (EELS)	———	900
Forward area control beacon	———	110
Reliability improvement program	———	7,000
AN/ALQ-100 capacitor destruct	———	202
Provide standard arm delivery capability (phase II, mod I)	———	6,300
Fiscal year 1969 subtotal A-6		50,898
Fiscal year 1970 Zero/zero escape system (final increment)	———	1,397
Approach power compensator for control of air speed for effecting a safe carrier landing (final increment)	———	260
One-way data link to provide an all-weather carrier landing capability (4th increment)	———	4,514
IFF MK X system (AIMS) (2d increment) CADC mod	———	2,100
ALQ-89 ECM pod	———	1,326
Modification of ALQ-76 transmitters	———	9,500
Incorporation of airborne video tape	———	2,404
Provisions for incorporation of strike camera bomb damage assessment	———	572
Increased gross weight capability	———	701
Convert A-6A to KA-6A	———	3,000
Fiscal year 1970 subtotal A-6	———	25,774

NUMBER OF AIRCRAFT MODIFIED

Mr. SIKES. How many aircraft have been involved in the modifications?

Admiral CONNOLLY. In fiscal year 1968, 18 categories of modifications were performed. The number of aircraft modified varied from ———. Fourteen individual modifications are being performed with fiscal year 1969 funds; the number being modified varies from ——— aircraft. Funds requested in fiscal year 1970 will accomplish 10 indi-

vidual groups of modifications; the number varies from ——— aircraft. Fiscal year 1970 details are as indicated on this chart:

Modification	Number of aircraft	Total cost
Zero/zero escape system (final increment)	———	$1,397
Approach power compensator for control of air speed for effecting a safe carrier landing (final increment)	———	260
One-way data link to provide an all-weather carrier landing capability (fourth increment)	———	4,514
IFF MK X system (AIMS) (second increment) CADC Mod	———	2,100
ALQ-89 ECM Pod	———	1,326
Modification of ALQ-76 transmitters	———	9,500
Incorporation of airborne video tape recorder	———	2,404
Provisions for incorporation of strike camera bomb damage assessment	———	572
Increased gross weight capacity	———	701
Convert A-6A to KA-6A	———	3,000
Total (Increment means modification commenced in prior years)		25,774

Mr. SIKES. Give us some comparison of the cost of the aircraft before and after modification.

Admiral CONNOLLY. The cost of the A-6A has increased by approximately $106,000 per aircraft as a result of modification. This is due to the installation of new and modified systems ———. Other increased costs result primarily from a decrease quantity.

Programs such as TRIM, Standard ARM, and the reliability improvement program (RIP) do not contribute to a production cost increase as they are applicable to only a limited number of aircraft and are not installed as a production item.

Mr. SIKES. Questions on the A-6A and EA-6A?

(No response.)

Mr. SIKES. We shall reconvene at 10 o'clock tomorrow morning.

TUESDAY, MAY 13, 1969.

Mr. MAHON. We welcome you gentlemen before the committee again today. We hope we will be able to conclude the hearing and you can get back to your offices where you can devote your full time to your duties there.

MODIFICATION OF AIRCRAFT

F-4 SERIES AIRCRAFT MODIFICATIONS

Mr. MAHON. In the last 2 fiscal years, we have funded a total of $126.4 million for modifications to F-4 series aircraft. In fiscal year 1970, you are requesting an additional $35.7 million for this purpose. How much has been spent in modifications to the F-4 aircraft since they entered the fleet?

Admiral CONNOLLY. A total of $282.5 million has been programed for F-4 modifications from fiscal year 1964 through fiscal year 1970.

Mr. MAHON. Would you describe briefly the modifications made to these aircraft in the past 2 fiscal years?

Admiral CONNOLLY. $28.8 million of the fiscal year 1968 program

provided for follow-on program of various Electronic Countermeasures capability; $17.4 million for all-weather carrier landing for 163 aircraft; $8.7 million for follow-on increment of MK X and MK XII AIMS equipment; $8 million for installation of drooped ailerons and structural beefup in 179 aircraft; and $3.7 million for four miscellaneous modification programs.

$26.9 million of the fiscal year 1969 program provided for various electronic countermeasure changes; $8.1 million for follow-on increment of all-weather carrier landing system for 91 aircraft; $8.1 million for MK X and MK XII AIMS equipment; $3.5 million for final increment of installation of drooped ailerons and structural beefup; $5.1 million for first increment of improvement to AWG-10 radar; $2 million for modification to intercommunications system, and $6.1 million for miscellaneous safety improvements.

F-8 AIRCRAFT MODIFICATIONS

Mr. MAHON. Recently the Navy awarded a contract in the amount of $28.2 million for certain modifications to 150 F-8B/C aircraft. Our last delivery of F-8Es was in October 1964. Would you briefly describe the modifications to be made under this contract?

Admiral CONNOLLY. The modifications to be incorporated in the 150 F-8B/C aircraft include the following:

(*a*) Provisions for the carrying and dropping of conventional ordnance from the wings.

(*b*) Installation of an integral starter, improved lighting (internal and external) and new electrical wiring.

(*c*) Extended service life will be attained by providing an improved wing structure, improved landing gear and fuselage strengthening.

The program commenced in fiscal year 1967 and is to be funded over a 4 year period. The projected total cost is estimated at $70.2 million.

Mr. MAHON. We have spent $148 million in the last 2 fiscal years for modifications to this aircraft and this year you are requesting an additional $21.9 million. Why has it been necessary to make such extensive modifications to this aircraft?

Have most of these been safety flight modifications, or what is the problem with the F-8 just generally, and supply the details for the record.

Admiral WALKER. Modifications in the F-8 for fiscal 1970 are a continuation of prior year programs directed toward further improvement in the reliability and combat capability of this time-proven fighter. The modifications include such things as ACLS—that is, automatic carrier landing system provisions in the 130 aircraft; improve the TACAN, which is a navigation system in 118 aircraft, and improved radar in 160 aircraft. I have details which amplify on all of those which I can supply for the record.

(The information follows:)

Fiscal year 1970 F-8 modifications are outlined in the following tables:

	Number of aircraft	Total cost (in thousands)
IFF MK X system (AIMS) (fourth increment)	———	$2,674
Instrument landing system (ILS) and monitor for automatic carrier landing (second increment)	———	1,375
Replace AN/ASQ-17 CNI with improved equipment (second increment)	———	3,617
Aircraft provisions for APR-30 radar warner for F-8H (final increment)	———	420
Incorporation of additional generator power for ALQ-100 installation (first increment)	———	1,518
2-inch standby attitude indicator (final increment)	———	1,792
Aircraft provisions for APR-30 including installation in RF-8G	———	1,726
Installation of backup flight control system (labor only)	———	872
AN/ARN-52 TACAN including aircraft provisions	———	1,423
Incorporation of wing mounted camera pod, including aircraft provisions	———	216
Incorporation of radar altitude line eliminator to permit effective utilization of boresight acquisition and track (BAT) mode of radar	———	2,264
Incorporation of a polarized radar hood for use with APQ-83B and APQ-124 radars	———	444
Incorporation of air refuel probe emergency extension to provide for refueling when hydraulic system fails	———	749
Incorporation of unit horizontal tail (UHT) signal to the approach power compensator	———	949
Conversion of F-8A to DF-8F	———	200
Improvements to APQ-83B radar	———	420
Material costs migrating from APA to NSA for F-8 and RF modifications	———	920
Incorporation of emergency fuel cell pressurization system (prototype)	———	300
	———	21,879

Mr. MAHON. What is the future useful life of this aircraft?

Admiral CONNOLLY. With the renewed wings, we are going to be able to get, through the fiscal year 1975 period, in the active fleet; they will stay with us as long as we have Hancocks. They are the fighters for the *Hancock*-type carrier. After that, they will have further life in the Reserve. It is very difficult to say when we would run out of them, but I would say we would have F-8's around for another 8 to 10 years, sir.

Mr. MAHON. What is the alternative to making these modifications this year in the F-8?

Admiral CONNOLLY. We really don't have a very good alternative. All of our programing is based on using the F-8's through the period I have been talking about and nothing else in its stead. Although the F-14 could go on the *Hancock* class carrier, we won't have them, the *Hancock* carriers, long enough to make that a good way to go.

The F-8, as modified, is still a good day fighter.

Mr. SIKES. Where is it in use?

Admiral CONNALLY. We have F-8's on all of our *Hancock*-class carriers of which we now have five in operation.

OV-10A MODIFICATIONS

Mr. SIKES. Turning to the OV-10A, here is an aircraft upon which you first received delivery in fiscal year 1968. Now, 2 years later, you propose to begin modification at a cost of $14 million. What is there that should require modifications so quickly?

Admiral CONNALLY. Although the aircraft generally meets performance specifications, it is presently operating in a ———.

Mr. SIKES. Do we have the viewgraphs of the aircraft we are talking about?

Admiral CONNOLLY. We do not have those.

The existing operating limit of ——— do not restrict the operational capability of the aircraft. The aircraft exceeded the following guaranteed performance parameters, taking off over a 50-foot obstacle, similar landing, and so forth.

The aircraft did not meet maximum level flight air speed by one and a half knots in ferry range by four and a half nautical miles.

What we want to do with the $14 million is this: A sum of $1.4 is requested for aircraft modification in 1970. In this regard there is a typographical error in the justification book which indicates $14 million for OV–10 modifications. It is $1.4 million.

Mr. SIKES. What do you propose to do?

Admiral CONNOLLY. Funding for two modifications is requested. One, cockpit air conditioning in 54 aircraft for $1.2 million, and a VHF radio homing capability in 92 aircraft for $152,000.

Mr. SIKES. Why was this not done at the time the aircraft were manufactured?

Admiral CONNOLLY. I guess we would have to answer that they found it so hot out there in Vietnam and they didn't think it was going to be, that the pilots really are miserable and uncomfortable in the cockpit. It is a lot hotter than they realized. It has a greenhouse effect for one thing. It acts like a greenhouse.

Mr. SIKES. This is not an unreasonble modification. It is surprising, though, that no one foresaw that it was going to be hot in Vietnam.

You discussed a flight safety factor a moment ago. How do you propose to overcome that situation?

Admiral CONNOLLY. I believe that the ——— problem—do you want to comment on that?

Admiral WALKER. The safety problem arises from the ——— of the aircraft and this is a subject of extensive investigation by the contractor and the Navy. We have agreed on a detailed flight ——— test program with a highly instrumented test airplane. We hope this will lead to a solution to the ——— problem in the near future.

Mr. SIKES. Will this require additional modification on all aircraft?

Admiral WALKER. It will require a kit modification; yes, sir; which will have to be backfitted into all OV–10A's.

Mr. SIKES. Do you have an idea of the cost per unit?

Admiral WALKER. No, sir. I will supply that.

(The information follows:)

As a result of the ——— problem, the contractor has been formally cited by the Navy for a defect. It is the Government's position that all costs associated with determining the cause of this defect, that is airplane ——— and the aircraft modifications required to alleviate this problem are to be borne by the contractor. This has been done because the aircraft specifications require the contractor to demonstrate the OV–10A at ——— knots maximum speed at a structural load of ———. Thus far the contractor has not been able to safely demonstrate this performance requirement. The Navy has restricted the aircraft to ——— knots at ——— until the cause of the ——— is determined and a satisfactory modification installed in the aircraft at the contractor's expense.

Mr. SIKES. Has this affected the usefulness of the aircraft?

Admiral WALKER. It has resulted in a ——— permitted for the aircraft at maximum speeds.

Mr. SIKES. Other than this problem, are you completely satisfied with the OV–10A?

Admiral McCutcheon. ———. We did know in advance that this airplane was ———. Eventually we would like to get a ——— engine in it.

Mr. Sikes. That sounds as though you still have quite a ways to go in order to get a fully satisfactory aircraft.

Admiral McCutcheon. This would make it better. We are satisfied but it can be improved. As in any airplane, there is a growth potential.

Mr. Sikes. Were the original specifications reduced and the original missions changed in order to accommodate deficiencies that you now have noted in the aircraft?

Admiral Connolly. I believe the answer to that is "No," sir.

Admiral Walker. There is a restriction in the ——— permitted but these do not restrict the operational capability of the aircraft.

MISSION CHANGES FOR OV–10 AIRCRAFT

Mr. Mahon. The committee has received information recently to the effect that the current planned mission of this aircraft with associated performance specifications is quite different than the mission and associated performance specifications of the developmental OV–10A. The essential differences relate to the original mission of light helicopter escort reconnaissance aircraft versus the current mission of forward air control aircraft requiring greater takeoff rates and so forth.

It would appear from this that the specification had been changed and also the mission of this aircraft, apparently, as a result of deficiencies noted during its development. Is this essentially correct?

Mr. Sikes. Would that jibe with the statement given to me a few minutes ago?

Admiral Connolly. Namely, that it is satisfactory?

Mr. Sikes. Yes.

Admiral Connolly. I think so, Mr. Sikes, for this reason: Quite a few of these airplanes were conceived, designed and the airplanes built before we got out there. What has actually been happening to us—I think I said to the committee before—as we take our airplanes out to the test laboratories, we find certain things we should have thought of were not present or were not adequate. In ordinary peacetime, we probably wouldn't be in seeking the changes that we are seeking.

Mr. Sikes. This is not an unusual situation, is it, for new equipment?

Admiral Connolly. I don't think so. As you well know, we constantly try to make our product work better and do a better job.

Mr. Sikes. Why is this aircraft unacceptable as a reconnaissance flight helicopter escort aircraft?

General McCutcheon. It is not unacceptable for those roles. We are using it as a visual reconnaissance aircraft and as a helicopter escort.

There is on deficiency, however, that makes it far from being the best airplane for that role and that is that it is noisy.

Mr. Sikes. What will be done to correct these problems and how much will it cost? Provide for the record that information.

(The information follows:)

There are no plans to initiate noise reduction modifications of the OV–10A aircraft. As is the case with all turbine engines, the engines of this aircraft do

not lend themselves to effective noise abatement. Because of the relative ineffectiveness of such an effort, no modification costs are available.

The OV–10A is acceptable in the visual reconnaissance role under most battlefield conditions; however, it is extremely desirable to detect and observe the enemy without his being aware of the detection and observation. Experience in SeASIA proves that such a capability is particularly necessary at night.

Mr. SIKES. Do you have future requirements for additional aircraft?

General MCCUTCHEON. At this point in time we have none. We had a buy, I believe it was 2 years ago, of 114 and this was to take care of our UE and pipeline in advance of attrition, so at this stage we have no requirements for additionals.

Mr. SIKES. Have you bought all you intended to buy?

General MCCUTCHEON. Yes, sir.

Mr. SIKES. Questions on the OV–10A?

P–3A/B ORION AIRCRAFT

Mr. SIKES. On the P–3A/B Orion, in fiscal year 1968, we funded $2 million for modification of this aircraft. Last year a total of $43.9 million was funded for this purpose. For fiscal year 1970 you are asking for an additional $46.5 million. What are you doing to this aircraft?

Admiral WALKER. Mr. Chairman, I have two pages of justification for the modifications.

Mr. SIKES. Provide it for the record.

(The information follows:)

The fiscal year 1968 program of $2 million covered $900,000 for final increment of auxiliary power units to permit operation from remote areas; $900,000 for second increment of EP–3A conversion (electronic warfare configuration); and $200,000 for AIMS (identification) equipment.

$34.6 million of the $43.8 million for fiscal year 1969 covers the cost of the first increment of installing ——— Jezebel sonobuoy system analyzer (Difar) in 72 aircraft; $3.4 million for final increment of EP–3A conversion; $2.6 million for first increment for modification to increase gross weight capability; $2.6 million for first increment of a crash position-inflight recorder; and $600,000 for radar modification.

The fiscal year 1970 estimate requests $41.7 million for second increment of ——— aircraft for Difar; $600,000 for second increment of radar modification; $15 million for second increment of increase in gross weight capability; $800,000 for second increment of crash position-inflight recorder and $1.9 million for five minor safety-of-flight and ASW improvements.

In general, the fiscal year 1970 program for P–3 is a continuation of programs initiated in fiscal year 1969. Details are outlined in the following chart:

P-3 MODIFICATIONS

	Number of aircraft	Total cost (in thousands)
Fiscal year 1969:		
41–67 ———Jezebel sonobuoy system analyzer	———	$34,627
33–68 AN/APS–80A (V) radar improvement program for improved reliability and maintainability	———	620
74–67 Big look kits EP–3A	———	1,200
74–67 SSE for EP–3A conversion	———	2,200
45–68 Increased gross weight capability (first increment)	———	2,607
35–68 Crash position, inflight recorder (first increment)	———	2,629
Total		43,883

P-3 MODIFICATIONS—Continued

Modification	Number of aircraft	Total cost (In thousands)
Fiscal year 1970:		
Crash position, inflight recorder (second increment)	———	$803
RO-308/SSQ-36 recorder, including aircraft provisions for use with AN-SSQ-36 bathythermograph transmitter set (first increment)	———	245
Modification of AN/APN-70 LORAN A to AN/APN-70B LORAN C	———	748
Modification of PB-20N automatic flight control system air data sensor (first increment	———	224
——— Jezebel sonobouy system analyzer (second increment)	———	41,652
AN/APS-80A (V) radar improvement program for improved reliability and maintainability (final increment)	———	634
Increased gross weight capability (second increment)	———	1,446
Modification of PB-20N automatic flight control system vertical gyrp	———	336
Aircraft provisions for installation of flight station side windshield defogging (first increment)	———	362
Total		46,450

Mr. SIKES. Tell me briefly what is the problem.

Admiral CONNOLLY. The principal item is to install a Difar sonobuoy system analyzer.

The second increment was accomplished in the prior year and this is the second increment. It is the biggest item that cost ——— per airplane and for ——— airplanes the total cost is $41,652,000. This makes the P-3/C completely compatible with the work we have done in the development of Difar sonobuoy.

Mr. SIKES. Provide the rest of it for the record.

(The information follows:)

Difar has no problems that are visible yet except for being 4 months late to P-3C requirements. This lateness was primarily the result of a late procurement. Contract award was to have been made in January 1968 but was held up to April 1968 due to concern for ——— has been an additional cause of schedule delay, however, the improved version will be well worth this delay. Basic sensor performance of the Difar developmental models has been excellent.

Mr. SIKES. For the record tell us how many will be modified with fiscal 1969 funds; how many will be modified with fiscal 1970 money out of what total in your inventory.

Are all of these modifications absolutely necessary?

Admiral CONNOLLY. In our judgment they are very necessary.

The answer to your first question is ——— in 1969 will receive this Difar sonobuoy analyzer and there are other things that will go in 92 airplanes, but they are small. There will be a radar improvement in 92 which is a $6,000 improvement. There is a crash position in flight recorder going in 94 airplanes that will cost $27,000, but the principal one is this Difar sonobuoy system analyzer at $481,000 and that will go in ——— airplanes with the 1970 money. This is out of a total of ———.

Mr. SIKES. How can you measure the essentiality of these modifications? In other words, what is it the plane can do after modification that it can't do now?

Admiral CONNOLLY. If I can answer that with respect to the Difar system analyzer, it makes the airplane capable of deciding where the submarine is, it shortens the time, locates it, makes it clear that there is a submarine, and makes it possible for much quicker attack. It is a big improvement in our ability to detect and localize submarines.

Mr. ANDREWS. Admiral, at what depth and from what distance can that be achieved?

Admiral CONNOLLY. Difar is a ——— sonobuoy. It is affected by such things as the thermal layer which affects all ASW sensors to one degree or another, but roughly speaking—and I am sure I am right about it—the submarines operating down to about ——— feet, depending on the thermal layer, are subject to detection by Difar and from a practical, operational point of view, submarines use that area from the surface down to about ——— feet for tactical purposes.

Mr. SIKES. Does this new equipment solve the problem of detection formerly posed by whales and other objects?

Admiral CONNOLLY. I think it will eliminate false targets—probably not completely, but a greater—to a very great degree, sir.

Mr. SIKES. How is this accomplished?

Admiral CONNOLLY. ———. It is my opinion that a whale would have a pretty tough time giving the return that a submarine would.

OTHER AIRCRAFT MODIFICATIONS

Mr. SIKES. On the "various aircraft", will you provide for the record a tabulation showing how the $74.2 million funded in the last two fiscal years was used and how you propose to use the $56.3 million in fiscal year 1970 for aircraft modification.

(The information follows:)

Aircraft Modification, Various for fiscal year 1968, 1969, and 1970:

[In thousands of dollars]

Modification	Number of aircraft	Unit cost	Total cost
Fiscal year 1968:			
UHF radio modifications (2d increment)	——	——	4,782
AN/ALQ-100 ECM set	——	——	17,123
AN/ALQ-100 ECM set (provides for refinancing of prior year programs)	——	——	15,213
Project speedboat	——	——	67
R 2000 engine for C-47M	——	——	76
AN/APN-158 radar for C-131	——	——	22
10-520 engine for O-1C	——	——	105
Total	——	——	37,388
Fiscal year 1969:			
UHF radio modifications (3d increment)	——	——	1,600
AN/ALQ-100 ECM set	——	——	33,300
Modify AN/APR-27 to provide S-band correlation	——	——	900
Helo decoy pods	——	——	1,000
Total	——	——	36,800
Fiscal year 1970:			
AN/ALQ-100 ECM set	——	——	18,000
Helo decoy pods	——	——	2,500
Modification of ALQ-100 for improved system performance and reliability (1st increment)	——	——	7,200
Standardize ALQ-55 ECM sets	——	——	1,560
Update ALQ-55 ECM sets	——	——	3,935
VHF and L-band paste-on jammers	——	——	4,000
Modification of ALQ-41 ECM sets	——	——	5,688
Side saddle recorder	——	——	1,100
AN/ALQ-88 X band DECM pods	——	——	8,000
Modify AN/APR-27 to provide S-band correlation	——	——	2,250
Redesign of J52-P-8A engine burner cans to provide smoke abatement capability for A-4/A-6 aircraft	——	——	2,040
Fiscal year 1970 subtotal, various	——	——	56,273

Aircraft Spares and Repair Parts

Mr. Sikes. In the aircraft spares and repair parts, your fiscal year 1970 request for $568.5 million, this is approximately $195 million more than the fiscal year 1969 program. What is the primary reason for this increase? Are we using up spares and repair parts in Vietnam or did we underbuy previously? What did happen?

Admiral Connolly. Perhaps I could lead off and Admiral Walker could pick it up.

Mr. Sikes, it is our opinion, which doesn't make us very happy, that in spite of all the spare parts money we have received over the years and particularly during the Vietnam period, we have been short of the required spares every year. Now we have, and I regret to say it, we have a poorer NORS—not operationally ready on account of supplies—record than the Air Force.

We get a lot of pressure from our fleet commanders, our field units; why can't we be as good as the Air Force? The answer that we believe is correct mainly is that we just don't have the spare parts that we should have.

Mr. Sikes. Does this come back to the situation where, if you buy what you think you need, you have some left over and then you get criticized because you bought too many?

Admiral Connolly. That is certainly part of it, Mr. Sikes. Maybe the Navy hasn't put——

Mr. Sikes. You are between the devil and the deep blue sea then, aren't you?

Admiral Connolly. Yes, sir.

Mr. Sikes. Is this a recurring problem, one that you have encountered over a period of years?

Admiral Connolly. Yes, sir.

Mr. Sikes. Or is it aggravated because of Vietnam?

Admiral Connolly. Well, Vietnam has had an awful lot to do with it. We put in OP–05 a program sponsored for aircraft and aircraft spares; we put in for essentially about twice as much money in spares and we end up getting APO because when we come down to the crunch in December to push that budget down in size, it is really easy to lop off a couple hundred million worth of spare parts. That is very easy. Like it is real easy to lop off 50 airplanes. We have subscribed to this, we know it has to be done and we are not fighting the problem but this is what happens in spare parts and it is chronic. I can't make a strong enough plea because there is not much use in buying multi-million-dollar equipment and then not being able to keep it flying when you need it.

Deliveries of Aircraft Spares

Mr. Sikes. Is the present request more realistic from that standpoint than prior requests?

Admiral Connolly. If we get what is in this spare parts budget this time, we will be better off than we have been in any prior year.

Mr. Sikes. How soon will this additional inventory be reflected?

Admiral Connolly. I have a real expert on spares here.

Mr. Sikes. How long will it take to get these additions of spares which you are buying?

Captain CROSBY. Spares would start to deliver 9 months after the beginning of the fiscal year and would be completed in about 15 months for the longer leadtime items. We will start to show some improvement in the 1969 months.

AIRCRAFT SPARE PARTS INVENTORY

Mr. SIKES. How does the fiscal 1969 inventory of these items compare with that of each fiscal year since 1965? Supply that for the record.

(The information follows:)

Aircraft spare parts ending inventory fiscal year 1965 through fiscal year 1969
(Dollars in millions)

Fiscal year 1965	$2,971
Fiscal year 1966	2,951
Fiscal year 1967	3,158
Fiscal year 1968	3,338
Fiscal year 1969	3,131

LEVEL OF WAR RESERVE MATERIEL

Mr. SIKES. What are the levels of war reserve materiel now as compared with last year?

Admiral WALKER. The level of war reserve materiel for beginning fiscal 1969 is $96.1 million as compared to $87.5 million previously.

The increase is primarily due to allocation of spares to war reserve which had been previously classified as long supply. This was the result of a comprehensive program review in fiscal year 1968.

COMPETITIVE PROCUREMENT OF AIRCRAFT SPARE PARTS

Mr. SIKES. Last year the committee report on fiscal year 1969 DOD appropriation bill criticized the military departments on the lack of competition in the procurement of replinishment spare parts, particularly in the aeronautical spare parts area. Has the Navy made progress on this during fiscal year 1969?

Admiral WALKER. Yes, sir; there has been significant progress.

Mr. SIKES. Provide a more extensive answer for the record.

(The information follows:)

In fiscal year 1968, competitive procurements for aircraft replenishment type spares were 16.2 percent of total procurements as compared to 22.4 percent in fiscal year 1967. This reduction in the competitive procurement percentage is attributable primarily to the change in ASPR reporting criteria in fiscal year 1968. Formerly all procurements under $2,500 were reported as competitive; under the new criteria, all procurements under $250 are reported as sole source and procurements between $250 and $2,500 are reported as competitive or noncompetitive in accordance with the actual procurement method used.

In fiscal year 1969, Navy (ASO) has experienced about a 4.8 percent drop in competitive procurement awards through April 1969 for aircraft replenishment type spares, that is, from 16.2 percent in 1968 to 11.4 percent. An analysis of influencing factors is as follows:

(*a*) During fiscal years 1968 and 1969, ASO has transferred 59,000 items to DSA which normally would have resulted in competitive type procurement.

(*b*) In fiscal year 1966, ASO retained about 63 percent of items provisioned whereas today ASO retains only about 34 percent of items provisioned. As a result, the items that are assigned to other agencies, such as DSA, tend to be subject to competitive procurement; whereas the items remaining at ASO tend to include a greater proportion subject to noncompetitive procurement.

(c) The tightness of funding and the priority on SEA requirements have resulted in the necessity to go frequently noncompetitive to meet deployment deadlines.

(d) The relative percentage of investment funds as compared to replenishment funds was higher in fiscal year 1969 than in fiscal year 1968. Investment funds (or initial requirements) will normally be direct prime manufacturers and vendors. This means less opportunity for competitive procurements.

(e) In the past years a great many of initial buys went to prime contractors and were normally awarded under Navair end item contracts. These types of noncompetitive procurements were therefore credited to Navair statistics. As a result of more emphasis on first tier breakout from prime to vendor, the larger amount of funds are being awarded direct to vendors under ASO contracts. Although a significant savings are realized, these actions are a penalty upon the ASO competitive procurement statistics because of the change in base.

Mr. SIKES. Are there questions on aircraft spares and repair parts?

INVESTMENT SPARES FOR F–111B AIRCRAFT

Mr. SIKES. Turning to the F–111B, you had $37.7 million requested in fiscal year 1969 for investment spares. What happened to that appropriation?

Admiral WALKER. The money was not appropriated, Mr. Chairman.

Mr. SIKES. Was it denied by Congress?

Admiral WALKER. Yes, sir.

INVESTMENT SPARES FOR SELECTED AIRCRAFT

Mr. SIKES. In fiscal year 1970 the Navy is requesting an increase of $68.2 million for investment spares in support of the initial procurement of the KA–6, F–14A, UH–1N, T–38, and AV–6B. Provide a tabulation for the record showing the amount of each aircraft mentioned.

(The information follows:)

Fiscal year 1970 aircraft investment spares requirement for selected models

	Thousands
KA–6	6,728
F–14A	35,995
UH–1N	5,150
T–38	1,146
AV–6B	15,300

INVESTMENT SPARES FOR F–14A AIRCRAFT

Mr. SIKES. Now, the F–14A aircraft, have your estimates for investment spares for the F–14A increased or decreased since your presentation to this committee earlier this year? Or are you standing by your original estimate

Admiral WALKER. It decreased by approximately $10 million.

Mr. SIKES. Does that mean the fiscal year 1970 request for F–14A investment spares is overstated

Admiral WALKER. I think that is the correct answer, sir. This was a portion of the adjustment within the total F–14A program which was discussed yesterday.

Mr. SIKES. What is the reason for this decrease in investment spares estimate for this aircraft?

Admiral CONNOLLY. The way I understood our answer yesterday, we reallocated the effort to be made on the F–14 with fiscal year 1970 money and investment spares was reduced. We don't mean to infer by this that the cost of spares went down, or that we think we are going to need less spares, or that the cost of something else went up. We just adjusted the scope of effort within the $450 million.

Mr. SIKES. Questions at this point?

Mr. LIPSCOMB. Yes.

CONTRACT TERMS FOR F–14 AIRCRAFT

Yesterday Admiral, when we were discussing the F–14A and there was some discussion about what would happen if we didn't go ahead with the six production models, I think it was testified that this would have the effect of terminating the contract and that we would be placed in an unfavorable negotiating position with a sole-source contract. Why is that?

Admiral CONNOLLY. Mr. Lipscomb, I think there was a misunderstanding of what was in your mind and what was in our mind.

The contract doesn't have to change, in my opinion. It doesn't have to change at all. If you feel, in the wisdom of this committee that a larger portion of that money should be R.D.T. & E., that will not negate the contract and it will not change anything. We will be able to go right ahead with our work as we have it laid out. I think I explained that we divided it up between R.D.T. & E. and PAMN so as not to have the R.D.T. & E. which is the smaller appropriation for all the things it has to cover in the Navy, and we were running into some opposition from the standpoint of our airplane, the F–14, and the new S–3 swallowing up a large part of R.D.T. & E. We used to buy airplanes entirely out of PAMN and didn't buy in R.D.T. & E. at all.

This was a judgment laid on us by the Comptroller essentially, and the office of the Secretary of Defense.

We are studying it now as a result of yield. I talked to Mr. Bowsher, our Assistant Secretary of the Navy; he has already talked to Dr. Frosch and Mr. Moot and if it worked better to have more in R.D.T. & E. and less in PAMN, there are certain things we feel must be put in PAMN but the majority of it could be in R.D.T. & E. and it would not affect the contract.

Mr. RHODES. That is completely contrary to the testimony given by the project officer yesterday. You will remember, Admiral, that in response to my question you said that if we did not pick up the option on the 6 aircraft to be bought under PAMN, that the contract would be vitiated, would have to be renegotiated and probably could not be renegotiated at the same level as the present contract.

Now, what are the facts?

NAVY CONTRACT TERMS COMMIT CONGRESS IN ADVANCE OF CONSIDERATION

Admiral CONNOLLY. The facts are—I would like to say I am not a contracting expert. What I am telling you this morning is based on what I was able to determine after yesterday's discussion last night and this morning. But what I am trying to say is the contract with Gruman doesn't say "You will get so many dollars out of the

R.D.T. & E. part of the Government and you will get so many dollars out of PAMN." The contract says, "You will produce so many airplanes" and this 6 in lot 2 that Captain Ames is talking about is part of that contract. It would null and void the contract and we would have to renegotiate if we didn't exercise the option on that lot of 6—that now appears to be supported and paid for by PAMN. That is all I am saying.

Mr. RHODES. All you are saying is you still have to buy 12 airplanes or the contract is null and void.

Admiral CONNOLLY. Essentially that is right; however, to be completely accurate I must point out that the contract permits us a 50 percent flexibility factor in exercising our options after lot 1. Thus, although six is the base quantity in the second lot, the contract is still effective even though we should decide on a number between three and nine for that lot. This would mean that the fiscal year 1970 R. & D./PAMN buy together could total between nine and 15 without vitiating the contract. The total 12 (six R. & D. and six PAMN) is the planned contract figure, based on a careful Navy and OSD analysis of the requirements and milestones necessary to maintain a balanced program. It must be realized in discussing this subject that any number less than 12 would cause proportionate delay in development and fleet introduction. It would increase the extended lag already experienced by the Navy in achieving an advanced fighter to meet the needs of the country in the near future.

Mr. RHODES. It doesn't matter whether you buy it under R.D.T. & E. or PAMN.

Admiral CONNOLLY. That is what I tried to say.

Mr. RHODES. Then I don't think you have said very much.

Mr. LIPSCOMB. There is no change.

Mr. RHODES. There is no change.

Admiral CONNOLLY. That is right because all 12 of the airplanes are going to be used for the advancement of the program for the tests and evaluations that have to be done.

Mr. LIPSCOMB. What difference is it then if we just go ahead with the six R.D.T. & E. aircraft in fiscal year 1970 and then go later with the additional six? Why does that make the contract null and void?

Admiral CONNOLLY. It does just what the captain says, that knocked out the contract.

Mr. LIPSCOMB. How did you get into such an intolerable position? How can you commit the Congress to getting 12 aircraft in fiscal years 1970?

Admiral CONNOLLY. We think we need to buy 12 aircraft in 1970. We believe the program will be cheaper doing it this way than to buy six in 1970 and wait until 1971 to buy six more.

Mr. LIPSCOMB. But Admiral, the testimony might show that the six will be sufficient for your R.D.T. & E. program in 1970.

Admiral CONNOLLY. No, sir; it is not. You will have to wait for one of those six airplanes to do another task that the seventh, eighth, ninth, and 10th airplane will pick up as soon as it is built?

Mr. LIPSCOMB. Admiral, you don't yet even know what engine you are going to put in these aircraft.

Admiral CONNOLLY. They are going to put the TF-30P12 engine in the first ——— airplanes.

Mr. LIPSCOMB. In the first, but eventually you have retrofits coming along, you have to determine whether the engine will work or the airframe will take it.

How do you get into this position that says we have to go ahead with a 12-plane procurement in fiscal year 1970? It is the Congress that authorizes and appropriates the funds.

Admiral CONNOLLY. This matter was raised by each of the people for whom we work in the Navy, the Secretary of the Navy, by people in Defense. It has been reviewed by people in Defense. We have conducted studies to show that the way we have laid the program out is the lowest cost. The least-risk program is to build the airplane, build a half dozen perhaps and don't do another thing until you fly these airplanes to the point where you are sure that you have worked out everything. But in the meantime you have created tooling, you have people capable of producing.

These are not handmade. You have to build the jigs, you have to build the tooling, you have to get all the vendors in line; you have to get them geared up.

Mr. LIPSCOMB. We heard the same story in the case of the last one, Admiral. This isn't anything new to us. That is exactly why we kept cutting down the procurement aircraft on the F–111B. Exactly. So we wouldn't buy their tooling; so we wouldn't get the line hot.

Admiral CONNOLLY. I hate to say it, but we did not build the F–111B. We built the F–8, we built the F–4, we built the P–3, we built the A–7. We built the A–4. We built Sidewinder and Sparrow and Shrike. Standard Arm. These are our things. We didn't build that F–111B and we are not going to take credit for it.

Mr. ANDREWS. You mean blame for it.

Mr. LIPSCOMB. The blame for it.

It was the Secretary of Navy who was on the Hill all the time trying to get this committee to go ahead with the procurement funds so we have heard the same story.

EXERCISE OF CONGRESSIONAL CONTROL OF PURSE

Now, when I speak of an intolerable position, I'd like to call to your attention here that Congress has close control over expenditures as far as the military is concerned, and I can't point out a better example than this at the moment. When somebody contracts for 12 planes before the appropriation even comes before Congress, this is serious.

We are fully knowledgeable of that first six but why do we have to get six production models? We are told if we don't we cancel the contract and go into an unfavorable position; it just doesn't add up.

Admiral GADDIS. The question of the contract, Mr. Lipscomb, the only actual commitment of the service to date is for the 1969 portion of the contract dollar. The point we are speaking to is an option on the contract. This is the option for lot 2 out of PAMN funds in 1970 and obviously this is not a commitment until the option is picked up. However, if that option is not picked up, it is true the follow-on balance of the contract is null and void.

Mr. LIPSCOMB. If the option is not picked up?

Admiral GADDIS. Yes, sir; but we have not committed the Congress to spend fiscal 1970 money as of this date; no, sir.

Admiral CONNOLLY. No money gets spent that isn't authorized for the purpose.

Mr. SIKES. I think that is very important information. It could have been easy to understand the other way. I think it is very important that the matter be fully clarified.

What are you trying to do, buy back some of the time that was lost because of the mistake involved in the other aircraft, the F–111B? Isn't that what you are trying to do?

Admiral GADDIS. That is a part of the consideration, yes.

Mr. SIKES. Isn't that a very serious matter? You have lost a number of years and you are desperately anxious to recoup some of those years? Isn't it as simple as that?

Admiral CONNOLLY. It is that plus the fact that we did a thorough job on finding out how best to proceed with a new airplane. We subjected this to the utmost scrutiny, studies were made of it from one end to the other and the program we have laid out is a carefully laid out program.

This isn't that high a risk program. The engines are available——

Mr. SIKES. How much will you save if you buy 12 rather than six in the first buy?

Admiral CONNOLLY. The program manager said yesterday 18 months to 2 years.

Mr. SIKES. You have already lost how much time, depending on the F–111B? Three years, four years, in the development of new aircraft or the availability of the new aircraft?

Admiral CONNOLLY. The F–4 was started in 1954. The design in 1954. The first one was built and delivered to the fleet in 1961. We are now in 1969 and the F–111 was supposed to come along in about 1965 and we don't have it and we won't get a new airplane now until 1973 so we won't have had a new airplane in 15 years, a new fighter.

Admiral GADDIS. At the time of the F–111B cancellation, sir, the fleet introduction date was scheduled for the spring of 1972. The earliest fleet introduction we can achieve with a balanced program in the F–14 is April 1973. That is the program which Admiral Connolly is speaking to at this time.

Mr. MINSHALL. Admiral, I have listened with much interest to this colloquy between you and my colleagues this morning. One thing that concerns me is that you say the F–14A is a great program and you will need 12 planes to go through with the test and evaluation part of it, but you also mention the F–111. It was my hope we wouldn't have to get into it, but you responded to a query from me 1 or 2 years ago, and said the F–111B was a great bird, that you had flown it; it was going to fit into the inventory.

Admiral CONNOLLY. Well, Mr. Minshall, you will have to judge me on what I said and I will stand on it, but I want to correct your impression. I said that——

Mr. MINSHALL. Admiral, if you wish I will go back and get the testimony verbatim that you gave this committee 1 or 2 years ago, whenever you first came on board in the F–111B program. I specif-

ically remember asking you the question about the F–111B, and in short you said it was a great bird.

It was only a few short months after that that the whole program was canceled.

Admiral CONNOLLY. There is only one thing you can say about that airplane and I said it, and that is it has good low speed flying qualities. It could fly around the field at a very low speed and this was possessed to a degree we had never had before in a swept wing, high performance fighter.

Now, we have it in other airplanes too.

When I went around the field up there at Peconic and made a series of simulated deck landings, going at 115 knots and touching down at 105, this was a remarkable thing to be able to do and it was a feature of the swing wing.

Mr. MINSHALL. I am just trying to refresh my memory.

Mr. SIKES. I think it would be useful to have the exact statement that Admiral Connolly made at that time.

Mr. Clerk, will you make it available for the record?

(The document follows:)

The following testimony is reprinted from *Department of Defense Appropriations for 1968; Hearings, Part 4, Procurement*, pages 229–234, held before the Subcommittee on Department of Defense, Committee on Appropriations, U.S. House of Representatives.

TUESDAY, APRIL 18, 1967.

* * * * * * *

PROBLEMS IN CONNECTION WITH WEIGHT OF F–111B AIRCRAFT

Mr. ANDREWS. What about the weight problem of the F–111B, Admiral Connolly?

Admiral CONNOLLY. The weight problem of the F–111B was addressed by the Superweight Improvement Program, and there have not been any appreciable accretions in weight that I know about since then. In the life of an airplane there is always something added which increases the weight, but the weight has not gone up by any appreciable amount that I know of.

Mr. ANDREWS. Does the anticipated weight of the delivered F–111B satisfy the Navy requirements?

Admiral CONNOLLY. Yes, sir.

Mr. ANDREWS. No deck problems?

Admiral CONNOLLY. Not to do with weight, no. *As a matter of fact, I think this F–111B is going to land on that carrier like a lady. If there is anything great about the airplane, it has fine low-speed performance. I have never seen an airplane come around the pattern as easily and slowly as this F–111B.*

Mr. ANDREWS. You say you flew one last Friday?

Admiral CONNOLLY. Yes.

Mr. ANDREWS. And you liked it?

Admiral CONNOLLY. *It is a very easy plane to fly. Its low-speed qualities, I want to point out, are really outstanding. There is no question about it.* There is a lot of work to do on the airplane. There are configuration changes to make the visibility for the pilot better. These changes have been approved and will be incorporated in some of the preproduction aircraft and all of the production aircraft. When we get the engine stall situation squared away that Admiral Sweeney has been talking about, there should be no major problems.

Mr. ANDREWS. If things go well, when do you expect to have them on the carrier decks?

Admiral CONNOLLY. According to current estimates, fleet introduction should occur in late ———.

You have to look at this airplane for what it really is. It is a carrier and deliverer of a very advanced air-to-air missile, the PHOENIX, the like of which does not exist, to my knowledge, any place else in the world.

On the PHOENIX missile and the missile control system and the radar and everything connected with it, we have our fingers crossed, because the test and development program is better, to my knowledge, than anything has ever been. I am not trying to say the F–111 engine situation does not need to be squared away, because it does, but I come back to something I did not think I would believe some months ago—that this airplane is a very fine airplane to fly. It is not a fighter in the usual sense. It is a missile-shooter.

Mr. ANDREWS. A bomber.

Admiral CONNOLLY. The one I am talking about is the F–111B. We are not through testing. We may encounter other things. I feel a whole lot better about this airplane now than I did when I approached taking on this job.

Mr. ANDREWS. That is the most complimentary statement about that plane which has been made before this committee.

(Discussion off the record.)

* * * * * * *

Mr. ANDREWS. No further questions.

Mr. SIKES. Mr. Minshall.

Mr. MINSHALL. Admiral, witnesses have come before this committee for a number of years testifying about the TFX. I must say, as Mr. Andrews has said, you are the first expert witness—and we have had many of them in the Navy from Admiral Michaelis on down or on up, whichever you will—who has made the unqualified statement about the F–111B that you have. What has changed your mind as you said recently about the F–111B? What has happened?

The visibility in the bird still isn't any good. It still weighs much more than the original specifications called for. What changed your mind?

PROPOSED ROLE OF F–111B AIRCRAFT

Admiral CONNOLLY. I think, Mr. Minshall, I got over the idea of thinking about it as a fighter.

Mr. MINSHALL. Wasn't it originally designed for a fighter?

Admiral CONNOLLY. Not for our purposes.

Mr. MINSHALL. Partially it was.

Admiral CONNOLLY. Would you answer that for him?

Admiral SWEENEY. The Air Force design is, of course, an attack airplane, high speed, low level, supersonic, as compared to the A-6. It is really an attack airplane. It is a big airplane. Our design is an interceptor rather than a fighter that dogfights.

Mr. MINSHALL. I want to make clear I am not an expert about this type of airplane or any other type of airplane; but I am just amazed, Admiral, after all the other witnesses we have had up here throughout the years, that you come up with these glowing statements about the F-111B.

I have talked to many others privately and have gotten their opinion; I think they are experts in the Navy as much as you are, and they think this aircraft is a dog.

Admiral CONNOLLY. I am not going to argue my degree of expertise. I am telling you the gospel truth as to exactly how I feel about it. I have flown a lot of other airplanes.

Mr. MINSHALL. What changed your mind so recently? You were of the other opinion as of when?

Admiral CONNOLLY. Off the record.

(Discussion off the record.)

HANDLING QUALITIES OF F-111B AIRCRAFT

Admiral CONNOLLY. What I said was in connection with its low speed, handling qualities, high lift, the fact that it has a very low stall speed at very high weight with six PHOENIX missiles hanging on it, which surprised me. You can always learn something new.

Mr. MINSHALL. I still haven't gotten an answer to my question. I want to know what has changed his mind about this bird so drastically.

You have laid great claim as to what a wonderful slow flyer it is, what high lift it has, but you have not gone into the deficiencies.

Admiral CONNOLLY. You are saying that I had an adverse opinion about the airplane at a time when I didn't have much of an opinion because all I had heard was other people and I didn't really know very much about the airplane. When I found I was being ordered to my current position from the one I had before, I arranged with Admiral Sweeney to fly the F-111A down at Fort Worth.

There I realized that this airplane was pretty easy to fly. If I can fly it, it must be pretty easy. But it was the Air Force version. So I made it my business to go up to Peconic at the first chance I could without hurting the program too much and I was very happy to see what I have described to you.

Mr. MINSHALL. When did you first get into this program and first take such an interest in the F-111B?

Admiral CONNOLLY. The minute I found out I was going to be the Deputy Chief of Naval Operations for Air.

Mr. MINSHALL. What date?

Admiral CONNOLLY. About October, sir.

Mr. MINSHALL. I presume you talked to Admiral Michaelis and the other Navy experts who preceded you?

Admiral CONNOLLY. I talk to Admiral Michaelis all the time.

Mr. MINSHALL. What is his opinion of this bird today, do you know; because he testified before this committee only a year ago that he thought as far as the Navy version was concerned it was a very questionable aircraft? I quote him exactly. He said questionable aircraft. Did he ever tell you that or did you ever read the records of this committee?

DEVELOPMENTAL PROBLEMS OF F–111B AIRCRAFT

Admiral CONNOLLY. Not in this respect; no, sir.

Mr. MINSHALL. That is what he told this committee. This is what amazes me about your statement today. You come up here with glowing reports about what a wonderful slow fighter this bird is. How about its loiter ceiling, its combat ceiling, and single-engine rate of climb? How about those other factors? It does not meet the design specifications in many important respects.

You say it is a wonderful bird. You can take a Piper Cub up and have a good ride in it.

Admiral CONNOLLY. If I can get you to agree that what I have said about its being outstanding in my opinion relates to a low-speed handling, flying, landing airplane. That is what I said was outstanding about it. I can talk about those other things, too—the single-engine rate of climb and its ceiling. I can talk about the engine stalling and I can talk about its maximum speed and all these things because I have done those, too.

INCREASED WEIGHT OF F–111B AIRCRAFT

Mr. MINSHALL. Let's talk about them now. That is what we are here for. Let's start with the weight. You mentioned that you had cut down the weight. What was the original specification for the take-off gross weight of this airplane?

Admiral SWEENEY. The original specification take-off weight was ——— pounds.

Mr. MINSHALL. What was it as of March 9, 1965? The reason I ask is that is when we had the last real testimony about this airplane.

Admiral SWEENEY. It is very close to ——— pounds with additional fuel over the other one.

Mr. MINSHALL. That is as of today. It gradually has been going up. The admiral tells us they have been taking it down. It has gone up to ——— pounds now, a substantial increase.

Am I correct in that?

Admiral SWEENEY. That is a projected weight, sir.

Mr. MINSHALL. Then it is going up, Admiral. You tell us today that it's going down.

Admiral CONNOLLY. We only took 3,000 pounds out of it in the weight empty configuration, no fuel.

Mr. MINSHALL. You can't fly an airplane empty. You know that better than I do. Actually the gross take-off weight has gone up then, has it not?

Admiral CONNOLLY. Certainly.

Mr. MINSHALL. Then you just told this committee about 5 minutes ago that they had taken 3,000 pounds off of it. I think that is very misleading.

Admiral CONNOLLY. I will say it again. We got 3,000 pounds of structural weight out of the airplane.

Mr. MINSHALL. Just for the record, the initial specifications for this aircraft, take-off gross weight, which is all that counts, was ——— pounds, and as of April 18 it is now ——— pounds. Then the weight has gone up considerably, hasn't it?

Admiral CONNOLLY. Yes, sir.

Admiral SWEENEY. These are ——— pounds more of fuel, sir, in this version.

Mr. MINSHALL. Also they have lengthened this bird in size as well, about ——— percent.

Admiral SWEENEY. ———.

Mr. MINSHALL. It comes out to about ——— percent.

Admiral SWEENEY. About 3 percent.

OTHER DEVELOPMENTAL PROBLEMS OF F–111B AIRCRAFT

Mr. MINSHALL. My point is this, Admiral. You talk about the slow flying characteristics of this bird, which is all well and good coming in over the deck, but the combat ceiling of this plane which was originally ——— feet, by the last report I had had gone down to ——— feet. What is it today, do you know?

Admiral SWEENEY. It is about that.

Admiral CONNOLLY. I think that is just about right.

Mr. MINSHALL. How about the single-engine rate of climb?

Admiral CONNOLLY. The single-engine rate of climb without using afterburner at a representative weight is very low. No pilot in his right mind is going to use nonafterburner single engines. He is going to use afterburner. With afterburner it is pretty good.

Mr. MINSHALL. With afterburner you burn a lot of fuel?

Admiral CONNOLLY. That is right. If you get down to single engine and you put your wheels and flaps down coming aboard, you are really in bad shape if you don't have enough fuel left to flip that engine.

Mr. MINSHALL. This bird was originally designed to do certain things.

Admiral CONNOLLY. Yes, sir.

Mr. MINSHALL. What of those things does it not do that it was originally designed to do? Would you go through those?

Admiral CONNOLLY. I am not trying to dodge your question, but there are things that I haven't done. I didn't go to the service ceiling. The airplane I flew——

Mr. MINSHALL. You said you came on in October and made a serious study of this.

Admiral CONNOLLY. That was the F–111, still with the Y engines in it, not truly representative of the airplane that the Air Force is going to fly as an attack airplane. The airplane I flew at Peconic on Friday does not yet have the canopy changes, the windshield changes in it. It had not been demonstrated by the contractor yet, past ——— Mach number. It had not been flown with the wing swept past ——— degrees, which they are going on to do with this No. 5.

Mr. MINSHALL. Then there are a lot of things about this bird that have not been checked out, is that correct?

Admiral CONNOLLY. This particular airplane.

Mr. MINSHALL. Let's stick to this. There are a lot of things about the F-111B that have not been proven or checked out. Is that a correct statement?

Admiral CONNOLLY. That is right.

Mr. MINSHALL. You have just listed some of them.

Admiral CONNOLLY. Yes, sir.

Mr. MINSHALL. But you ask in this budget for 20 aircraft, F-111B, of a bird that has not been checked out yet?

Admiral CONNOLLY. Of course, Mr. Minshall, I am up here defending the President's budget.

Mr. MINSHALL. You should be defending the Navy and the taxpayers as well, Admiral.

Admiral CONNOLLY. I am, sir. I am, indeed. The taxpayers have spent a lot of money on the F-111.

Mr. MINSHALL. They sure have.

Admiral CONNOLLY. If from this we can get a good, usable airplane for fleet defense, this is making the best of the money that has been expended.

Mr. MINSHALL. There is one big word in the statement you just made, and that is "if."

RESUMPTION OF FISCAL YEAR 1970 BUDGET HEARINGS

F-14A AIRCRAFT

Mr. SIKES. Are there further questions?

Mr. ANDREWS. Admiral, as I understand it, in order to go forward with this program, you need 12 planes?

Admiral CONNOLLY. We believe we need 12 planes. This is our careful evaluation of the need.

Mr. ANDREWS. And the question of 12 planes against six makes the unit cost cheaper for the 12 planes?

Admiral CONNOLLY. Sure.

Mr. ANDREWS. And the only thing before us is which fund will pay for the 12 planes; PAMN 6, R. & D. 6.

Admiral CONNOLLY. Yes, sir. We will do whatever this committee wants done.

Mr. ANDREWS. It is a matter of bookkeeping after all. It is the taxpayers' money.

Admiral CONNOLLY. I thought it might be more understandable if the 12 planes were in an R.D.T. & E. category rather than a production category. That was the basis of my coming forward with the suggestion that I did.

Mr. LIPSCOMB. If they are under production, is my understanding correct that $55 million goes into tooling?

Admiral CONNOLLY. That is true.

Mr. LIPSCOMB. If those aircraft are all under R.D.T. & E. are you still intending to put $55 million into production?

Admiral CONNOLLY. For tooling. We don't know how to make an airplane if we don't make tooling, sir.

Mr. LIPSCOMB. I am speaking of getting the production line ready.

Admiral CONNOLLY. That is right, but we have a lot of milestones in this program which——

Mr. LIPSCOMB. I think that the Navy ought to make this record extremely clear on that particular point because it is not my understanding that when you are doing R.D.T. & E. work that you are building the production line for the manufacturer. Until that plane goes into production, you get advance production going, but not to this extent, on an R.D.T. & E. program.

I don't know why you think you have any assurance that the Congress is going to go ahead with a major procurement in the F–14. We may want to. We may need it, but what assurance do we have now? This is the whole argument of the day and it just so happens the F–14A is the aircraft we are talking about.

The Congress must continue to take a look to see that they fly before we buy.

PRODUCTION GUARANTEES ON F–14

Admiral CONNOLLY. We have a whole series of milestones in this program that we are going to watch and the minute any one of them is over, we are perfectly capable of stopping the proceedings. We are not committed to building a bunch of airplanes coming down the line that we can't stop.

Mr. LIPSCOMB. The thing that concerns me the most in this is that you have plans to change the engine and you don't even have the engine for the airframe right now that you intend to finally use.

You say this doesn't concern you?

Admiral CONNOLLY. This is no different from buying a new airplane in which you have a new engine—now, the F–15 is going to come along here and they are going to have a new airframe and a new engine and both are going to be in the same airplane.

Mr. LIPSCOMB. This budget contains many modifications. This justification has them. We just got through talking about some modifications. You are bound to have them but this committee told you at the outset on the F–14A, we are going to watch it like a hawk and I certainly encourage the committee to continue to do this. And I know how badly you need a plane.

Mr. SIKES. Provide for the record a listing of the guarantees that you are writing into this program to insure that this won't be wasted money and fruitless effort.

Admiral CONNOLLY. Yes, sir.

(The requested information follows:)

There are a number of guarantees set forth in the Grumman aircraft contract which will eliminate the possibility of wasting money. Generally, these guarantees are in the areas of cost and performance. The airframe contract contains performance guarantees which the contractor is required to meet. The most significant ones are:

1. Weight empty
2. Acceleration
3. Specific range
4. Approach speed
5. Maintainability
6. Mach number
7. Supersonic combat ceiling
8. Maneuvering capability
9. Rate of climb
10. Fuel flow

The first five elements listed above are considered to be the most important and, as such, are included in the performance incentive arrangement in the R. & D. contract. In the cost area, the R. & D. contract includes a target price, a ceiling amount, and a sharing by Government and contractor of the costs between target and ceiling. In no event is the Government liable for more than the ceiling amounts. In addition, there is a sharing of cost savings below target.

Further, the contract includes maximum prices for the production aircraft, if such aircraft are ordered, which are negotiable downward only. At no time does the Government's maximum termination liability exceed the amount of funds obligated.

In regard to performance, the contract incorporates a detailed performance specification, a requirement for contractor demonstration of performance achieved, the technical data requirements and for a management and reporting system which provides continuing performance, cost, and schedule information. All of these are the minimum requirements which must be met within the price ceilings established.

With respect to the question concerning the fruitfulness of the effort, it should be noted that, generally speaking, the major risk inherent in an aircraft development is the concurrent development of a new engine, a new avionics system, and the airframe. This is not the case in the F–14 program because we have in existence today a proven TF–30 engine and a developed avionics system (AN/AWG–9). The use of these known components greatly increases the probability of success in this development by reducing integration risks.

AIRCRAFT ENGINES

Mr. SIKES. Turning to aircraft engines, a February 1969 GAO draft report on spare aircraft engine requirements estimated that the fiscal year 1969 planned procurements of new aircraft engines could have been reduced by about $35 million by eliminating duplicate requirement computations for similar or identical contingencies.

Specifically, GAO found that the Navy and the Air Force, in computing requirements for spare aircraft engines, included both a safety factor and a depot stock factor which essentially provided for the same type of contingencies.

Furthermore, studies have not been performed to determine the necessity for or the validity of these factors used in the requirement computations.

Have you had an opportunity to study this criticism?

Admiral CONNOLLY. Yes, sir. We have a position paper on it.

Mr. SIKES. What are your comments?

Admiral CONNOLLY. Neither the Navy nor OSD agrees with the GAO that duplicate quantities of spare engines were included in the requirements computation, nor that the $35 million reduction in fiscal year 1969 procurement could be realized by eliminating the stated duplication.

The Navy/OSD cannot support the conclusion of GAO that the depot stock level factor and the base safety level factor are duplicative and, accordingly, produce excess spare engine stocks.

The Navy/OSD position is that the GAO has assumed that the base safety level factor provides protection for the complete base repair cycle and the complete depot overhaul cycle including order shipment assembly time. This is not the case.

Notwithstanding the above OSD/Navy position, we do plan to fully explore the possible advantages of converting the depot-stock level now fixed at 15 days to a variable type of safety level based on the statistical-probability technique. Providing a decision is made in this regard, the Navy would probably assign an 85 to 90 percent confidence level in the quantity of spare engines in the depot pipeline. The net effect of engine requirement reductions through adoption of 85 to 90 percent competence left in the depot repair cycle has only been partially evaluated.

Our estimate is that there would be no substantial difference in spare-engine requirements because of the complexity of spare-engine computations and because of the fast, helpful exchanges of views on this subject by our respective staffs, further discussion of details on this subject are planned.

SPARE-AIRCRAFT ENGINES, FISCAL YEAR 1970 PROGRAM

Mr. SIKES. How much is in the fiscal year 1970 budget for spare-aircraft engines?

Admiral GADDIS. A total of $60.171 million for 258 engines.

Mr. SIKES. Supply for the record the designation number and cost of each engine as well as the aircraft and model for which the engine is being procured.

(The information follows:)

Aircraft	Engine	Number of engines	Total (in thousands)
A-4M	J52-P-408	——	$4.250
A-6A	J52-P-8A	——	2.736
EA-6B	J52-P-8A	——	2.280
KA-6D	J52-P-8A	——	2.280
TA-4J	J52-P-8A	——	6.250
A-7E	TF41-A2	——	15.180
RA-5C	J79-GE-10	——	1.975
F-4J	J79-GE-10	——	4.938
UH-1N	T400-CP400	——	1.571
CH-46	T58-GE-16	——	5.031
T-2C	J85-GE-4	——	1.029
P-3C	T56-A-14	——	1.763
C-2A	T56-A-8	——	0
F-14A	TF30-P-412	——	6.780
CH-53	T64-GE-12	——	4.108
Total		258	60.171

Mr. SIKES. Of the total requirement for fiscal year 1970, how many are to meet safety-level factor and how many to fulfill a depot-stock factor?

Provide that for the record.

(The information follows:)

Of the total spare-engine requirement for fiscal year 1970, 28 engines are to meet the safety-level factor and 22 engines are to satisfy the depot-stock factor.

Mr. SIKES. For the record tell us the cost of the engines to be purchased to satisfy the safety-level factor and to satisfy the depot-stock factor.

(The information follows:)

The cost of the engines to be purchased to satisfy the safety-level factor is $5.604 million. The cost for the depot-stock factor is $4.049 million.

AIRCRAFT SPARE ENGINE INVENTORY

Mr. SIKES. How many spare aircraft engines are now in Navy inventory and what is their approximate value? You can provide that for the record and compare these figures with the similar figures for the last 5 fiscal years.

(The information follows:)

The current Navy inventory and the associated value for the spare aircraft engines with a comparison of similar figures for the last 4 fiscal years, 1965–68 are as follows. (Fiscal year 1964 figures are not available.)

AIRCRAFT SPARE ENGINE INVENTORY AND DOLLAR VALUE FOR FISCAL YEARS 1965-69

[Dollar amounts in millions]

	June 30, 1965, fiscal year 1965	June 30, 1966, fiscal year 1966	June 30, 1967, fiscal year 1967	June 30, 1968, fiscal year 1968	May 1 1969, fiscal year 1969
Engines	9,022	7,331	6,872	6,646	6,216
Dollar value	$675.0	$497.0	$539.0	$549.0	$574.0

Mr. SIKES Any questions on aircraft engines?

AIRCRAFT SUPPORT EQUIPMENT AND FACILITIES

Mr. SIKES. There is a request in this category for $99.1 million for fiscal year 1970. This is $3.6 million less than your fiscal year 1969 program.

INTEGRATED HELICOPTER AVIONICS SYSTEM

The production contract for the integrated helicopter avionics system for the CH–46 and CH–53 helicopter called for the technical data package to have been delivered in the fourth quarter of fiscal year 1968. Was this data package delivered on time, or has there been a slippage?

Admiral CONNOLLY. There was a slippage in production deliveries of SCNS (navigation portion of IHAS) occasioned by technical problems experienced during the first article tests. The contractor has now essentially completed the tests with approval expected by 30 May 1969. The data package (comprising drawings and specifications) will then become available early in the second quarter of fiscal year 1970.

AIRCRAFT ENGINE COMPONENT IMPROVEMENT

Mr. SIKES. Admiral Connolly, your statement indicates that $43.9 million of the above request is for component improvement. How much of this amount is for continuing engineering effort necessary to improve and uprate aircraft engines?

Admiral CONNOLLY. None. All of the $43.9 million requested for component improvement in fiscal year 1970 is for product support. Product support is effort directed toward improvement of the engine within the limits of the engine model specification. These improvements include the correction of installation and operational problems and the improvement of durability, reliability, maintainability, serviceability, and producibility.

Mr. SIKES. What engines will be included in your fiscal year 1970 component improvement program?

(The requested information follows:)

[Dollars in millions]

Engine model:	Fiscal year 1970
T53-1-11/13	———
T56-A-8/10/14/16	———
T58-GE-8/10/16	———
T63 (Commercial version)	———
T64-GE-6/12/16	———
T76-G-10/12	———
T400-CP-400	———
J34-WE-34/36/48	———
J48-P-8	———
J52-P-6/8	———
J57-P-4/6/8/10/16/20/22	———
J65-W-16/18/20	———
J79-GE-8/10	———
TF30-P-6/8/12	———
TF41-A-2	———
R1820, R3350	———
Starters	———
Propellers	———
Electrical power systems	———
Total	43.900

ENGINES FOR TACTICAL TYPE AIRCRAFT

Mr. SIKES. I would like to return to our investigative staff report on engines for tactical type aircraft. One of the many interesting things learned from this study was the fact that for years funds for further engine development, upgrading engines, and component improvement have been obscured in production engine prices. Does this not amount to the use of procurement funds for essentially research and development effort?

Admiral CONNOLLY. Research and development as used in the Navy involves the design, development, test, and evaluation of a completely new end item such as an engine. Component improvement is limited to the redesign, development, test, and evaluation of specific components, assemblies, sub assemblies, or individual parts of an existing engine type for the purpose of eliminating problems that have been encountered or improving the assembly, component or individual part.

Mr. SIKES. Are there any statutory or regulatory prohibitions circumvented by this practice?

Admiral CONNOLLY. The fiscal year 1970 component improvement program includes funds only for product support. Budgeting for product support costs in the procurement appropriation is consistent with Department of Defense Instruction Number 7220.5, January 24, 1968, entitled "Research and Development Program/Budget Costs-Definitions."

PRODUCT IMPROVEMENT VERSUS NEW DEVELOPMENT

Mr. SIKES. The committee understands that the Navy designates engineering effort designed to improve performances within the engine specification as "product support," and effort designed to exceed the specifications as "product improvement." Both types of effort are funded in the production engine contract using procurement money. Is not product support nothing more than providing a contractor additional funds to complete a development to contract specifications?

Admiral CONNOLLY. The Navy does segregate component improvement into "product support" and "product improvement" as stated in the question. In the cases of Allison and General Electric engines, the procurements are made through the Air Force and are partially included in the production contract. In the case of Pratt & Whitney, both "product support" and "product improvement" are now procured on separate contracts and are not included in the production contract. Prior to January 1, 1968, the costs of all of the "product support" effort and a part of the "product improvement" effort were included in production engine and spare parts prices and thus funded in the production contract using procurement money. Even though this work is now procured under separate contract, it is still funded with procurement money.

Product support does not provide funds to complete a development to contract specifications. Product support provides funds to improve an engine beyond the minimum requirements of the development contract, but within the performance specified in the engine model specification.

Mr. SIKES. Should not product improvement be an R.D.T. & E. effort funded from R.D.T. & E. funds?

Admiral CONNOLLY. Funds for engine product improvement are properly included in the PAMN appropriation because the effort is directed toward improvement of the performance of an existing engine. R.D.T. & E. funds are used for the development of a new engine through qualification of the existing model.

Mr. SIKES. Does not such product improvement effort inhibit competition for the development of a better engine?

Admiral CONNOLLY. Competition in major and expensive items of military equipment takes place at the initiation of development. It is not economically sound to introduce further competition each time a new model of an existing aircraft or engine type is developed. Insofar as aircraft engines are concerned, the engine which is selected initially for use in a particular aircraft generally remains in that aircraft throughout its life. The only time consideration given to changing engine types in an existing aircraft is when there is some compelling reason dictating such a change and when another suitable engine type is available.

For the reasons given, therefore, it is considered that this program provides a means for exploiting the potential of existing engines to the maximum extent practical. From a practical standpoint, the component improvement program does not eliminate competition.

Mr. SIKES. According to the staff study, the component improvement funding trend for the Navy and the Air Force for the period 1957 through 1969, indicates that $1.3 billion had been funded directly and about $1.4 billion had been funded indirectly for this purpose. Inasmuch as the $1.4 billion funded indirectly had been included in production engine prices, it would appear that production engine prices were inflated by that amount over the 13-year period. Do you not consider these indirect efforts of sufficient importance to have warranted competition with other projects in the R.D.T. & E., and procurement appropriations?

Admiral CONNOLLY. In the case of Navy procurements of Navy and

Air Force development and component improvement from Pratt and Whitney for the period 1957 through 1967, the total indirect funding has been about $527 million. To that degree, it may be stated that production engine and spare parts costs have been inflated over that 11-year period. This $527 million, which was used to cover a portion of development and product improvement costs, was matched by an amount three times as large on direct contracts and thus, the projects did compete with other projects in the R.D.T. & E. and procurement appropriations.

This portion of the $527 million which was used to cover product support costs did not compete with other projects in the procurement appropriations in a strict sense; however, the product support work was a necessary ancillary to the successful operational use of the production hardware so including such ancillary costs in the production hardware prices appears to be one step closer to indicating total costs of that hardware.

There have been no indirect costs for development, product improvement or product support in production prices at Pratt & Whitney since January 1, 1968. All such military work is procured under direct contracts since that date.

In summary, it is considered that all such indirectly funded effort competed to the degree desirable and practicable with other projects in the R.D.T. & E. and procurement appropriations. To assure such competition and to provide increased visibility, however, the indirect funding practice has been discontinued by the Navy at Pratt & Whitney beginning January 1, 1968.

Mr. SIKES. Does this practice not obscure from Congress the expenditure of funds for such nonproduction engineering effort in production engine prices?

Admiral CONNOLLY. The information on indirect funding for component improvement is provided to the Office of the Secretary of Defense and the Bureau of the Budget as budget justification material.

In the case of Pratt & Whitney, the practice was discontinued as of January 1, 1968, as a part of the overall change in contracting practices. This change, to improve visibility, has resulted in an increase in cost to the Government for such engineering and development effort. The increase in cost for the engineering and development effort is largely or totally offset by a corresponding decrease in the prices of production engines and spare parts.

PERPETUATION OF EXISTING MARKET

Mr. SIKES. Does the component improvement of existing engines perpetuate existing military engine markets and in some cases tend to eliminate new military engine markets? For example, the Pratt & Whitney J52 engine after component improvement replaced the Curtis Wright J65 engine.

Admiral CONNOLLY. It is true that component improvement tends to perpetuate existing military engine markets, because it provides a means of exploiting any given engine type to the maximum extent feasible. This is attractive from a practical and economic point of view for the reasons discussed hereafter.

Historically, aircraft tend to improve in capability and grow in weight during their operational life. As a result, modest improvements in engine performance become necessary. Such improvements in engine performance are generally obtained through product improvement of the existing engine type for the following major reasons:

a. Improvement of the existing engine type is less costly than the development of a new engine; generally in the order of one-tenth to one-third of the cost of a new engine depending on the magnitude of the improvement desired.

b. Improvement of the existing engine type requires considerably less time than development of a new engine. Most product improvement tasks require from 1 to 2 years while a new engine development requires 4 to 5 years.

c. Associated airframe changes are generally appreciably less costly and time consuming when using an improved model of the existing engine type than when a new engine is used.

d. Logistic support costs are usually much lower when using an improved model of the existing engine than would be the case if new engines were used.

This does not mean that other engines are not considered each time product improvement requirements are generated; however, for the reasons given, such consideration generally is limited to engines already in existence or under development for other planned uses.

In the example cited in the question, the new J52–P–6 which had been developed for use in the A–6 replaced the older J65 which had been used in earlier models of the A–4 aircraft. The major reasons leading to this change in engine type were the higher rating and better overall performance characteristics inherent in the newer J52 and the impracticability of improving the J65 further to make it competitive with the J52 insofar as performance was concerned.

Mr. SIKES. Is it not equitable for engine manufacturers to share in the costs of such improvements which perpetuate engine sales to the military and, in some cases, contributes to the development of commercial versions?

Admiral CONNOLLY. The Department of Defense policy relative to cost sharing in research and development procurements is covered in ASPR 4–110. In substance, it is the policy to use cost sharing only when there is a high probability that the contractor will receive substantial present or future commercial benefits. It is considered logical to follow the same policy insofar as continuing engineering costs are concerned. In consonance with this policy, it has been the practice of the Navy to seek cost sharing of aircraft engine development and continuing engineering costs in those cases where the engine has current or potential future commercial application.

COST SHARING ON TF–30 ENGINE

Mr. SIKES. Up until 1968, it was Navy policy to obtain contractor cost sharing of its R.D.T. & E. engine development programs, including product improvement and product support. In reviewing the approved military program with Pratt & Whitney for 1966 and 1967, our investigative staff noted that there was no cost sharing of the product support program for the TF–30 engines totaling $66.3 million

nor in development costs of the TF–30–P–12 engine, the total program in which was $44.1 million for those 2 years. Why were these costs not shared by the contractor in accordance with the Navy practice?

Admiral CONNOLLY. It has been and is the Navy policy to obtain contractor cost sharing of its engine development, product improvement and product support programs in consonance with the Department of Defense policy as stated in ASPR 4–110. In substance, it is the policy to use cost sharing only when there is a high probability that the contractor will receive substantial present or future commercial benefit. In the case of Navy contracts with Pratt & Whitney, it is the practice to obtain cost sharing of development and continuing engineering costs in those cases where the engine has current or potential future commercial use.

In the case of TF–30 engine product support during calendar years 1966 and 1967 as well as the TF–30–P–12 development, the TF–30 has no current commercial use nor is it considered to have potential for future commercial use. For this reason, cost sharing was not obtained.

It is noted that the $44,149,303 in the 1966 and 1967 approved military program at Pratt & Whitney reflects repetition in 1967 of $12,500,000 shown on the 1966 program. In addition the final phase of this program in 1968 cost $5,719,155 for a total cost of $37,368,458.

Mr. SIKES. According to a Navy official, the degree of share or the exclusion from share of specific engine models in particular years has been determined between the Propulsion Division of the Naval Air Systems Command and Pratt & Whitney. The bases for the specific sharing arrangements, however, had not been documented in writing to either the contracting office within the Naval Air Systems Command nor to higher levels within the Navy. In the stated absence of documenting specific sharing arrangements, has Navy management had an awareness of the reasons for decisions in this complex area when granting approval of the arrangements?

Admiral CONNOLLY. As stated in the response to the previous question, cost sharing is based upon the present or future commercial benefits as prescribed in ASPR 4–110. The Propulsion Division of the Naval Air Systems Command is responsible for making the determination concerning whether or not each engine type offers present or future commercial benefits. The amount of cost sharing in those cases where cost sharing is in order is a matter of negotiation by the Contracts Group of the Naval Air Systems Command based on the facts concerning each particular engine.

While written documentation to higher levels within the Navy discussing specific cost sharing arrangements for each engine type prior to January 1, 1968, may not be available, the basis for the cost-sharing practices had been discussed at levels as high as the Assistant Secretary of the Navy and the Assistant Secretary of Defense (installations and logistics).

Since January 1, 1968, all aspects including cost sharing of each contract covering development, product improvement or product support must receive official approval by the Chief of Naval Material in the form of a business clearance.

Mr. SIKES. What has changed since 1968 to influence the decision that component improvement of engines with military application should not be cost shared by the contractor?

Admiral CONNOLLY. There has been no change in component improvement cost sharing practices of the Navy at Pratt & Whitney since 1968. Cost sharing has been employed on all engines which have current or potential future commercial application both prior to and subsequent to the change in contracting practices which became effective on January 1, 1968.

Mr. SIKES. What supports the Navy opinion that value received for product support and product improvement of engines is commensurate with the cost?

Admiral CONNOLLY. Information concerning the relative value of product improvement is contained in the response to the question concerning whether or not component improvement tends to perpetuate existing military engine markets and eliminate competition. With respect to product support, it is the practice of the Navy to release aircraft engines to production on completion of a 150-hour endurance test and certain other prescribed component and environmental tests. At this stage, the engine does not represent a fully and completely developed piece of hardware but rather an article which has been developed and demonstrated to the degree that it is considered reasonable to release it to production and operational use. This is done with full knowledge that development refinement must be carried out on a continuing basis since it is only through production and operational use that installation, operational, durability, reliability, maintainability and producibility problems beyond those detected during development on a test stand can be discovered. It is possible, of course, to extend the engine development cycle so that some of the problems could be discovered and corrected prior to production release; however, many problems and particularly those related to the installation effects, operational usage effects and production methods and practices would still remain for correction after production is underway. Further, such action would delay the realization of the performance and other advantages of the new engine. It is concluded, therefore, that the current practice, which is a compromise aimed at attaining early availability of a reasonably satisfactory engine, is sound from the standpoint of both operational capability and economics.

Obviously, current Navy practice also is based on an adequate product support program for the engine to permit the rapid and effective correction of engine problems as they are disclosed. Particularly in the case of safety of flight problems, failure to correct the problem means grounding of the aircraft. An example of this type of problem is the catapult steam ingestion problem encountered with the A-7 aircraft. This unforeseen problem threatened the entire aircraft program until a solution was developed under the engine product support program. Two more examples of the benefits gained from product support are shown by the extensions in allowed time between overhaul for the TF30-P-6 and TF30-P-8 engines.

TF30-P-6		TF30-P-8	
Date	*Hours*	Date	*Hours*
October 1965	150	October 1967	150
December 1966	300	September 1968	300
October 1967	450	December 1968	450
August 1968	600		

The attainment of the extensions in allowable operating time between overhauls results in substantial savings since less engines are required in the inventory and overhaul and spare parts costs are reduced. One other example of the benefits of product support is the smoke abatement program on all combat engines. Smokeless burners developed under product support will greatly reduce engine exhaust smoke and thus combat losses.

Mr. SIKES. The Navy opinion that value received is commensurate with the cost is inconsistent with the statement made in an Air Force document to the effect that what it cost to fix a specific problem area on the J58 engine "is truly an unanswerable question."

Admiral CONNOLLY. We do not think that our opinion is inconsistent with the Air Force statement. The Navy has never stated, nor did we intend to imply, that the cost of fixing a specific problem area could be measured against identifiable dollar benefits. We do feel, however, that the value received from the overall component improvement program is consistent with the expenditures in that program.

Our belief is based on several factors. One pertinent factor is the Navy practice of releasing aircraft engines to production upon completion of a 150-hour endurance test. This practice represents a compromise between funding further test stand development versus gaining production and operational experience. Production and operational experience results in expenditures of product support dollars—which is fully anticipated. On the other hand, further testing of the engine, in a nonoperational environment, would dictate increased funding for testing as well as expending product support funds once the engine becomes operational.

Another factor of importance is that more than 95 percent of the funds expended for product support are to remedy problems reported by the fleet. Thus we are spending money to correct actual operational problems; we are not just doing "blue sky" engineering which may or may not improve engines.

Insofar as measuring costs of specific improvements against benefits, this is extremely difficult. Although we have attempted to improve our accounting producers in this area and the estimated cost of each improvement is weighed against the potential benefits before engineering is begun, specific cost information is not now available. Considering the benefits of, for example, a safety of flight improvement, aircraft and possibly lives will be saved. In extending the time between overhaul of an engine, among the benefits would be decreased procurement of spare engines, decreased procurement of spare parts, decreased costs at a rework facility, decreased transportation costs, and increased aircraft flying time. In solving a problem such as catapult steam ingestion encountered with the A–7, the benefits were that a serious problem which threatened the entire A–7 program was averted.

Mr. SIKES. In arriving at the Navy opinion, were costs segregated for the resolution of the following problems with the TF–30 engine: Increase in tolerance of the TF–30–P–1/3 engine to accommodate the severe inlet distortion in F–111 aircraft; improvement in allowable operating time between overhaul for all engines; uprating and redesign of TF–30–P–1A to TF–30–P–12?

Admiral CONNOLLY. Costs were not segregated for work involved with increasing the tolerance of the TF-30-P-1/3 engine to accommodate the severe inlet distortion in the F-111 aircraft nor for improvement in allowable operating time between overhaul for all engines. Costs for redesign and improvement of the TF-30-P-1A to the TF-30-P-12 were segregated since this work was covered by a separate product improvement contract. All such costs were considered in arriving at the Navy opinion.

CONTRACTOR INDEPENDENT RESEARCH, OR CONTRIBUTING ENGINEERING

Mr. SIKES. The committee understands that contributing engineering is effort aimed at advancing the overall state of the art and includes basic and applied research on advanced materials, fuels and lubricants, components, and the propulsion system. It is funded indirectly with procurement funds within production engine prices. Prior to 1968, both the Navy and Air Force utilized contributing engineering, in lieu of independent research and development because it permitted tighter controls to be exercised by the government.

Navy officials advised our investigative staff that contributing engineering programs in the engine prices with Pratt & Whitney ranged from $7.5 to $10 million annually from 1958 through 1967.

In lieu of contributing engineering the Navy negotiated with Pratt & Whitney in 1968 an independent research and development agreement which will permit allocation of up to $30 million to military engine production. This is three times as great as that provided in any year from 1958 through 1967 under the more tightly-controlled contributing engineering program.

What influenced the Navy to enter into an independent research and development agreement with Pratt & Whitney? Was it because the Navy expected that component improvement dollars would decrease?

Admiral CONNOLLY. The allowance of the costs of a contractor's independent research and development program as an indirect cost in government supply and research contracts with commercial organizations is a policy of the Department of Defense as stated in ASPR 15-205.35. There is no such policy relating to contributing engineering programs. The sole reason for eliminating the contributing engineering program at Pratt & Whitney and substituting an independent research and development program in lieu thereof was to provide the same treatment to Pratt & Whitney as given to suppliers of other types of military equipment. The decision was not influenced in any way by the expectation that component improvement dollars would decrease. As a matter of fact, the elimination of the practice of indirectly funding a portion of the component improvement program at Pratt & Whitney as a part of the same overall change in contracting practices created the need for substantially more component improvement funds to place in direct contracts covering that portion of the effort that had previously been funded indirectly.

Mr. SIKES. Why does the Navy favor I.R.&D. when the Air Force believes the Navy agreement with Pratt & Whitney will increase cost to the Air Force $11 million in the first year?

Admiral CONNOLLY. The Navy prefers to treat aircraft engine con-

tractors in a manner similar to the treatment given the suppliers of all other types of equipment. The possibility that granting equivalent treatment may result in increased cost to the government does not appear to be a sound reason for failure to afford equal treatment to all contractors. Our belief is that, until such time as an annual report of contractor costs for calendar year 1968 is available, it is not possible to determine the effect of any of the changes on cost to the Government or to the military service.

Mr. SIKES. The Air Force prefers the tighter control of data rights and of engineering effort offered by the traditional method of including contributing engineering in engine prices. Rights in data are not normally acquired under independent research and development. How does the Navy plan to obtain data rights under the new agreement?

Admiral CONNOLLY. The policy of the Department of Defense relative to rights in technical and other data is described in ASPR-9-202.2. In view of the facts that: (1) the Navy limited contributing engineering effort to work of a basic or applied research nature and (2) that any technical data developed under the contributing engineering program did not result directly from performance of experimental, developmental or research work which was specified as an element of performance in a Government contract, the Navy did not acquire unlimited rights in data produced under the contributing engineering program. Since the same facts apply to data emanating from the independent research and development program, the result will be the same.

In view of the Department of Defense policy, it appears that the Government is not entitled to unlimited rights in data developed under a contributing engineering or independent research and development program when the costs of such effort are included in prices as an item of indirect cost.

AIRCRAFT INDUSTRIAL FACILITIES

Mr. SIKES. Turning to "Aircraft industrial facilities," your statement, Admiral, indicates this year's request of $16.9 million for this area does not include any brick and mortar facilities of direct cost to the Government. Does it include any money for design of production facilities?

Admiral WALKER. No, sir; it does not. I would like to suggest, Admiral Connolly, that Mr. Lewis is here.

Admiral CONNOLLY. Mr. Lewis is our expert in this area, Mr. Sikes.

Mr. SIKES. Mr. Lewis, will you answer the question?

Mr. LEWIS. This does not include any funds for design of new facilities.

LEASEHOLD IMPROVEMENTS AT GOVERNMENT-OWNED PLANTS

Mr. SIKES. Are there any funds in this request for brick and mortar facilities which are of indirect cost to the Navy?

Mr. LEWIS. No, sir; not in this line item.

Mr. SIKES. And where would they be other than in this line item?

Mr. LEWIS. Mr. Chairman, if a contractor elects to build or construct facilities on Government property or on his own property, an appro-

priate allowance is made against depreciation and a writeoff is made against supply contracts representing the business that he does.

To that extent, there will be some charges in the supply contracts under the appropriation which buys our aircraft, engines and so forth.

Mr. SIKES. Can you provide for the record specifics to be sure what you are talking about?

Mr. LEWIS. Yes, sir.

(The information follows:)

Over the past several years contractors have been authorized to construct facilities as leasehold improvement with contractor funding at Government-owned contractor-operated plants. The costs of these items are capitalized and may be amortized as an allowable charge against Government procurement and R.D.T. & E. contracts in the same manner as facilities provided by contractors on private property. It is estimated that approximately $2 million may be charged as allowable writeoffs during fiscal year 1970 as a result of previously approved construction of this type.

PRIVATE CONTRACTOR INVESTMENT IN PLANT EQUIPMENT

Mr. SIKES. In its report on fiscal year 1967 DOD appropriations the committee discussed at length the industrial plant equipment inventory of DOD.

It was stressed at that time that the military departments could effect significant savings in this area by encouraging private contractors to invest their funds in plant equipment modernization. What studies have you made in approaching the overall problem discussed last year concerning this area?

Mr. LEWIS. Mr. Chairman, as we stated earlier, there are no funds earmarked for new facilities either brick and mortar or machine tools in keeping with the desire of Congress and the Department of Defense to require the contractor to furnish all such equipment.

Mr. SIKES. Has there been any response on the part of the contractors to indicate their willingness to participate more in this area than they have heretofore.

Mr. LEWIS. Yes, sir; I would say we have had responses.

Mr. SIKES. Can you provide examples for the record?

Mr. LEWIS. Yes, sir.

(The information follows:)

The following is a representative list of contractors who have provided their own facilities or have indicated a willingness to do so. These examples are in addition to construction and improvements provided by contractor funding at Government-owned contractor-operated plants as discussed elsewhere in this testimony:

HUGHES AIRCRAFT, TUCSON, ARIZ.

The contractor, bidding on the Phoenix missile program in 1967, requested Government facilities support in the amount of $1.8 million. By the Navy taking a firm stand, the contractor agreed to provide all necessary facilities without direct Government funding.

GENERAL ELECTRIC, WEST LYNN, MASS.

The contractor, in 1969, requested Government facilities support in the amount of $600,000 supporting production of the T-58-16 helicopter engine. When advised that, as a policy, Government facilities support would not be extended, General Electric Co. agreed to provide the necessary facilities.

UNITED AIRCRAFT CORP., EAST HARTFORD, CONN.

The contractor, since 1966, reportedly has invested in excess of $83 million in facilities expansion, a portion of which was for support of military aircraft engine production contracts. This was after several requests for Navy facilities funding, all of which were disapproved.

GRUMMAN AEROSPACE ENGINEERING CORP., BETHPAGE, N.Y.

The contractor, since 1966, reportedly has invested $42.2 million in production equipment acquisitions for expansion of plant capacity supporting military aircraft production.

NORTH AMERICAN ROCKWELL CORP., COLUMBUS, OHIO

The contractor, since 1966, reportedly has invested $6.5 million in numerically controlled machine tools modernizing the plant's capability and replacing Government-owned tools.

CONTINENTAL AVIATION AND ENGINEERING CORP., TOLEDO, OHIO

The contractor, bidding on the J69–T–6 turbojet engine program in 1968, requested Government's facilities support in the amount of $220,000 for installation in the contractor-operated Air Force-owned plant No. 65, Neosho, Mo. When advised that Government facilities support was against Defense policy, the contractor withdrew the facilities proposal.

In addition to encouraging contractors to provide all new facilities, each contractor holding Naval Air Systems Command sponsored facilities has been contacted with regard to replacement of such facilities with privately procured items; releasing the facilities, and/or purchase of facilities within the restrictions of current sale policies. These contacts have resulted in a decline in facilities holdings. Currently several sale proposals are pending completion which will further reduce the amount of Government-owned facilities in use by contractors.

Mr. SIKES. In March 1969, GAO completed a review of acquisition of industrial real property at five Government-owned, contractor-operated plants.

This review disclosed that since 1966 major new industrial facilities have been completed or are under construction at Navy weapons industrial research plants at the Bethpage and Calverton, N.Y., locations valued at $4.3 million and $1.1 million, respectively.

LIST OF LEASEHOLD IMPROVEMENTS AT GOVERNMENT PLANTS

The contractor operating these Government plants provided the funds for this construction and is recovering the cost by means of overhead charges to procurement and R.D.T. & E. contracts. These facilities were considered improvements to Government-owned property, and the construction of these facilities were not previously disclosed to the Congress in budget requests. Another $1.7 million worth of facilities were acquired in a similar fashion by the Navy at its industrial reserve ordnance plant at Pittsfield, Mass., through rearrangement and improvement projects. How many other facilities have been funded indirectly for the Navy in this manner over the past 10 years?

Will you answer that, Mr. Lewis?

Mr. LEWIS. We have approved construction by contractors on Government-owned property to the extent of $25 million in the past 10 years in this same manner.

Mr. SIKES. Provide a listing for the record.

(The information follows:)

The following is a listing of leasehold improvements indirectly funded by contractors for the Naval Air Systems Command at Government-owned, contractor-operated plants:

Authorized in 1960:	
Grumman, naval weapons industrial reserve property, (NWIRP), Bethpage, N.Y., radar test penthouse	$35,000
Grumman, NWIRP, Calverton, N.Y., rocket motor test facility (no leasehold improvements authorized in 1961)	20,000
Authorized in 1962:	
Grumman, NWIRP, Calverton, N.Y., addition of mezzanine in plant 6	75,000
Raytheon, NWIRP, Bedford, Mass., construction of AMRAD test facility	59,000
Authorized in 1963:	
Grumman, NWIRP, Bethpage, N.Y., construction of autoclave at plant 3	25,000
Raytheon, NWIRP, Bedford, Mass., installation of heating and airconditioning as part of alteration and addition to flight test facility	91,000
Grumman, NWIRP, Calverton, N.Y.:	
Installation of explosive forming facility	36,000
Construction of addition to hangar 4, plant 4	35,000
Authorized in 1964:	
Grumman, NWIRP, Bethpage, N.Y.:	
Addition to chemical milling building	35,000
Parking lot at Navy garage	50,000
Modification plant 5 hangar to clean room	900,000
Honeycomb area, plant 3	108,000
Addition to plant 5, lunar explority module final assembly area	1,300,000
Grumman, NWIRP, Calverton, N.Y., addition and modification to rocket engine and weapons firing facility	9,800
LTV, NWIRP, Dallas, Tex., propulsion system flow test lab	775,000
Authorized in 1965:	
Grumman, NWIRP, Bethpage, N.Y.:	
Construct air lock, plant 5	39,500
Flow coat addition, plant 3	400,000
LTV, NWIRP, Dallas, Tex., alterations and addition to low speed wind tunnel	325,000
Authorized in 1966:	
Grumman, NWIRP, Bethpage, N.Y.:	
Construct autoclave enclosure, plant 3	42,000
Addition to plant 3, flow coat	854,200
Improve receiving area in warehouse N	12,400
Addition to plant 3, press heat treat facility	1,143,000
Grumman, NWIRP, Calverton, N.Y.:	
High pressure airconditioning system, hangars 2 and 3, plant 7	192,000
Conversion of garage adjacent to hangar 1, plant 7, to avionics engineering center	85,000
LTV, NWIRP, Dallas, Tex., office building	1,950,000
Authorized in 1967:	
Grumman, NWIRP, Bethpage, N.Y., install freight elevator, plant 5	28,000
LTV, NWIRP, Dallas, Tex.:	
Addition to building 110, expansion of fuel calibration operation	130,500
Addition to building 105, paint strip building	146,950
8 runup line shelters	132,000
Expand employee parking lot	130,730
Machine shop and special projects manufacturing building	3,700,000
Addition to building 128, high pressure test and acoustic lab	520,871
Additional ramp area and support stations	894,000
Warehouse	496,000

Authorized in 1968:	
McDonnell-Douglas, NWIRP, St. Louis, Mo.:	
Waste lines from Navy building to tie into McDonnell industrial waste disposal system	$46, 144
6 25,000 KVA current limiting reactors	31, 000
Grumman, NWIRP, Calverton, N.Y.:	
Addicion to hangar storage building including improvements to existing building	122, 000
3d floor to addition to hangar 3, plant 7	235, 000
Raytheon, NWIRP, Bedford, Mass., Radome antenna for radio frequency circuits antenna range on components lab	58, 000
LTV, NWIRP, Dallas, Tex.:	
Warehouse	761, 040
Production hangar	2, 259, 390
Paint preparation building	282, 000
Office building	3, 080, 000
Tool fabrication building	1, 900, 000
Avionics buildings	1. 200, 000
Parking lot	140, 000
Grumman, NWIRP, Calverton, N.Y.:	
Dual fuel evaluation ramp	200, 000
Ammo storage magazines	50, 000
Total leasehold improvements	25, 140, 525

(CLERK'S NOTE: Data was not provided for fiscal year 1969.)

1970 LEASEHOLD IMPROVEMENT PROGRAM

Mr. SIKES. Is this a continuing program, or are you planning to do this in the fiscal 1970 program?

Mr. LEWIS. This is a continuing program, Mr. Sikes, and it refers back to your earlier question concerning the Government's ability to get contractors to provide all their own facilities. There will be some in 1970; yes, sir.

Mr. SIKES. At this point identify those for the record.

Mr. LEWIS. Yes, sir. These are tentative at this point, as you appreciate.

Mr. SIKES. Yes.

(The information follows:)

The following is a list of tentative leasehold improvements contractors plan to fund at Government-owned contractor-operated plants during fiscal year 1970:

Ling-Temco-Vought, Dallas, Tex.:	
Hot form and processing building	$2, 400, 000
Building 99 addition	210,000
Engine test cell	300, 000
Maintenance building	1, 700, 000
Hover test facility	40, 000
Water pollution controls	250, 000
Sewage plant expansion	425, 000
Parking lot and ramps	600, 000
Upgrade utility systems	2, 258, 000
Additional water storage capacity	290, 000
Total	8, 473, 000
Grumman Aerospace Engineering Corp., Bethpage, N.Y.:	
Construct boron fabricating facility	350, 000
Rehabilitate data acquisition structure	10, 000
Total	360, 000

Grumman Aerospace Engineering Corp., Bethpage N.Y., Engine test house	$130, 000
Total	130, 000
McDonnell-Douglas, St. Louis, Mo.:	
Expansion metrology lab	178, 500
Expansion tool grinding room	34 000
Total	212 500
Total, fiscal year 1970	9, 175, 500

NAVY POLICY ON FUNDING OF INDUSTRIAL FACILITIES

Mr. SIKES. Under military construction authorization acts, congressional review and approval is necessary for each construction project exceeding $25,000 in cost, except urgently needed projects costing not more than $200,000. Should not Congress have the benefit of review and approval of construction projects funded, either directly or indirectly, with procurement of R.D.T. & E. funds?

This was a policy matter. Do you want to answer it?

Mr. LEWIS. I do not feel that I should answer the policy question, that is whether you should do it or not.

We certainly can provide the information to you, sir. There is an important element of timing here.

The contractor is willing, or is in a position to put up his facilities in a timely manner. If we have to anticipate 2 or 3 years or at least 1 year in advance it would be impossible in many cases to do so accurately, because much of this construction results from the awarding of a contract as in the case of the F–14, for example. We could not have told you last year even what contractor was going to get this major program, much less what facilities he would be willing to provide with his own funds on our property or his own property. The timing is the thing that concerns us, sir, in having to come to you for a prior approval. We certainly have no objection to reporting to you on a month-by-month basis on what is going on and this would not impede our program.

Mr. SIKES. Very good. Thank you.

Admiral Connolly, for the record, tell us what is the Navy policy with respect to funding of industrial facilities through a contractor operating a Navy-owned plant?

Admiral CONNOLLY. Yes, sir. I will be happy to provide that for the record.

(The information follows:)

It is the general policy of the Navy that contractors provide their own facilities. Exceptions are approved for direct Government financing only when it can be clearly shown that a cost saving to the Government will result. Government financing might also be approved if the contractor is unable to finance the project or there is no commercial use for the facility, and/or there is an urgent requirement for timely delivery of military end items.

Mr. SIKES. What action has the Navy taken to assure that budget submissions to the Congress contain full disclosures of construction projects regardless of the manner in which they are funded?

Admiral CONNOLLY. I will be happy to provide that for the record.

(The information follows:)

All construction projects planned for placement on Government-owned land are described in Navy budgets, either for Mcon (military construction, Navy) appropriation, when Government installations are involved, or for procurement appropriations, such as PAMN (procurement of aircraft and missiles, Navy) when construction is required at a Government-owned, contractor-operated facility. The line item in the PAMN budget called new production facilities covers the purchase of both new construction and new equipment. No funds for aircraft new production facilities were requested nor funded by Naval Air Systems Command for fiscal year 1969; also no funds for aircraft new production facilities are being requested for fiscal year 1970.

As has been previously stated, those facilities funded by contractors at Government-owned industrial plants cannot be anticipated readily and for this reason cannot realistically be identified in budget submissions. As pointed out in the GAO report, there is no current requirement to report this type of tentative construction to the Congress.

OTHER PRODUCTION CHARGES

Mrs. SIKES. Under "Other production charges," there is a request for $38.3 million. I would like for the record a tabulation showing the uses to be made of these funds.

Admiral CONNOLLY. The following reflects the fiscal year 1970 budget request for "Other production charges," as shown on this table:

Other production charges

[Dollars in thousands]

Item	*Cost*
Government-furnished equipment for technical training and trainers	$3,000
Production/modification of WST's and OFT's for weapon system not in the current procurement plan	5,000
Government furnished equipment production support	10,000
Cameras:	
Aerial (REWSON)	1,800
Other	500
Special support for E–2A aircraft	11,500
Transportation	6,500
Total	38,300

Mr. SIKES. Admiral, tell us what is meant by the sentence in your statement: "In addition, it provides support for undelivered aircraft procured with prior year funds"? Does this refer to cost overruns? If not, what does it mean?

Admiral CONNOLLY. New special support equipment requirements not previously known for aircraft still being produced but not in the current year plan are budgeted in budget activity 7. These special support equipment costs are budgeted in activity 7 because there is no aircraft procurement program in the current year that they can be charged to.

Mr. SIKES. Does this sentence refer to cost overruns?

Admiral CONNOLLY. No, sir.

Mr. SIKES. Are there questions on other production charges?

Mr. LIPSCOMB. Admiral, I did not quite understand that explanation in regard to undelivered aircraft procured in prior years—$38.3 million.

Admiral CONNOLLY. It may be that I did not answer that. Maybe I do not know the answer to it very well. Can somebody help me with it?

SPECIAL SUPPORT COSTS ASSOCIATED WITH OUT OF PRODUCTION AIRCRAFT

Admiral GADDIS. It is my understanding, Admiral, that we are speaking here to special support equipment in support of an operating aircraft program in a fiscal year when that aircraft program is not contained in the procurement request.

As you recall, sir, a part of the unit cost of aircraft includes the special support equipment for the sites from which that aircraft operates. If you have to open up a new site for an aircraft not in a procurement program, the special support equipment is then budgeted in this activity. That is the principal source of the requirement as stated in this activity.

Admiral CONNOLLY. An example is the CH–53, which we are not buying this year. We do not have any part of that to charge it to.

Another one is the E2A. We have $11.5 for special support for the E2A. We are not buying any E2's in fiscal 1970.

Mr. LIPSCOMB. According to your justification book you have $3 million for Government-furnished equipment—GFE—for trainers. What trainers? This is on page 1–28 of the justifications.

Admiral GADDIS. This line item procures representative Government-furnished equipment items in support of the Navy class A and B technical training schools and Government-furnished equipment to update aircraft trainers for out-of-production aircraft such as the S–2, F–8, A–3, SH–3 and P–2 aircraft.

Mr. LIPSCOMB. And for the modification of trainers, $5 million?

Admiral GADDIS. That would be for updating trainers for out-of-production aircraft. This program is tied to the aircraft modification program in that it incorporates changes to the trainers relative to the changes that are programed for the aircraft in the mod program.

Admiral CONNOLLY. These are trainers that are kept up to the changes that take place in the airplane.

Mr. LIPSCOMB. Which ones?

Admiral GADDIS. In this case we are talking to several airplanes; F–8's, S–2's, E–2's, and SH–3, for example.

Mr. LIPSCOMB. GFE production support, $10 million.

Admiral CONNOLLY. Testing services, vendor publication, field and lubrication at vendor's manufacturing plants, and visual inspection and repair of Government equipment.

Mr. LIPSCOMB. Cameras and special support equipment and transportation totals $38.3 million.

Admiral CONNOLLY. I will be glad to spell that out in complete detail on each of those items. I cannot do it here. I don't know it.

Mr. LIPSCOMB. Very well.

(The information follows:)

		Millions
Other production charges		$38.3
Government-furnished equipment (GFE) for technical training and trainers		3.0
Requirements for formal schools: [1]		
AN/APS-88	$210,000	
AN/AQH-1	162,000	
AN/AQA-1	12,000	
R-1170/ARR-52	18,000	
R-1047A/A	6,000	
AN/ALD-2	18,000	
AN/ULA-2	21,000	
AN/ASR-3	9,000	
Related to specific equipments:		
Misc Avionics/Inst Equip	$212,000	
T-58-GE-8B	268,000	
J-79-GE-8/10	215,000	
T56-A-10W	240,000	
Misc Ord/Arm Equip	210,000	
Misc Safety Surv. Equip	83,000	
AN/AQS-13	560,000	
AN/AQA-7	756,000	
Production/modification of trainers for weapon systems not in the current procurement plan		5.0
Requirements for formal schools: [1]		
A-3	$200,000	
H-46	300,000	
H-3	200,000	
S-2	300,000	
A-4	700,000	
A-6	500,000	
A-5	100,000	
A-7	400,000	
Related to weapon systems programs:		
F-4	$500,000	
F-8	200,000	
P-3	400,000	
H-53	300,000	
H-1	100,000	
P-2	200,000	
C-130	100,000	
Various training equipment changes related to more than 1 weapon system program	500,000	
GFE production support		10.0
Preproduction and production testing: Production reliability surveillance; qualification testing; technical and engineering assistance	$2,686,740	
Publications and printing: Allotment to Naval Air Technical Service Facility (NATSF), Philadelphia	1,250,000	
Production engineering services	541,000	
Production training courses	400,000	
GFE fuels, oils, and lubricants for engine production testing	200,000	
Royalty payments to Sperry Gyroscope Co., under autopilot license NOd 9571	160,000	
Repair of damaged or defective GFE	4,762,260	
Cameras		2.3
Gunsight camera kits for retrofit of F-4 and F-8 aircraft	$1,000,000	
Strike camera kits for attack aircraft	300,000	
Reconnaissance photography equipment for RA-5C aircraft and photo flash units and serial from cameras for P-3 aircraft	500,000	
Other cameras: Aerial camera instrumentation at various naval activities; procurement of 16-mm high-speed recording cameras; airborne framing cameras; 16-mm LoCam instrumentation cameras; special purpose camera lens; and SSE airborne photo pads	500,000	

[1] Schools supported: Naval Air Technical Training Centers (NATTC's), Memphis, Glynco, Lakehurst, Jacksonville, and Pensacola.

		Millions
Special support for E-2A aircraft		$11.5
Outfitting USS *Midway* [2] to accept E-2A	6,100,000	
Long leadtime funds for outfitting USS *Nimitz* for E-2A aircraft	1,800,000	
Nonrecurring costs for ASQ data link in E-2C aircraft development	3,600,000	
Transportation		6.5
1st destination transportation charges for aircraft, missiles, and related equipment procured under the PAMN appropriation.		

[2] The USS *Midway* during modernization removed aviation gasoline and negated the possibility of using E-1B aircraft. Therefore E-2A was called out to meet deployment scheduled in calendar year ———.

Mr. LIPSCOMB. That is almost $9 million greater than last year.

Admiral CONNOLLY. Yes, it is. However, in 1968 it was $40 million.

PROCUREMENT OF MISSILES, NAVY

Mr. SIKES. I would like to have the remainder of Admiral Connolly's statement on missiles go in the record at this point.

(The remainder of the statement follows:)

MISSILE PROGRAM

Mr. Chairman, I will now review the missile procurement request.

This program, which includes the last five of the 12 PAMN budget activities, provides funds for the fleet ballistic missile and navigation satellite programs; the procurement of all guided missiles and aerial targets, both air and ship launched; and the related programs of missile modification, spare parts, and industrial facilities support.

Air-launched missiles and aerial targets used by the Marine Corps are also included in this program.

BALLISTIC MISSILES

Polaris/Poseidon

To insure the continued effectiveness of the FBM system through the 1970's and into the 1980's, development of a new missile, Poseidon (C-3), was begun in fiscal year 1966. Poseidon is a new generation ballistic missile utilizing technology that has been developed during years of Polaris operational tests and patrols.

The principal new feature of Poseidon is its multiple independently targetable reentry vehicle (MIRV) system which will assure continued effectiveness of the FBM system in the event that the Soviets continue to deploy anti-ballistic-missile systems, or alternatively in the event that they markedly improve the quality and increase the numbers of their ASW forces.

Six Poseidon test shots have been conducted to date, all from the pad at Cape Kennedy (August–November 1968, January–April 1969). The first test flight successfully provided data comparable to that which was available only after the first nine of the Polaris (A-3) test shots. The second test shot was also successful. The success of the first two test flights has demonstrated the MIRV system and provides confidence in the design and configuration of Poseidon.

The third Poseidon test flight was unsuccessful ———. The fourth and fifth shots were successful. The sixth ———.

Test results to date indicate that Poseidon will be at least as reliable as Polaris and with the significant advantage of greatly increased flexibility of employment ———.

Poseidon will be deployed in 31 of the 41 existing FBM submarines. The first delivery of tactical Poseidon missiles is planned for August 1970 with initial deployment in January 1971.

Fiscal year 1970 funding of $491.5 million is requested for ——— Poseidon missiles. In addition, $26.4 million is requested for continuing flexible support of the existing Polaris systems in such areas as test equipment, surveillance components, and operational engineering support.

OTHER MISSILES

Air to air

Sparrow III (AIM–7E/F)

The Sparrow missile provides the F–4 aircraft with a supersonic, all-weather, air-superiority capability. This weapon has accounted for ——— MIG kills. It is also being used in our basic point defense surface missile system. In this role it is used for ——— surface-to-air defense, and has a limited surface-to-surface capability.

In past years, our efforts concentrated on improving missiles by increasing their range and maneuverability. ———. A modification providing this capability has been incorporated in the AIM–7E version and entered fleet use last summer. This ——— missile also improves shipboard basic point defense capability by its ———.

The AIM–7F is the latest configuration of this missile. It will, with the same ——— provide considerably increased performance and higher kill probability.

The fiscal year 1970 request for $36.1 million will fund a total of ——— SPARROW missiles. ——— of the 7E missiles and ——— of the 7F missiles are in this funding.

Sidewinder (AIM–9D)

The Sidewinder heat-seeking missile, first developed by the Navy in 1955, is the other primary air-to-air weapon in use by the Navy, Marines, and Air Force today.

Improvements over the years have provided a greatly expanded firing envelope. The current model, the AIM–9D, is effective from altitudes ——— feet, with a maximum launch range at altitude of about ——— nautical miles.

Sidewinder 9D enjoys a high reliability and has accounted for the destruction of ——— MIG aircraft in aerial combat over North Vietnam. Continued improvements and introduction of a solid state missile promise to more than ——— the current AIM–9D reliability as well as produce substantial improvements in maintainability and tracking performance.

This year's program includes $32 million for ——— AIM–9D missiles.

Air to surface

The air-to-surface missiles in this year's request are designed to seek out and home on enemy surface radars.

Shrike (AGM–45A)

Shrike has been used in combat in Southeast Asia by Navy and Air Force air units since mid-1965. Three modifications have resulted in a more sophisticated missile and an improved cockpit display for use by pilots of A–4, A–6, and A–7 aircraft in Shrike delivery.

Tactics have been improved with experience and combat results have been encouraging. ———. When our aircraft were operating in the high-risk areas prior to the bombing pause, we reached a monthly Shrike usage-rate in October 1967 of ——— missiles.

$9.5 million is requested for ——— Shrike missiles.

Standard Arm (AGM–78)

The Navy has developed Standard Arm, anti-radiation standoff missile as a supplement to Shrike. Basically the same as the surface-to-air medium-range "Standard Missile" currently in production, it is modified for air launch and incorporates ———. This missile, ——— has scored an estimated ——— hits out of the ——— total fired by the Navy against enemy SAM radars. It provides a significant increase in effectiveness and a greatly expanded firing envelope, and is intended to complement rather than replace Shrike.

Whereas the Shrike missile is used mainly by aircraft accompanying the strike group, ——— Standard Arm's ———.

Although the projected SEA requirements for Standard Arm (and equally true for Shrike) have been reduced since the bombing pause, current procurement rates barely equal the manufacturer's sustaining rates, and are necessary for inventory position regardless of hostilities, because of contingency needs.

Twenty-five million dollars is requested to fund ——— Standard Arm missiles.

Surface to air

Standard Missile (Medium Range (RIM–60A) and Extended Range (RIM–67A))

Standard Missile has two versions—MR and ER. The MR, or medium-range version, is the follow-on to the TARTAR and will be the anti-aircraft armament aboard three guided missile cruisers and 35 destroyers. The ER, or extended-range version, will be the follow-on to the homing TERRIER as antiaircraft armament aboard one guided missile cruiser, three aircraft carriers and 30 frigates. The ER Standard Missile is almost identical to the MR, except that the extended-range version incorporates an ——— for additional missile range.

These supersonic missiles incorporate solid state electronics and will provide improved capabilities for the fleet against maneuvering targets, multiple targets, surface targets, and low-altitude targets. The two versions of the missile use largely interchangeable components and are compatible with the TERRIER and TARTAR Weapons systems, although some shipboard modifications are required to take advantage of increased capabilities.

The at-sea technical evaluation of Standard Missile has been partially completed and resulted in approval for load out in January 1969. The operational evaluation, scheduled for ——— will test the missile with product improvements resulting from the technical evaluation.

$25.6 million is requested to fund the fiscal year 1970 production buy of ——— medium-range ——— NM missiles. $32.1 million is requested to fund ——— of the extended-range ——— missiles. In addition, $12.8 million is requested to fund fleet support requirements for other surface-to-air missiles in the inventory but no longer in production.

ASW

SUBROC

The SUBROC missile, a submarine-launched ASW weapon with stand-off capability, is rocket propelled, inertially guided and delivers a nuclear depth charge at extended ranges.

SUBROC represents the only submarine weapons system capable of ———. Additionally it is the only ——— ASW weapon in the submarine arsenal. Because of its nuclear payload, SUBROC has a large kill/damage radius. It is being introduced on all of our PERMIT/STURGEON class nuclear attack submarines as they become ready for fleet operations. Continuing operational training and a vigorous surveillance program insure our readiness to use this important weapon.

Procurement of ——— missiles is requested at a fiscal year 1970 cost of $25.6 million.

Aerial targets

The procurement program for aerial targets includes a variety of expendable and recoverable targets to provide realistic simulations of possible threats. These targets also provide for noncombat tests and exercises to develop, sustain, and measure the combat readiness of the operating forces. Also reflected are the increased target requirements to provide live firing of air-to-air missiles by all aircrews prior to deploying to Southeast Asia.

The fiscal year 1970 request includes continued procurement of two types of subsonic, Jet-powered recoverable target drones, and two supersonic models. Included are support funds for conversion of aircraft to drones, and for tow targets and special equipment used in evaluation programs.

$53.8 million is requested for this year's program.

SUMMARY

This chart summarizes the missile procurement and supporting programs in this year's request.

Budget activity 8 (ballistic missiles) provides funds for Poseidon production and fleet support of Polaris.

Budget activity 9 (other missiles) finances all missiles, other than ballistic, and include aerial targets and drones.

The modification of missiles is funded at $20.8 million under budget activtiy 10. This program is required to assure maximum effectiveness of missiles already in the fleet. It is designed to improve reliability and performance, and to increase maintainability through the incorporation of improved components.

Missile spares and repair parts are funded separately under budget activtiy 1, and are not included in the funds previously requested for each type of missile. The request of $36.8 million includes funding for investment and replenishment spares support, both for ballistic and other missiles.

$23.3 million is requested in budget activity 12 for missile support equipment and facilities. These funds provide for the procurement of satellites and boosters in support of the Navy's astronautics program; and also finance industrial production and testing machinery.

In summary, the missile program request for fiscal year 1970 is $851.3 million.

The last slide presents the overall PAMN program and financing. Total program cost is $3,350.5 million. The recoupment objective this year reduces funding by $75 million and, combined with $40 million in other available fundings, results in a balance of new obligational authority requested of $3,235.5 million.

Mr. Chairman, that completes my statement.

Ballistic Missiles

Mr. Sikes. Are there any further questions? If not, under "Ballistic missiles," your fiscal year 1970 program totals $517.9 million. This is $133.2 million more than the fiscal year 1969 program.

Under the Polaris A–3 missile you are requesting $26.4 million for support of the Polaris program in such areas as test equipment, surveillance components, and operational engineering support. I would like to have for the record a tabulation showing how this money will be spent.

(The information follows:)

Polaris A–3 requirements for fiscal year 1970 fall into two general categories. Polaris missile procurement costs total $5.7 million for test instrumentaton components, support of production facilities, and missile alteration hardware. Polaris operational support costs total $20.7 million for performance evaluation, surveillance, and reliability maintenance. The principal items included in the $5.7 million are $1.5 million for special-purpose instrumentation components for operational test programs, $1.2 million for capital maintenance of civil works and equipment for Navy facilities and NIROPs, and for procurement of equipment in support of operations at the Polaris missile facilities, $0.3 million for transportation and $1.0 million for missile alterations.

The $20.7 million for Polaris operational support is required to preserve the reliability of the presently configured FBM missile system. The amount requested reflects a decision that the previous level of support can be reduced prior to deployment of Poseidon. Requirements for support of presently deployed Polaris missiles are now principally in the areas associated with the maintenance of weapon system reliability and performance levels. Functional categories are:

a. *Performance evaluation, $9.2 million.*—Effort in this category is for the purpose of discovering problems or problem areas. It identifies design, operating and maintenance deficiencies which are, or are potentially, capable of reducing FBM weapon system performance, readiness, or reliability.

b. *Surveillance, $0.3 million.*—Effort relates to determination and evaluation of service life characteristics.

c. *Reliability maintenance, $11.2 million.*—Effort is for the purpose of determining solutions and corrective actions to problems encountered during the operation of the weapon system and equipments aboard ship, at shore activities and at training facilities, such as implementation of changes, system integration, and revision and maintenance of operational and design documentation.

Mr. Sikes. How many FBM submarines are now equipped with the Polaris A–3?

Admiral Smith. As of now there are 26 of the 41 SSBN's configured for the A–3.

Mr. Sikes. How many A–3's are in the Navy inventory now?

Admiral SMITH. Submarines or missiles? I don't have the number handy, however, I believe that there are approximately ——— A–3 missiles in inventory at this time.

Mr. SIKES. How many additional submarines are going to be equipped with the A–3?

SUBMARINE CONVERSION SCHEDULE

Admiral SMITH. Five are undergoing configuration changes from A–2 to A–3 and two are undergoing change from A–3 to the Poseidon C–3. Eight are configured for the Polaris A–2 weapon system. By the end of fiscal 1977 we are scheduled to have 10 SSBN's configured for the A–3, none for the A–2, and 31 configured for the Poseidon. I have a table year by year.

Mr. SIKES. I would like to have that for the record or for the confidential use of the committee, as the case may be.

(The information is classified and has been supplied to the committee.)

POSEIDON MISSILE

Mr. SIKES. Under the Poseidon, the fiscal 1970 budget request is $491.5 million for ——— Poseidon missiles. Are these all production quantities or will some be used for testing?

Admiral SMITH. Those are production quantities. They are not to be used in the development program. There are 11 for the development program, the fabrication of which will be completed in fiscal 1969. These were funded in the R.D.T. & E. appropriation.

Mr. SIKES. Is that included in the ——— that were bought in fiscal 1969 for $356.1 million?

Admiral SMITH. No. The ——— procured are under the "Procurement of Aircraft and Missiles, Navy," appropriation and are production missiles of the same type as the ——— we are requesting in 1970.

Mr. SIKES. You have conducted a total of six Poseidon test shots. How many are now scheduled?

Admiral SMITH. The contract for the development of the Poseidon missile is a 5-year cost plus incentive fee completion contract with the incentive fee for performance and reliability based on the test results of ——— preproduction and ——— production missiles. The target cost was based on a developmental flight test program of ——— missiles, which can be reduced at the discretion of the contractor, and also on our elaborate and extensive ground-testing program of the individual components of the missile.

In other words, there is not a fixed number of flight tests provided for in the plan.

Mr. SIKES. You say at the discretion of the contractor. I presume you mean with the consent of the Government?

Admiral SMITH. Yes. His performance is judged on the end product and not on the basis of the number of flight tests reaching that end product.

Mr. SIKES. How many test vehicles do we have and how many are under contract? Supply that for the record.

(The information follows:)

In fiscal year 1969 fabrication of ——— flight test missiles will be completed and fabrication of an additional ——— are scheduled for completion in fiscal year 1970. These missiles are procured under the R.D.T. & E. appropriation and are funded incrementally rather than fully funded as in the Procurement accounts. Of this total ——— have been expended to date.

Mr. SIKES. What is the total number of Poseidon missiles required to support the approved SSBN Poseidon conversion program?

Admiral SMITH. A total of ——— Poseidon missiles are required by October 1976 when the last shipfill is required for the 31 Poseidon force. This will provide ——— missiles for ship fills, ——— missiles for demonstration and shakedown operations and operational testing, and ——— for operational support. Additional missile quantities would be required in subsequent years for the follow-on operational test program which is currently authorized at ——— per year, and for overhaul demonstration and shakedown operations.

POSEIDON TEST PROGRAM

Mr. SIKES. What have been the success and failures in your six Poseidon test shots to date? Tell us something of your degree of confidence in the Poseidon as of this date.

Admiral SMITH. As you noted there have been six flight tests to date. The first two were successes. The third failed during ———. The fourth was determined ———. No trouble of this nature was encountered on the next three flights. The fourth and fifth flights were also successful ———.

Mr. SIKES. Is the fact that you have found the problem does not change the fact that the problem has developed. Have you lost any confidence that you originally had in the program, assuming that you had confidence in the program initially.

Admiral SMITH. Actually, both the nature of the faults and the number of faults has been very considerably less than we might reasonably have expected in this type of a development flight-test program. For instance, we were further along, and got more developmental information from the first Poseidon flight test than we had gotten from the first 8 of the Polaris A–3, which after the completion of that development program is now a highly reliable missile system.

In addition, there have been more extensive and more successful ground-test programs on Poseidon than on the A–3, the A–1, or A–2, or any part of this program previously.

Based on the general conservativeness of the design, the ground-test program, and the flight-test program, I am convinced that his missile will be at least as reliable as the A–3 if the development and production programs are carried out as now planned.

Mr. SIKES. Is it on schedule?

Admiral SMITH. Yes, sir.

Mr. SIKES. Poseidon is a far more advanced technology missile than Polaris, and also has a multiple-entry vehicle weapons delivery system.

Do you think that the testing is adequate to insure its operational feasibility?

Admiral SMITH. I think the program planned and proposed will so assure ———. As a development program it is much less risky than

the A–3 was. The guidance system that I spoke of ——— was state of art at the time of initiation of the program. Really, the only part of the program that was not state of the art at the time of initiation is the ———. For those two reasons we chose, and the contractor essentially said that he did not believe he could contract on any other basis, the contract for that portion and that portion alone—on a cost-plus-fixed-fee basis. I believe that the performance test results to date confirm that original assessment.

Mr. SIKES. Has the Poseidon contractor built any facilities on Government property using contractor funds?

Admiral SMITH. I know of none, sir.

Mr. SIKES. Check your record for confirmation if there have been such facilities and tell us how much they cost.

(The information follows:)

The Poseidon contractor has built no facilities on Government property using contractor funds.

Mr. SIKES. Questions on Poseidon?

Mr. ANDREWS. Admiral Smith, you say you have had six tests of the Poseidon?

Admiral SMITH. Six flight tests.

Mr. ANDREWS. You mean by that from submerged submarine?

Admiral SMITH. No, from a flight pad at Cape Kennedy.

Mr. ANDREWS. How many of the six would you say were right on the button?

Admiral SMITH. ———.

Mr. ANDREWS. ——— out of the six?

Admiral SMITH. Yes.

Mr. ANDREWS. That is ——— percent.

Admiral SMITH. As I mentioned, the sole fault in the ———.

Mr. ANDREWS. So out of the six you had ——— perfect shots. Are you satisfied with that record of ——— percent with the first six? Of course, you are not satisfied. Is that about what you expected?

Admiral SMITH. That is very much better than we expected.

Mr. ANDREWS. What are you shooting at, ——— percent perfection?

Admiral SMITH. We are shooting at about ——— percent reliability in the production missiles that come out of this program after we have learned all these things with the ——— shots.

Mr. ANDREWS. Do you plan to equip 31 of your Polaris submarines with the Poseidon?

Admiral SMITH. Yes, sir.

Mr. ANDREWS. When do you expect to have the first one equipped with the Poseidon?

Admiral SMITH. The first submarine is in the yard for conversion now. It will come out about ——— of 1970. In ——— of 1970, we plan to fire Poseidon missiles from it at Kennedy, and to have a complete load of missiles ready to deploy in ———.

Mr. ANDREWS. You plan ——— test shots before equipping a submarine.

Admiral SMITH. The development contract and our funding requests are based on a maximum of ———.

Mr. ANDREWS. Mr. Lipscomb.

CONTRACTOR PRICE AND MATERIAL PERFORMANCE ON POSEIDON

Mr. LIPSCOMB. Admiral Smith, how is the contractor performing on this contract with respect to Poseidon?

Admiral SMITH. We feel that he is performing very well. We have evaluation criteria written into the contract on schedule and performance, and I believe all, or if not, better than ——— percent of those evaluation criteria have come up completely satisfactory.

Mr. LIPSCOMB. How about the pricing—are they on target as far as the contract?

Admiral SMITH. The total program—this is the missile and everything in R. D. T. & E.—is currently being reported estimated as ending up with a 1.6 percent over target cost.

Mr. LIPSCOMB. What would this amount to in dollars?

You can put that in the record.

(The information follows:)

This would amount to approximately $68.5 million. The percentage and resultant dollar estimate is calculated using the target costs negotiated under 5-year incentive contracts with the Poseidon weapon system contractors in 1966 and comparing those costs with the current estimated cost to complete the Poseidon development program as reflected in Pert/Cost reports.

Mr. LIPSCOMB. What would be the cause of this increase in the target estimate? Are these change orders, as far as the Navy is concerned?

Admiral SMITH. In the missile the CPFF portion on the re-entry body is over target cost on the basis that some changes did need to be made because of ———. In the navigation system there was a straight overrun on the new, fairly large, central computer that programs all of the navigation equipment and analyzes its output. There was a fairly significant change, where we selected a method of procuring the electronic parts—and these are bits and pieces—that are needed to be specially controlled to have ——— characteristics. We chose a controlled, so-called ——— as the best method of assuring those characteristics. A change was necessary to write into the contract for that purpose.

Mr. LIPSCOMB. The increase in estimated cost, then, is a combination of both contractor and Navy changes.

Admiral SMITH. Yes, sir.

Mr. SIKES. Are there any further questions on Poseidon?

Mr. RHODES. Mr. Chairman, may I ask this question? Do you feel, Admiral, that the unit cost will reduce as we manufacture more of these birds?

Admiral SMITH. Our budget experience shows, and our budgeting is based on a 95-percent learning curve. How much that will be offset by inflation, escalation, is more of a guess. Our budgeting, and so far our feeling, is that the combination of those two effects will result in a continually lowering cost.

Mr. RHODES. I would hope so. That seems like an awful lot of money for one missile. It used to be you could buy a good airplane for that. You can't anymore. I am sure it is a very sophisticated weapon. I was not clear as to whether or not all ———.

Admiral SMITH. ——— test.

Mr. RHODES. ———.

Admiral SMITH. Yes.

Mr. RHODES. They did?

Admiral SMITH. Yes. ———.

Mr. RHODES. How many did the fourth test have?

Admiral SMITH. ———.

Mr. RHODES. So you have not really licked this concept to the point of satisfaction?

Admiral SMITH. ———.

Mr. RHODES. How are you going to manufacture ——— while you still have design problems? Aren't you going to test some more before you make these birds, or are we going to have to go through a lot of remodifications after you find out what the problems are?

Admiral SMITH. There are different leadtimes on different parts of this program. The longest leadtime items have really been completely proved out already.

Mr. RHODES. I am talking about the ——— portion. I am not talking about the rest of the bird. Can you make the rest of the missile without having the ——— concept whipped as far as the technology?

Admiral SMITH. The production leadtime is somewhat shorter, not a great deal shorter on that portion. However, the ——— that we have had would show a reliability of better than ——— percent right now.

Mr. RHODES. I do not know how you figure the percentage, but when your last test was ——— are concerned I don't know how you can be so complacent about it.

Admiral SMITH. No, sir. I said it was no test as far as ———.

Mr. RHODES. I misunderstood you. I thought you said this was not a part of the test in No. 6.

Admiral SMITH. I said the missile ———.

REMAINDER OF POSEIDON TEST PROGRAM

Mr. RHODES. When is your next test?

Admiral SMITH. It is currently scheduled for the 22d of May.

Mr. RHODES. You already have ——— Poseidon missiles funded and undelivered.

Admiral SMITH. Funded. The first of those is scheduled to be delivered just about a year from now. That is, the component parts.

Mr. RHODES. After your testing program after May 22, how many more tests do you plan, and at what intervals? You can supply it for the record.

(The information is classified, and has been provided the committee.)

Mr. RHODES. Will the tests be completed before the first deliveries of the missile?

Admiral SMITH. The production design will be completed—a flight test of the production design will be completed before delivery of that first missile. There will be other tests continuing beyond that.

Mr. RHODES. Thank you, Mr. Chairman.

Mr. MINSHALL. What other tests are you talking about? I hate to see you in a position of not having a bird completely tested out before you go into production. Then you go into modification and retrofits, and all the rest.

Admiral SMITH. While I cannot say it is impossible that there will be no minor changes as a result of later tests, the reason for the additional tests is to demonstrate with larger numbers. In other words, we are not going to be satisfied because it worked perfectly once.

Mr. MINSHALL. When do you think you will get to that juncture that the Poseidon will work perfectly once?

When do you anticipate that will happen, in number of tests and also the calendar year and month?

Admiral SMITH. I said that actually it performed all of the functions ———.

Mr. MINSHALL. But you have not had ——— yet. Is that adequate for fleet use?

Admiral SMITH. Yes.

Mr. MINSHALL. I am not quite sure I understand you. If the ——— part of the bird is not working satisfactorily, how can it be satisfactory for fleet use, if you have not even tested that phase of it yet?

Admiral SMITH. The point is that this test I described where ———. It was a quality-control and manufacturing problem, the same thing you would find on automobiles that have been in production for years.

Mr. SIKES. Admiral, we do not pay ——— million apiece for cars, and they are used for an entirely different purpose. We cannot afford not to be certain of what we are doing in this field. I think that is what my colleague is trying to get to.

Admiral GADDIS. I think the major point, if I might interject, of what Admiral Smith is speaking to is a completely ———. We expect to prove this on future missiles.

Admiral SMITH. In other words, there was no design fault in the ——— system disclosed by that test. It is the difference between a design fault and a repetitive imperfection of repetitive manufacture.

Mr. MINSHALL. I think I will get my answer when you supply Mr. Rhodes' question that you will put into the record, your test program, and what you learn from each phase of this testing program. Maybe that will help clarify it to the committee, at least to me.

OTHER MISSILES

Mr. SIKES. Under "Other missiles," the fiscal 1970 program is $252.5 million, which is $74.4 million less than the fiscal year 1969 program.

AIR-LAUNCHED MISSILES

In this field of air-launched missiles, there was a request of $102.6 million. This is $66.3 million less than the fiscal year 1969 program for this category.

The decreases are primarily in PHOENIX, SPARROW, and SHRIKE programs. Is any of this overall decrease attributable to a reduction in expenditure rates since the bombing halt?

Admiral CONNOLLY. Yes; partly. The reduced SIDEWINDER and SPARROW are a reflection of the reduced consumption of these missiles in combat.

Mr. SIKES. In other words, what is before us reflects the current changes in combat-use rate.

Admiral CONNOLLY. It reflects that, yes, sir.

AIM–7E/F SPARROW III

Mr. SIKES. Under the SPARROW III program, the request for $46.1 million for ——— missiles is a significant reduction from last

year. Are the ——— AIM–7F missiles in support of your test program?

Admiral CONNOLLY. It is a reduction, but it maintains a hot production line. It provides for the introduction of the follow-on ——— advanced SPARROW AIM–7F. We held back on SPARROW this year because we want that AIM–7F to be exactly right. Just as soon as we are satisfied—this is our dogfight missile—as soon as we are satisfied we really have what we want, we hope to come in with a request for a larger order next year.

Mr. SIKES. What is the status of the tests on this missile?

Admiral CONNOLLY. The development of the AIM–7F is approximately ——— months late. Flight scheduling was halted in ——— after ——— test missiles failed to perform satisfactorily. Problems have been identified. Modification of test missiles is in progress and flight testing is scheduled to resume in August.

Mr. SIKES. How much slippage has there been?

Admiral CONNOLLY. ———.

Mr. SIKES. How much have we spent to develop the 7–F?

Admiral CONNOLLY. $21.9 million is the development cost of the AIM–7F, sir.

Mr. SIKES. What do you anticipate in terms of increased performance and higher kill probability over the 7–E?

Admiral CONNOLLY. The AIM–7F will incorporate a ———. A solid state configuration will result in an increase in reliability and a decrease in logistics. Shipboard advertising will not be required.

Mr. SIKES. The characteristics you show on the supporting viewgraph indicate a very marked improvement.

Will you discuss the ——— ability you hope to acquire?

Admiral CONNOLLY. SPARROW was originally designed for ———. So we adapted SPARROW to it.

Mr. SIKES. Are there questions on SPARROW III?

Mr. ANDREWS. What success have you had with SPARROW?

Admiral CONNOLLY. ———.

That is the reason we got going on this AIM–7F development ———.

Mr. ANDREWS. Have you tried any of the F's?

Admiral CONNOLLY. No, sir, not yet. I have the record of the missiles here. For example, these are all AIM–7E's. Air Force fired ——— with ——— hits and ——— kills. The Navy fired ——— with ——— hits and ——— kills. ———. We have ——— with SIDEWINDER. We fired ——— SIDEWINDERS with ——— hits and ——— kills.

Mr. SIKES. Are there further questions? If not, we will turn to SIDEWINDER.

AIM–9D SIDEWINDER 1C MISSILE

You were funded ——— AIM–9D SIDEWINDERS air-to-air missiles in the last 2 fiscal years. Last year you testified that not very many air-to-air missiles have been fired in Southeast Asia.

What is the requirement for ——— more of these missiles in fiscal 1970 which will cost $32 million?

Admiral CONNOLLY. The ——— SIDEWINDER missiles will meet the Navy's requirement for the fiscal year 1970 funding period. This quantity will permit each pilot to spend one AIM–9D in training and

provide for combat expenditure of ——— per month. The predicted inventory of SIDEWINDERS for fiscal 1969 is about ——— AIM-9D's and about ——— AIM-B's. The planned 1970 expenditure rate for noncombat consumption averages ——— per month. Two-thirds of these expenditures will come out of the obsolescent AIM-9B's.

This really is our principal air-to-air weapon, not only for the Navy, but also for the Marines and Air Force.

Mr. SIKES. Has it been used in Southeast Asia?

Admiral CONNOLLY. Yes, sir.

Mr. SIKES. In what way?

Admiral CONNOLLY. Against Migs.

Mr. SIKES. Will you provide some information on the success rate?

Admiral CONNOLLY. Yes, sir.

Mr. MINSHALL. Can you give a feel for it for the committee for now, Admiral?

Admiral CONNOLLY. ——— air-to-air missiles have been fired by U.S. forces in ——— combat engagements in Southeast Asia to date. A summary of combat performance, from the commencement of hostilities to September, 1968, is as follows: AIM-7, SPARROW, fired ——— got ——— hits and ——— kills. AIM-9B, this is the older obsolescent SIDEWINDER, fired ——— got ——— hits and ——— kills. AIM-9D, which is the one we are asking to purchase this year, fired ——— got ——— hits and ——— kills. There were some others in here. FALCON, ——— fired with ——— hits and ——— kills.

Mr. MINSHALL. When we first went into the SIDEWINDER program we saw movies and demonstrations of the capability of this weapon. I do not know how you could get a hit, without getting a kill. Why is this?

Admiral CONNOLLY. Some of these hits have taken place—the SIDEWINDER has not gone up the tailpipe, it may have flown close and exploded and caused damage. We do not count them as kills unless they wrap up and come in. If they made them home, that is not a kill, probably damage in every case. The thing that is important is that the ———. This is what we have analyzed very carefully.

Mr. MINSHALL. What are you talking about when you say ——— altitude?

Admiral CONNOLLY. ———.

Mr. SIKES. Does the request before us reflect the reduction in the combat activity in Vietnam?

Admiral CONNOLLY. Yes, sir.

Mr. SIKES. For the record, tell us how many of these missiles are in Navy inventory, how many are under contract.

(The information is classified and has been supplied to the committee.)

As of 31 March 1969, Navy SIDEWINDER assets were ——— AIM-9D, ——— AIM-9C, and ——— obsolescent AIM-9B. We currently have ——— AIM-9D's under contract that have not been delivered.

Mr. SIKES. For the record, tell us what has been the monthly consumption of these missiles in the past 6 months.

(The information follows:)

The primary expenditures of SIDEWINDER missiles during the past 6 months have been in training, the majority of which is conducted with the obsolescent AIM-9B. Average monthly consumption for the past 6 months has been ——— for the AIM-9D, ——— for the AIM-9C, and ——— for the AIM-9B.

Mr. SIKES. Does this consumption rate support the fiscal 1970 request?

Admiral CONNOLLY. Yes, sir.

AIM-54A PHOENIX MISSILE

Mr. ANDREWS. Now we will discuss the AIM-54A Phoenix missile. You have been funded a total of ——— Phoenix missiles during the past 2 fiscal years. Were these production missiles or were they to support the Phoenix test program?

Commander FEATHERSTON. These are production missiles, sir. They will be fired subsequent to the RDT&E firings.

Mr. ANDREWS. How many Phoenix missile tests have we conducted to date and how many additional tests are scheduled?

Commander FEATHERSTON. We have conducted ——— out of ——— scheduled R.D.T. & E. firings to date.

Mr. ANDREWS. You have ——— to go?

Commander FEATHERSTON. Yes.

Mr. ANDREWS. What results did you have with the ——— tested?

Commander FEATHERSTON. We had ——— out of ——— hits, sir, ——— of which were direct impacts with the target.

Mr. ANDREWS. ——— out of ——— hits?

Commander FEATHERSTON. Yes, sir.

Mr. ANDREWS. Did you complete all your scheduled test shots in fiscal 1968 and fiscal 1969?

Commander FEATHERSTON. No, sir, these firings will extend into fiscal 1970.

Mr. ANDREWS. How many Phoenix tests have we had from the F-111B traveling at supersonic speed against a target moving at supersonic speed?

Commander FEATHERSTON. None, sir. We have ——— supersonic launches from the point of view of the launch aircraft but the target has been subsonic to date.

Mr. ANDREWS. When was the Pheonix program started and when do you hope to have the Phoenix operational?

Commander FEATHERSTON. The Phoenix program was started by letter contract in December 1962, in parallel with the F-111B development. It is now called out for the F-14A aircraft and will be operational with that aircraft in April 1973.

Mr. ANDREWS. I believe you said ——— tests at subsonic heights.

Commander FEATHERSTON. No, sir, ——— launches with the firing aircraft supersonic, but the targets were subsonic.

Mr. ANDREWS. What is the unit cost of this missile?

Commander FEATHERSTON. The current estimate of flyaway cost for this missile in production for a planning quantity of ——— is ——— each.

(The additional information, requested later, follows:)

This unit cost was derived by dividing the proposed fiscal year 1971 through 1975 program cost, less support, of $632.7 million by the proposed fiscal year 1971 through fiscal year 1975 buy quantity of ——— missiles. A comparable program unit cost, including support, would be ———.

Mr. ANDREWS. Are there any questions about the Phoenix?

Mr. RHODES. Will this missile have the same limitations as to various altitudes ——— or will it work at low altitudes?

Commander FEATHERSTON. The Phoenix missile has been built to counter the threat from ———. Within this regime there are limitations on all air launched missile firings. These limitations are a function of density altitude, airspeed and the size of the targets. All air launched missiles have basic limitation.

Mr. RHODES. What is the maximum altitude for a Phoenix?

Commander FEATHERSTON. The optimum altitude, of course, is against higher altitude targets. ———.

Mr. MINSHALL. Is this a cruise missile?

Commander FEATHERSTON. Yes, sir. ———.

PHOENIX TARGETING AND TESTING DATA

Mr. MINSHALL. You said you had ——— out of how many hits?

Commander FEATHERSTON. ———.

Mr. MINSHALL. ———.

Commander FEATHERSTON. Yes, sir.

Mr. MINSHALL. What altitude were these?

Commander FEATHERSTON. There is quite a succession of altitudes. Targets have been as high as ——— feet and as low as ——— feet.

Mr. MINSHALL. How did you do at ——— feet?

Commander FEATHERSTON. That particular flight was a nonsuccess because we had a problem with the ———.

Mr. MINSHALL. What altitudes were the other ———.

Commander FEATHERSTON. As I recall, sir ——

Mr. MINSHALL. The reason for my question is, what is the effectiveness of this missile system at low altitudes? ———.

Commander FEATHERSTON. Your point is well taken. The shots we have had have been delayed in terms of the plan we hoped to accomplish this time last year because we haven't had test assets available. We lost one F–111B firing aircraft and the other——

Mr. MINSHALL. Will you supply the rest of that targeting and test information for the record, please?

Commander FEATHERSTON. Yes.

(The information follows:)

At the time of presentation of the fiscal year 1969 budget two F–111B aircraft (Nos. 2 and 3) were equipped with R. & D. Phoenix equipments. It was anticipated that these firing aircraft would complete the R.D.T. & E. firing and flight test program during fiscal year 1969. Subsequently, one of these aircraft was lost over the Pacific Missile Range on September 11, 1968. The other aircraft has exhibited abnormally low availability because of maintenance and system problems. Through May 13, 1969 a total of ——— R.D.T. & E. firings have been accomplished, with seven of these occurring during fiscal year 1969. With another F–111B (No. 7) currently being equipped and scheduled for test activity, commencing in July 1969, completion of the ——— remaining firings should occur during the first half of fiscal year 1970.

Target altitudes for the ——— Phoenix firings that have not been successful were ———. The reasons for failure of these firings were:

———.

Admiral WALKER. The tests so far have not indicated there are any problems unique to a ———. The failures that have taken place have been identified.

Mr. MINSHALL. You are not running onto the same problem then that you ran into with ———.

Admiral WALKER. That is correct, sir.

Mr. MINSHALL. Why is that?

Admiral CONNOLLY. It has more thrust. It has enough thrust to be able to fire at ——— miles, at altitudes.

Mr. MINSHALL. It will take care of the increased density.

Admiral CONNOLLY. That is right.

Now, you might tell them about the successful shots at ——— feet, which is not ——— feet, but ———. The firing plane was at ——— as I recall it. Fired ——— missiles simultaneously at two BQM 34 drones proceeding at about ——— and they were separated laterally by ——— miles and these missiles were fired simultaneously and one knocked the drone completely out of the air so there was nothing left on the ground radars and the other was a little miss; that is, it passed within ——— feet. That was shot No. ———.

Commander FEATHERSTON. We shot a ——— mile launch and hit target. Our R.D.T. & E. firing program has purposely deferred low altitude shots until the last.

Mr. MINSHALL. Supply that information for the record and also the ranges at which these tests were made.

(The information is classified and has been supplied the committee.)

Mr. RHODES. How is the maneuverability of the Phoenix? Has it improved or is it effective against maneuvering targets?

Commander FEATHERSTON. ———.

Admiral CONNOLLY. We are not going to use the Phoenix for a dog fight. At least I don't think so. It is too expensive and too big and we will not use it for that purpose but there was nothing wrong with knocking an enemy airplane off, if you knock them off at ——— miles before you get into a dog fight; the more of these you have, the less dog fights you have.

Mr. LIPSCOMB. Commander, for the record would you insert at the point where you discussed the unit cost, the rationale for arriving at the ——— a unit?

Commander FEATHERSTON. Yes, sir.

Mr. ANDREWS. Are there further questions?

The committee will adjourn until 2 o'clock.

AFTERNOON SESSION

AGM-45A SHRIKE

Mr. SIKES. The committee will come to order.

We will proceed with the Shrike missile. Last year the Navy funded money for Shrike missiles, $23.8 million for ——— AGM-45A Shrike missiles. This year the amount is $9.5 million for ——— of these weapons. What has permitted this drastic reduction?

Admiral CONNOLLY. The truth of it, Mr. Sikes, is that we cut back on Shrike for two reasons. One of those reasons has to be that we had to carve the cost out, we had to carve the cost of our combined aircraft missile program. We carved Shrike back for one reason and that is that the combat use of it was backed off as a result of the cessation. The other is that Shrike has been an ——— weapon; the reason being it is very difficult ——— to make a choice between Shrike and Standard Arm, and in both cases we cut back our request. It is made up of the stopping in Vietnam and trying to get all the needs together as to what we thought the budget would allow. ——— Shrike, having

Standard Arm, which does the job, but is much more expensive—it does a better job but is much more expensive, and the same time, hanging on to enough in the inventory to be able to meet a sudden onset and also the fact that Shrike can be started up.

Mr. SIKES. Have there been any developments of unsolved problems in the use of Shrike under combat conditions?

Admiral CONNOLLY. ———. We continue to supply Shrike to our pilots because they wanted Shrike. They wanted the protection of Shrike.

Now, we have modified Shrike, ———.

Mr. SIKES. What?

Admiral CONNOLLY. ———. If this works out as our tests indicate it would, then Shrike is going to come back as a popular weapon because it is smaller and it is less expensive and it fits on more aircraft than Standard Arm.

Mr. SIKES. In the meantime, do you think that you will rely upon other weapons rather than Shrike?

Admiral CONNOLLY. We will continue to use Shrike in limited numbers and we will rely to a degree on Standard Arm. It is sort of a lull, Mr. Sikes, ———.

Mr. SIKES. Would it be realistic to withhold the order for ——— additional Shrike missiles until this problem has been resolved?

Admiral CONNOLLY. I don't believe I understood your question correctly.

Mr. SIKES. I say would it not be realistic to withhold the order for ——— additional Shrike missiles until the problem has been resolved?

Admiral CONNOLLY. I don't think it would be realistic in the sense that you undoubtedly mean. It would not be prudent because ———. ———.

Admiral GADDIS. There is another factor which I think is pertinent. ——— Shrike for Navy plus ——— for Air Force is the absolute minimum buy that can keep one producer going. We have already canceled out one producer. That is all that keeps that last producer going during the 1970 delivery season.

Mr. SIKES. Give us some information about inventory.

(The information follows:)

As of March 31, 1969, Navy SHRIKE assets were ——— missiles. These assets include only ——— of the latest versions of SHRIKE which are designed for the types of enemy radars not countered by the first versions of the missile. The ——— SHRIKE requested are for ——— each of three new versions of this missile.

Mr. SIKES. In October you were using—you used ——— missiles. Was this a peak month? October 1967? You used ———.

Admiral CONNOLLY. I don't think that is a peak month.

Mr. SIKES. Give us some information about the consumption rates during the last 3 fiscal years and about inventory.

(The information follows:)

During FY 1969 to date, which includes a period of restricted strike operations together with a period no strike operations against North Vietnam, total Navy SHRIKE consumption has averaged ——— missiles per month. During fiscal year 1968, prior to the restriction of operations over North Vietnam to below 19 degrees North, monthly SHRIKE consumption averaged ——— missiles. Consumption during fiscal year 1967, although a period of relatively unrestricted operations against North Vietnam, averaged only ——— missiles per month because our assets of SHRIKE were limited during the major portion of that year. The inventory has increased from ——— missiles at the end of fiscal year 1967 to the current figure of ———.

Mr. SIKES. Can you give us information for the record—I realize the problem, but give us what you can for the record about target kill ratio per missile fired.

(The information is classified and has been supplied the committee.)

Mr. SIKES. Are there questions on SHRIKE?

Mr. RHODES. Admiral, I am probably oversimplifying the problem, but it seems to me if you can get a weapon like this pointed at the target, ———.

Admiral CONNOLLY. You are absolutely right. We do this with STANDARD ARM. STANDARD ARM is an improved SHRIKE. SHRIKE was our first attempt at an anti-radiation missile. STANDARD ARM does do this. ———.

Mr. RHODES. Then why do you want to fool around with this weapon?

Admiral CONNOLLY. It is so much cheaper; way cheaper.

Mr. RHODES. We are going to get to STANDARD ARM but what is the cost of it compared to the ———.

Admiral GADDIS. The difference in cost is ——— to ———.

Mr. RHODES. Even so, that ——— is a pretty expensive radar suppressant ———.

Admiral CONNOLLY. We do ——— Mr. Rhodes.

Mr. RHODES. I probably read some thoughts into your statement that you didn't intend to have there, but it seemed to me that it was your feeling that the ———.

Admiral WALKER. Mr. Rhodes, I would like to inject a thought here. I came to this job from having a carrier division in the Gulf of Tonkin. SHRIKE was used there effectively ———.

Mr. SIKES. ———.

Mr. RHODES. That is a rather important statement. ———.

Admiral WALKER. As far as we were concerned ———.

Mr. RHODES. I certainly can't diminish the importance of that.

Admiral WALKER. This, of course, points up the fact that SHRIKE ———.

Mr. RHODES. When you put the ———.

Admiral GADDIS. ———.

Admiral WALKER. I think it is true also, sir, that without ———.

Mr. RHODES. Thank you, Mr. Chairman.

AGM 78A STANDARD ARM

Mr. SIKES. Turning to STANDARD ARM, in 1970 you are requesting $25 million for ——— of these missiles. This is in addition to the ——— funded in fiscal year 1969. Tell us something about its utilization and the aircraft which can use it.

Admiral CONNOLLY. The Mod 1 STANDARD ARM is a multi-based weapons system which can be ———.

Mr. SIKES. It sounds as though it might be worth ——— times as much as you are paying for the SHRIKE.

Admiral CONNOLLY. But the main thing is that we can't carry—well, one thing, not the main thing—but an important point is that the Navy has only ———.

Mr. SIKES. Is its modification difficult?

Admiral CONNOLLY. It takes an aircraft of that ———.

Mr. SIKES. Do you anticipate converting other aircraft in order to replace planes that now can handle only SHRIKE?

Admiral CONNOLLY. We have ——— more aircraft that we are converting to the STANDARD ARM. We are also giving STANDARD ARM ———.

COST OF CONVERTING AIRCRAFT

Mr. SIKES. What is the cost and time requirement on conversion per unit? Conversion of an aircraft? Not the application of the ———. Provide that for the record.

(The information follows:)

The cost of modifying the first ——— A-6A aircraft to be compatible with the STANDARD ARM missile was approximately $4.8 million each. The production lead time for this modification program was 11 months.

Mr. SIKES. Is the Standard ARM program on schedule?

Admiral CONNOLLY. Yes, sir.

Mr. SIKES. Are there any major problems which have been encountered and which occur persistently?

Admiral CONNOLLY. We have Standard ARM MARK 0 in the fleet. Now, with the Mod 1 we have brought it along in three phases. The zero had essentially a ——— and we have had ——— formal firings and there have been ——— successes and ——— failures. ———. This program has been corrected.

Finally, there was an ——— causing a failure of the missile.

I would emphasize that ——— out of the ——— is a pretty good record for a new production missile. We evaluate all new weapons vigorously prior to their release for use. These test firings are structured to demonstrate performance at the outer limits of the requirements.

Of note is the accuracy of the Mod 1 missile, or AGM78B has exceeded our expectations and the designed goal. The CEP of the ——— missiles were afforded a test of terminal accuracy which were about ——— of the specific value.

Mr. SIKES. Is the Standard ARM in use in Vietnam now?

Admiral CONNOLLY. It is out there and was used prior to the bombing halt in North Vietnam; yes, sir.

Mr. SIKES. In fiscal year 1968 you were funded $95.1 million for ——— Shrike and Standard ARM missiles. None have been funded in the last 2 fiscal years. This is the AGM-45A Shrike and the AGM-78 Standard ARM. Are there problems with this program?

Admiral GADDIS. That was a trade-off program in 1968. We would buy a total of Shrike and Standard ARMS to a total of 95 million, sir, and the line items on either side in the P-1 are for the specific line items. We bought ——— Shrike in 1969 and ——— Standard ARMS, sir.

Mr. SIKES. Are there questions on Standard ARM?

SURFACE-LAUNCHED MISSILES

In fiscal 1970 you requested a total of 12.8 million dollars to fund fleet support requirements for the Tartar, Terrier, and Talos missile

systems. You were funded a total of $14.7 million for this purpose last year. What are these funds being used for?

Admiral WOODS. This year the funds are going to be used for several categories. Checkout equipment which we have to modify special handling equipment for the Standard missile, 60 percent of it is for 644 UHF telemetry heads; training material; updating of our training missiles, and inert operation missiles.

Mr. SIKES. How many ships are still configured for the 3 T's?

Admiral WOODS. We have 78 ships which now have the 3 T's. We had six in 1968 which we converted to the Standard MR and three in '68 which we converted to the ER.

In 1969 we will convert four more to the medium range and eight more to the extended range. We will continue with this program, with the Terrier and Tartar ships through ——— when all the Tartar ships will have been converted to medium-range standard. The Terrier ships will have been converted, 30 of them, by end ———. The Talos ships are not involved in Standard missiles conversion.

Mr. SIKES. Let me see if I understand you. All of the Tartar and Terrier ships will be phased out as of ———.

Admiral WOODS. Fiscal year ——— for the Tartar ships and fiscal year ——— for the Terrier ships. Neither the ships nor the missiles, per se, will be phased out; rather the Terrier and Tartar ships will have been adapted to use the appropriate type of Standard missile by the years indicated.

Mr. SIKES. But not Talos?

Admiral WOODS. No, sir, the Talos ships will not be changed and those missiles will not be phased out until those ships are phased out. They go with the ships.

Now, we have a few Terrier ships which we are not going to convert to standard missile. Some of the cruisers and three of the carriers. It is just too big a conversion and it isn't worth it.

INVENTORY OF TARTAR, TERRIER, AND TALOS MISSILES

Mr. SIKES. For the record, tell us the 3 T's inventory at the present time. Give us some information and also for the record the cost of conversion.

(The information follows:)

As of March 31 the inventory of the 3 T's was as follows:

Terrier HT ---------- ———
Terrier BT ---------- ———
Terrier BW ---------- ———
Tartar IT ---------- ———
Talos ---------- ———

The conversion program can be divided into three basic categories. The first is modification of Terrier ships to provide Standard ER capability. Average weapon system compatibility costs for a single-battery Terrier ship is ——— million and for a two-battery Terrier ship is ——— million. The second category is modification of Tartar ships to provide compatibility with the ——— nautical mile version of Standard MR (type 1A). Average weapon system compatibility costs for each Tartar ship is ——— million. The third category is modification of Tartar ships to provide compatibility with the ——— nautical mile version of Standard MR (type 1). Average weapon system compatibility costs for each Tartar ship equipped with this ability is ——— million. The indicated costs include procurement and installation.

MISSILE DEFENSE AGAINST ANTISHIP MISSILES

Mr. RHODES. Can the 3 T's successfully engage a live missile?

Admiral WOODS. You are referring to the Styx, Mr. Rhodes?

Mr. RHODES. Yes.

Admiral WOODS. Let me answer the question this way: We have a program called Samid which is an attempt on a hurry-up basis to integrate as best as possible the various capabilities we have within our ships for quick-reaction capability. With this kind of quick reaction—this means ability to sense the target in a hurry, designate it in a hurry to the fire control system, the answer to your question is yes.

As a matter of fact, our primary practice target, the BQM 34 is very similar in cross section and performance to the Styx missiles. The Samid program is the beginning of a long-term improvement program to increase our capability. We have a capability now and are improving it all the time.

Mr. RHODES. The limiting factor is the ability to get ———.

Admiral WOODS. The missile flight performance warhead and so on are perfectly capable of knocking the incoming missile down ———.

Mr. ANDREWS. In fiscal year 1970 you requested $25 million—$25.6 million for ——— RIM-66A Standard Medium Range (MR) missiles and $32.1 million for ——— RIM-67A Standard Extended Range (ER) missiles. This is in addition to the ——— Standard MR and ER missiles funded in the last 2 fiscal years. What is the program for conversion of ships from the 3 T's to the Standard missiles?

Admiral WOODS. I addressed myself to part of this earlier on the numbers which we are going to convert.

All the Tartar ships—that is the DDG's, the DEG's and CG's—will have a capability to fire the ———-mile version of the Standard missile by the end of ———. Now, in order to fire the ——— mile version of the missile, an Ordalt kit was first initiated for procurement in 1969 for six ships, and this is to be installed in fiscal 1971. Eight more of these kits are planned for fiscal 1970 and will continue at that rate to the completion of the modification.

The current planning for the modification of the Terrier ships, the standard extended range, ER, provides completion of the installations by the end of ———.

The Ordalt kit has been planned for installation during regular overhauls and restricted availabilities. That is when it occurs, when the ships are normally in the yard.

TEST AND DEPLOYMENT OF STANDARD MISSILE

Mr. ANDREW. Why are we continuing to buy significant quantities of these missiles and have them deployed in 34 ships when they are still type classified as limited production and their operational evaluation is not scheduled until October 1969?

Admiral WOODS. In 1966 we stopped production of the Terrier and Tartar to go to a standard missile which eventually replaces both those except for the rocket components. We signed a buy covering 6 years at a much reduced price to produce these missiles. It is true

that they have not been formally accepted by Comoptevfor, but they have had a considerable amount of testing. As a matter of fact, their most recent tests—and I have the scores here—are far above anything we have been able to get with Terrier and Tartar.

The third phase of the technical evaluation which has just been completed had a score of ——— percent. This is the firing of ——— missiles with ———.

Our need was to continue to produce the missiles to outfit the ships; because of the sensitive tests which we have given these missiles, we have come up with, we believe, a not only successful, but a much increased reliable missile over what we have now in the three T's.

Mr. ANDREWS. What were the results of the technical evaluation of these missiles?

Admiral WOODS. Out of ——— fired, ——— for a success score of ——— percent.

DEVELOPMENT COST, RELIABILITY AND ACCURACY, STANDARD MISSILE

Mr. SIKES. For the record tell us how much has been spent in the development and production of the Standard MR/ER missiles through fiscal year 1969 by appropriation.

For the record, provide a table comparing the Standard MR/ER missiles with the 3Ts from a reliability and accuracy standpoint.

(The information follows:)

The total development and production cost of the Standard MR/ER missile is $282.4 million. Development was funded in the R.D.T & E. appropriation in fiscal year 1964 through fiscal year 1969 for a total of $78.5 million. Production was funded in the PAMN appropriation in fiscal year 1966 through fiscal year 1969 for a quantity buy of ——— missiles at a total cost of $203.9 million.

Missile reliability and accuracy are determined by missile firings in terms of the missile round success rates. A successful missile round is one that demonstrates reliability throughout the flight including proper fuze action, and is sufficiently accurate to insure a high probability of target kill (nonwarhead firings) or one which downs the drone target, warhead firings). Missile success rates for Standard Missile, TERRIER, and TARTAR missiles are shown in the attached table.

MISSILE ROUND SUCCESS RATE IN SURFACE-TO-AIR FIRINGS

	Successes	Missile failures	[1] Pmr
Standard missile (MR)	———	———	———
Tartar	———	———	———
Standard missile (ER)	———	———	———
Terrier HT	———	———	———

[1] As defined above, Pmr is the success rate for the missile round only. Normally success rate figures are presented which indicate complete shipboard weapon system and missile performance. such figures would include shipborad material and personnel performance and would tend to obscure the relative reliability comparison between Terrier/Tartar and standard missile ER/MR. The Navy is currently modifying Terrier/ Tartar missiles now in inventory to increase both performance and reliability.

Note.—Standard missile results based on production missile firing tests which began Oct. 24, 1968. Terrier and Tartar results based on fleet firings during the period Mar. 1, 1968, to Mar. 1, 1969.

F–14 AIRCRAFT

Admiral CONNOLLY. Mr. Lipscomb, with regard to the discussion of the F–14, and the desire to save money for the country and do a sensible thing, I would like to make a statement.

Perhaps you will remember, we were planning before there was any F–14, we were planning or it was being planned for us to buy the F–111B to perform fleet defense. There would be a squadron of F–111B's on every carrier and we were also planning to replace the F–4 with an airplane called VFAX.

One of the salient points of this VFAX concept, which is to take the engines out of the F–111B and use all the fire control and missile work done with the Aug 9 Phoenix in a new airframe was this, that the amount of money we could see was going to go out to buy approximately 463 of these F–111's would be about the same amount of money as would be required to commence the development of the F–14. So that this was almost a straight trade. Well, what would be eliminated was the necessity of developing the VFAX, which in magnitude would be exactly the same as is now contemplated for the F–14. So, in effect, we cut out the development of one entire airplane and all that that entails, time and moneywise. Maybe this has been lost sight of in the months that have gone on. I know it has by a lot of people over on the other side of the river, but it still stands that there was in the planning a continuation with the F–111B and the sum of money that was going to go for 400 and some odd planes, it was about $42 hundred million and those figures would have been up by virtue of what has been revealed since, to be well over $55 hundred million.

So we still think we are on a good track to take advantage of what has been spent and done and save developing another airplane in its entirety. We not only believe we have saved money, we think we have saved a lot of time and we will get a highly capable airplane which, when it is aboard ship, will be one airplane meeting both fleet air defense and the air superiority role so that the logistic support problem of the spares and so forth will be better and we will have eliminated another airplane altogether.

Mr. ANDREWS. There is a question in my mind about that, Admiral. You just traded off in a way the F–111B which the Navy didn't want and never did want and at last determined it wouldn't meet your needs because of weight and other problems, and you have wanted this F–14 and have supported this program with enthusiasm, and you do need a plane. The way I look at it, you just traded off what you considered a bad plane for one that you really want and need, and when the final bell is rung the F–14 program will cost you as much as the F–111B would have cost you.

Admiral CONNOLLY. Remaining to be spent.

I am just trying to balance out the record. When we are accused of being wasteful and not using our head and so forth, I think this is a pretty good trick and I hope it will save one big amount of money.

That is the end of my speech. Thank you.

Mr. LIPSCOMB. Admiral, if my comments have led you to believe that I don't believe in the F–14A, I think you misinterpret me. But I do have concern about the scheduling.

Admiral CONNOLLY. I just wanted to remind the committee that we really did try to make sense out of this thing.

SEA-SPARROW MISSILE

Mr. SIKES. On the Sea-Sparrow, what is the status of that program?

Admiral WOODS. The Sea-Sparrow has several phases. The first is the basic missile system which is now in four ships. We have bought some 81 systems and will put them in as we find installation money. The second phase——

Mr. SIKES. For clarification of the record, tell us what it does.

Admiral WOODS. It fires an air-to-air missile from a surface ship at a range of about ——— yards for point defense of that ship itself. The Basic Point Defense System is an inexpensive system where radar is controlled by a man pointing it. The next phase in this program will be to develop an integrated system, which is being developed in concert with three NATO nations, and that is called NATO Sea-Sparrow.

Mr. SIKES. Has the program slipped?

Admiral WOODS. The Basic Point Defense program has not slipped in development. It has slipped in installation on ships. We have not installed it on as many ships as we would like because of lack of funds.

Mr. SIKES. How have the cost estimates fared? Are they low? Are they high, or on target?

Admiral WOODS. They are on target on the Basic Point Defense. On the NATO Sea-Sparrow, we may have some increased costs. We have not yet signed a contract, so we don't know for sure what the contract will cost.

Mr. SIKES. What are your principal problems in the developmental program?

Admiral WOODS. There are no principal problems in the Basic Point Defense. It has been coming along satisfactorily. In the NATO Sea-Sparrow, we anticipate no particular problems. We are trying to stay within the state of the art, but we are also trying to make the system small enough to fit on ships of foreign nations and this may be rather difficult to do.

Mr. SIKES. Are there questions on Sea-Sparrow?

ANTISUBMARINE WARFARE MISSILE, SUBROC

On Subroc, for the last 2 fiscal years you were funded a total of $59.6 million for the procurement of ——— Subroc UUM–44A missiles. In fiscal year 1970 you have budgeted $25.6 million for ——— additional missiles as another "increment toward the inventory objective." What is your "inventory objective" for Subroc and how many do we now have in the Navy inventory?

Admiral WOODS. Our inventory objective is ——— missiles.

Mr. SIKES. How many do we now have?

Admiral WOODS. ——— as of January 1. I will provide an updated number for the record.

(The information is classified and has been provided the committee.)

Mr. SIKES. The point has been raised that inventory of ——— plus funded and undelivered of ——— would be more than your inventory objective; is that correct?

ADMIRAL WOODS. Yes, sir; but we will expend missiles in training during the fiscal year.

Our inventory objective total is ———. Our peacetime expenditures during the fiscal 1970 buy will be ——— missiles. Our net assets at the end of the 1969 buy will be ———.

Mr. SIKES. Questions?

AERIAL TARGETS

On aerial targets, you are requesting a total of $53.8 million. I would like to have for the record a tabulation of these various aerial targets by model, speed, number, and cost, as well as costs for conversion of aircraft to drones, and for tow targets, and special equipment used in evaluation programs. For the record, tell us which of these are used to test the Phoenix.

(The information follows:)

The fiscal year 1970 aerial target program includes the following targets:

(1) ——— AQM-37A, a high altitude, supersonic (Mach ———), nonrecoverable air launched target, $8.6 million;

(2) ——— BQM-34A, a high subsonic (Mach ———) air and ground launched, recoverable target, $14.7 million;

(3) ——— MQM-74A medium performance (——— knots) jet powered recoverable target for fleet gunnery training, $6.2 million;

(4) ——— BQM-34E, a supersonic (Mach 1.5) air and ground launched, recoverable target, $17.6 million;

(5) ——— TDU-22 series of supersonic tow targets for missile firings, ——— TDU-26 subsonic gunnery tow targets and 10 tow reels, $1.3 million;

(6) ——— QT-33A, converted T-33 subsonic (Mach 0.8) aircraft, $4 million;

(7) ——— QM-56 moving land targets and static land targets, $0.8 million;

(8) and support for the CQM-10A converted supersonic (Mach ———) Bomarc target, $0.7 million.

Thru April 1969 all 18 Phoenix missiles have been fired at ——— targets. Future firings will be made against QF-9's, BQM-34A's, BQM-34E's, AMQ-37's and Bomarc targets covering the full range of altitudes, ranges, and speeds.

CRUISE MISSILE DEVELOPMENT

Mr. SIKES. On the cruise missiles, Admiral Connolly, last year you testified that you did not see any great need for the Navy to embark on a cruise missile development program, but that the need was under study. What has been the result of this study?

Admiral CONNOLLY. You want to know what we are doing about a cruise missile of our own?

Mr. SIKES. That is correct.

Admiral CONNOLLY. We have a program which we have not yet started, but to which we have given a lot of study time called "Harpoon." This is a surface-to-surface missile. We have studied it and we know how to build it and it will be probably introduced in our 1971 budget.

Mr. SIKES. This is the cruise missile?

Admiral CONNOLLY. It is a missile capable of being fired from one ship against another surface target out to right now we are thinking about ——— miles.

Mr. SIKES. Would it have the same general characteristics as the Russian cruise missile?

Admiral CONNOLLY. ———.

Mr. SIKES. At this point, is it still a paper concept, a drawing-board concept?

Admiral CONNOLLY. It is, sir. We are thinking of a number of adaptations. We have been trying to do this so that we could have the same missile perform two roles. One, surface-to-surface, and one air-to-surface against ships and submarines and coastal patrol boats. We are not without this capability at the moment. We have two of them with good air-to-surface capability, OSA patrol boats.

Mr. SIKES. But no surface-to-surface capability?

Admiral CONNOLLY. That isn't entirely true either because we have used all of three T's in a surface-to-surface mode, both Tartar, Terrier, and Talos.

Mr. SIKES. And you are going to phase those out?

Admiral WOODS. The same capability will exist in the medium-range and extended-range standard missiles.

The limitation on those missiles is ———.

Mr. SIKES. I think this has been a gap in the Navy's weapons program and I am glad you are planning to do something about it. The question is, how fast are you going to direct what I think is a deficiency? When do you expect to have these new missiles introduced into the fleet?

Admiral CONNOLLY. Admiral Moorer has the pressures on us, Mr. Sikes, and we are going to work hard on this program.

We are going to do a good job on it and I don't think we are going to have a capability—other than the ones we have already talked about—we are not naked and bare in this respect, but I don't think we will have the new missile under ———.

Mr. SIKES. Where is the funding at this time?

Admiral CONNOLLY. Dr. Foster's group is ready to assist us and we should be making our minds up between now and the first of July on this.

Mr. SIKES. Do I understand there is no money specifically for this purpose in the budget? The fiscal 1970 budget?

Admiral CONNOLLY. No, but we have money for R. & D.

Mr. SIKES. Are there questions?

MODIFICATION OF MISSILES

Mr. SIKES. On "Modification of missiles," the fiscal year 1970 program for "Modification of missiles" is $20.8 million, a slight increase over the fiscal year 1969 program. These funds will be applied to all but the Bullpup and Standard ARM missiles. Why do we propose to spend $9.2 million for modification of the Tartar, Terrier, and Talos missiles and how many missiles are involved?

Admiral WOODS. These are primarily modifications ———.

Mr. SIKES. When will the modifications be complete?

Admiral WOODS. I would expect there would be some small amount of modification that would continue as long as we have any significant number of these missiles in service.

Mr. SIKES. How many of each type of missiles are involved in this modification? Provide that for the record.

(The information follows:)

The fiscal year 1970 modification program continues to improve the ——— counter-countermeasure and ——— of these missiles. ——— Terrier HTR, ——— Tartar IT and ITR, and ——— Talos missiles are involved with these improvements.

Mr. SIKES. How do we propose to spend $3.5 million to modify the Standard MR/ER missiles?

Admiral WOODS. This again is a modification to improve the ECM capability of the MR and ER. These are our Block 4 field changes.

Mr. SIKES. How many missiles are involved?

Admiral WOODS. There are ———.

Mr. SIKES. What is the reason for the request of $2.1 million for SUBROC modifications?

Admiral WOODS. The SUBROC modification is for ——— missiles to improve the ——— capability. The missile, as it presently stands, has a ———.

Mr. SIKES. The Navy has awarded a $49 million contract to repackage a major portion of the Standard ARM electronics. Why is this modification necessary?

Admiral WALKER. This was a fixed price subcontract with General Dynamics, the system prime contractor, to Bendix Electrodynamics. Bendix was the winner of a competition to production-engineer and produce the guidance system seeker assembly. We gained two price reduction advantages here.

First, there is the element of competition.

Second, by selective packaging the seeker has been made simpler to build by making test points more accessible and making in-process electronic alinement more straightforward, thereby reducing direct labor charges. The contract will yield one seeker for each missile in the fiscal 1969 buy or ——— units for each service. The Navy appropriation in fiscal 1969 PAMN funds, under the Standard ARMS item.

Mr. SIKES. Tell us the total cost of the modification and tell us what fiscal year funds will be used.

(The information follows:)

The program costs $4.0 million and is funded with fiscal year 1969 Standard ARM funds.

Mr. SIKES. Are there questions on modification of missiles?

MISSILE SPARES AND REPAIR PARTS

Mr. SIKES. Missile Spares and Repair Parts, the fiscal 1970 program for this program is $36.8 million. This represents an increase of $14.8 million over the fiscal year 1969 program. I would like to have for the record a breakout of this request. I would like to have you tell me, generally, the reason for the increase in this budget activity this year.

Admiral WOODS. In the surface-to-air missile area, we had not had in the past the amount of spares that we had felt that we needed, so each year we keep trying to get ourselves up to our inventory objectives.

Mr. SIKES. Admiral, just because we have cut your requests down—Congress has cut the request down each year for this purpose?

Admiral WOODS. No, sir; I think it is a case of the Navy trying to spread their money around where they need it most. We just haven't been able to put the money into spare parts that we would like to, not only in local appropriations, but elsewhere.

COMPETITIVE PROCUREMENT

Mr. SIKES. How much competition do we have in the procurement of missile spares and repair parts?

Admiral WALKER. At the present time, records are not maintained for competitive procurement for Air Systems Command missile replenishment spares and repair parts. However, the nature of missile replenishment, spare parts, under our management does not lend itself to substantial competitive procurement. For example, the performance standards, the critical quality and reliability standards and the expendable nature of the missile does not require extensive stock levels of spares in proportion to the procurement of missiles. I have a back-up paper of more length, Mr. Chairman.

Mr. SIKES. Provide that for the record.

(The document follows:)

Missile end item contracts require the prime contractor to furnish a complete set of drawings, specifications, and a PPB (provisioning parts breakdown) list. The Navy provisioning teams review the PPB, drawings and specifications to determine the spares and repair parts requirements. The spares and repair parts are coded to identify parts that can be broken out and procured competitively or directly from the prime missile contractor's vendors, and those parts that must be procured from the missile contractor.

The parts that have Federal stock numbers are referred to cognizant supply agency to procure in the normal competitive manner. The vendor items are referred to qualified products lists to determine if there are other sources of supply and if not, the parts are procured directly from the prime contractor's vendor.

In those cases where the prime contractor, or his vendor has a patent or proprietary rights for the parts required for spares and repair parts, they are the only source of supply until the Government obtains the rights for use in advertised competitive procurements. The decision to procure the contractor or vendor rights must be weighed against the total missile procurement in the on-going years, the estimated total parts procurements and anticipated resulting savings from competitive procurement sources.

Mr. SIKES. Are the spares and repair parts procured through the prime contractor or do we break out and go direct to the vendors and subcontractors?

Admiral WALKER. We do both of those things, sir.

Mr. SIKES. Show the percentage of each.

Admiral WALKER. We go to the prime contractor and break out as soon as possible.

Mr. SIKES. Show the percentage of each.

(The information follows:)

Prime contractors receive approximately 18.9 percent of procurements; break-out to the vendors constitutes approximately 81.1 percent.

SPARES AND REPAIR PARTS BY MISSILE SYSTEM

Mr. SIKES. For the record, how much of $36.8 million is for initial spares and repair parts and for which missile systems? For the record, provide the total value of spares and repair parts by fiscal year since fiscal 1965.

(The information follows:)

The following table portrays the fiscal year 1970 initial spares and repair parts by missile system:

Missile:	*Thousands*
Poseidon	$20,000
Sparrow	655
Sidewinder 1C SAR	440
Sidewinder 1C IR	764
Shrike	50
Standard ARM	600
Terrier	800
Talos	300
Tartar	600
Standard MR	400
Standard ER	400
SUBROC	1,600
BQM-34A	100
BQM-34E	2,860
AQM-37A	20
MGM-74A	50
TOW Targets	90
CQM-10A	50
QT-33A	400
Other targets	30
Total	$30,209

The inventory of ordnance spares and repair parts consists of items related to both conventional weapons and missiles and to both PAMN and OPN funded items. The financial inventory reporting system does not provide a breakdown of inventory values by weapon system or funding source. Commencing in fiscal year 1968 a Statistical Stratification of Inventory has been performed which provides a basis for estimating the proportion of total inventory by individual weapon system. No such basis exists for a breakdown of the inventory for the years 1965, 1966, or 1967.

Based on the statistical weapon systems stratification it is estimated that the PAMN funded MSL spares inventory for the above missile systems at the end of fiscal year 1968, 1969, and 1970 is as follows:

	Millions
Fiscal year 1968	$54.851
Fiscal year 1969	47.576
Fiscal year 1970	49.816

Mr. SIKES. Are there questions?

MISSILE SUPPORT EQUIPMENT AND FACILITIES

Mr. SIKES. On Missile Support Equipment and Facilities, the fiscal 1970 program totaled $23.3 million, an increase of $6.5 million over fiscal year 1969. Tell us something about the Navy's astronautics program as mentioned in your statement.

NAVIGATION SATELLITE SYSTEM

Admiral CONNOLLY. The astronautics program consists of the procurement of the navigation satellite system. This system enables ships to obtain position fixes within one-tenth of a nautical mile to check the accuracy of the ship's inertial navigation system. The system consists of a constellation of satellites in orbit around the earth, a network

of tracking stations supplying tracking data to a computing complex, an injection station for insertion of information into the memory of the satellite for transmission to user ships, and shipboard equipment designed to receive the data from the satellite to determine the navigational position.

To meet the CNO operational objective ——— to obtain position fixes in all latitudes and assign ——— a medium interval of ——— within an accuracy goal of one-tenth of a nautical mile, the navigation satellite system requires an operating constellation of four satellites. The number of vehicles required to maintain a four satellite constellation is based on computer trade-off study of satellite requirements versus satellite mean time between failure. With the foregoing assumption, that the life in orbit will be 15 months and the probability of launch success will be 90 percent, the probability of satellites surviving launch would be 90 percent and that the launch turn-around time will be ——— days.

The minimum orbit gap for relaunch is ——— degrees and the inclination of accuracy is equal to ———.

Admiral GADDIS. The extremely low level of funding in 1969 reflected a temporary attempt to make do with a ——— satellite system. It was not sufficiently accurate.

Mr. SIKES. That is the reason for the increase in the program?

Admiral GADDIS. Yes, sir.

MISSILE INDUSTRIAL FACILITIES

Mr. SIKES. I would like to have for the record the amount provided for missile industrial facilities, including separate listings for construction of facilities, additions to facilities, and for industrial plant equipment for the last 10 fiscal years.

(The information follows:)

In the past 10 years, the Naval Air Systems Command and the Naval Ordnance Systems Command have spent a total of $60.7 million for the following categories of missile industrial facilities:

Category:	*Millions*
New construction	$2,072
Additions and alterations	1,935
Industrial plant equipment	56,670
Total	60,677

SOVIET ANTISUBMARINE WARFARE CAPABILITIES

Mr. LIPSCOMB. Admiral, I would like to refer back to your statement on page 21 where you discuss the Poseidon–MIRV system. You say that in the event that they, the Soviets, markedly improve the quality and increase the numbers of their ASW force—Could you give us your views on what ways the Soviets might improve the quality of their ASW force, as you see it?

Admiral CONNOLLY. Yes, sir. To the very best of my knowledge. ——— perhaps Admiral Smith can speak to that.

Admiral SMITH. Mr. Lipscomb, we have made a number of studies to try to find the most sensible and most practical way in which the

Russians might proceed. Looking on it that way the job that they have to do with regard to Polaris-Poseidon is that of ———.

Mr. SIKES. Have the Soviets in the past 5 years increased the quality of their ASW capability?

Admiral SMITH. They have improved the quality of their attack submarines. They have made some improvements in the quality of their sonar. They have made improvements in sonobuoys and helicopter ASW operations. They have been trying.

Mr. LIPSCOMB. What you are saying is, they do have the capability of improving their ASW capability in the future that could give our Polaris submarines some difficulty?

Admiral SMITH. They have the basic technical capability. They have the manufacturing capability, I think more than they have been using, and in time this is true. How rapidly is a projection for the future. They certainly have a long way to go.

Admiral CONNOLLY. I think it is possible to say one more thing. You have to go on the basis of what they have done so far. I am not going to counter anything said here because I agree with it, but so far ———

It takes time to acquire the capabilities to do a good job against another man's submarine. It is something you work at a long time and you develop equipment to do so.

To think that the Polaris and Poseidon boats are in early prospect of being negated to some degree, I don't believe that, sir. I believe the potential to do this exists, but not in the near term.

Mr. LIPSCOMB. Not an early prospect, but the capability and technical expertise is certainly capable of being acquired by the Soviets?

Admiral CONNOLLY. I would think, sir, that they would. I am not a submariner, nor am I necessarily an ASW man except it is such an important problem to us that we all take a great interest in it. I would think they would have to have a much more ———.

Admiral SMITH. I would like to comment further, Mr. Lipscomb, that we are working in one R. & D. project, and another project is to be expanded this year, on the problem of ———.

Mr. LIPSCOMB. Is there any reason to believe that the Soviets can't gain the same capability that we have ———.

Admiral SMITH. No, I don't think so. I think they have a long way to go, but what we have been doing that I am sure you are referring to, depends on a very considerable ———.

In other words, what I am saying is, this is leading to a situation where ———.

Mr. MINSHALL. How does our ASW capability compare with that of the Russians?

Admiral SMITH. I don't know how to put a number on it, but it is very considerably better today.

Mr. MINSHALL. Ours is?

Admiral GADDIS. It is superior, no question.

Mr. MINSHALL. What makes you think the Russians aren't as smart in this field as they are in others?

Admiral SMITH. I don't believe I said that they are not.

Mr. MINSHALL. I mean as advanced or put it any way you wish. Why is ours so much better?

Admiral SMITH. The principal reason is they started so very much further behind.

Admiral GADDIS. The developments in ASW, Mr. Minshall, which we have been working on for a number of years, such as the ASW patrol aircraft, the sonobuoy developments which have essentially culminated in our DIFAR system with the P-3-ANU system, for instance, this has been many years in development.

Mr. MINSHALL. What concerns me, Admiral, is why do you think our intelligence is that good? Our experience with our intelligence in various arms of the military ———.

Admiral GADDIS. ———.

Mr. MINSHALL. Our counterintelligence then ——.

Admiral GADDIS. ———.

Mr. MINSHALL. You say it is not equal, but if we can do this ——— why can't they?

Admiral GADDIS. It is a matter of development and, as Admiral Smith said, one of the factors in that development is time.

Mr. MINSHALL. How much of a headstart do you figure we have had?

Admiral GADDIS. Five years, I would guess. Would you care to comment?

Admiral SMITH. We had a much bigger headstart than that. They have been catching up.

Mr. MINSHALL. I can't hear you. I am sorry.

Admiral SMITH. We had a headstart of over 20 years.

Mr. MINSHALL. They had a headstart in the space business too and we caught up.

Admiral SMITH. Yes, sir.

Admiral CONNOLLY. These gentlemen are talking about one thing and that is ———. Is that not correct? Mainly ———.

Admiral SMITH. As well as their ———.

Mr. MINSHALL. I don't wish to belabor this, but I don't think we should be too complacent and think the other side is that far behind.

Admiral GADDIS. We are extremely concerned, sir, and we have seen evidence of large strides on their part in ——— their newer submarines.

Mr. MINSHALL. Looking down the road, do you see any time in the foreseeable future when they will be catching up with us?

Admiral GADDIS. We must fight to stay ahead.

Mr. MINSHALL. Can you see that, even though you try, they might catch up anyhow?

Admiral GADDIS. It may happen, but we must work to see that it doesn't happen.

Admiral SMITH. Mr. Minshall, I think I can see the time within 10 or 15 years, when neither of us will be able to ———.

Mr. MINSHALL. That is what I wanted to know.

Admiral SMITH. I don't see the time, if we keep reasonably along with the efforts that we are asking for support on, when they will get ahead and be able to do what we can do now. I do see the time when neither of us will be able to ———.

Admiral CONNOLLY. If the committee would like it, there is a really good presentation that can be given to you. There is a lot of classification involved here and we are not sure about everybody in our audience, but we would like very much to present this to you to the degree

that you want it, just exactly what has been going on and where and by whom.

Mr. SIKES. I think that would be very useful. What would be the time requirement?

Admiral CONNOLLY. About an hour, sir.

Mr. SIKES. I think it would be worth while.

Mr. LIPSCOMB. The reason I brought this up—and this goes to Mr. Minshall's point—is that I was encouraged by your statement, Admiral, that you recognize this problem because you say that the principal new feature of the Poseiden is its multiple-independently-targeted reentry vehicle system which will assure continued effectiveness of the fleet ballistic missile system in the event that the Soviets continue to deploy anti-ballistic-missile systems, or, alternatively, in the event that they markedly improve the quality and increase the number of their ASW forces.

I just read an article the other day where somebody took the position that our Polaris-Poseidon program was forever inviolable.

Admiral GADDIS. Not without working at it.

Mr. LIPSCOMB. That is it. We have to work at it and this statement indicates that you recognize this threat.

Admiral CONNOLLY. That is right, sir. What we are trying to fight now is the conclusion because it is technically possible and they are as smart as we know they are and they have done great work otherwise, that you just automatically conclude that in a short period of time they are going to wipe out this advantage, which they haven't done, and they have put a lot into the submarine effort. They have built over 350 boats, they have a lot of ——— boats. It is going to take them a lot of money and a lot of time to ——— those boats. They are building ——— boats, we know that, but that is the beginning.

Mr. SIKES. And they are building more than we are, and that disturbs me.

Admiral CONNOLLY. But Admiral Smith's point is the one that I like the best, and that is that this ———.

Mr. SIKES. Are there other questions?

CARRIERS FOR V/STOL AIRCRAFT

Mr. RHODES. I have a question on another subject. The Russian aircraft carrier *Moskva* is a new concept for them as far as we can tell. All we have heard about it thus far seems to indicate that it uses helicopters. Is it possible that it was built for a V/STOL-type aircraft such as the Harrier? Could the Harrier operate off of that ship?

Admiral CONNOLLY. Yes, sir.

Mr. RHODES. Have you taken this into consideration in your planning?

Admiral CONNOLLY. We certainly have.

You know, we have some of these ourselves. We have a number of ships that are connected with, mainly—like the LPH and the APD, and the other amphibious ships that can operate V/STOL or compound helicopters and do operate regular helicopters.

Mr. SIKES. Is it within reason to assume that the development of the

Harrier, or the Harrier-type aircraft may revolutionize our own carrier program?

Admiral CONNOLLY. I think we are going to use V-type airplanes on platform ships such as Mr. Minshall described. You don't get V/TOL for nothing.

You have to pay in weight, complexity, and cost. It takes a certain amount of capacity in the airplane away from you for fuel or weapons. We have the V/TOL and the V/STOL right in there aboard the carrier in catpaults. We don't have to put it in each and every airplane. We have to strengthen them for a hook and a bridle, but as long as we can use catapults and operate 85 or 90 airplanes, not one of which has to have the complexity of a V/TOL, we can land planes aboard ship, catch them in the arresting gear, taxi them out faster than you can bring them in if you tried to in V/TOL.

Mr. SIKES. Gentlemen, thank you very much. This concludes this portion of the hearing. You have been very patient and you have been very helpful. This has been a rather long, drawn-out series of sessions, but something I feel is very useful to the committee.

TUESDAY, MAY 13, 1969.

SHIPBUILDING AND CONVERSION, NAVY

WITNESSES

VICE ADM. J. B. COLWELL, USN, DEPUTY CHIEF OF NAVAL OPERATIONS (FLEET OPERATIONS AND READINESS)
REAR ADM. E. J. FAHY, USN, COMMANDER, NAVAL SHIPS SYSTEMS COMMAND
REAR ADM. J. ADAIR, DEPUTY FOR SHIP ACQUISITION, NAVAL SHIP SYSTEMS COMMAND
REAR ADM. L. SMITH, USN, DIRECTOR, STRATEGIC SYSTEMS PROJECT OFFICE, NAVAL MATERIAL COMMAND
REAR ADM. W. D. GADDIS, USN, DIRECTOR OF BUDGET AND REPORTS, OFFICE OF NAVY COMPTROLLER
BRIG. GEN. H. G. MOORE, USA, DEPUTY DIRECTOR OF PLANS, OFFICE, DEPUTY CHIEF OF STAFF FOR MILITARY OPERATIONS
CAPT. W. N. FITZPATRICK, USN, COMPTROLLER, NAVAL SHIPS SYSTEMS COMMAND
COMDR. J. R. CRUMPTON, USN, SHIPS CHARACTERISTICS DIVISION, OPNAV
COMDR. R. L. CHASSE, USN, OFFICE OF NAVY COMPTROLLER
MAJ. C. A. DAY, USA, OFFICE OF DEPUTY CHIEF OF STAFF FOR MILITARY OPERATIONS
R. CLEMENTS, SHIPS CHARACTERISTICS DIVISION, OPNAV
R. A. DAVIDSON, OFFICE OF NAVY COMPTROLLER

PROGRAM AND FINANCING [IN THOUSANDS OF DOLLARS]

Program by activities	Budget plan (amounts for procurement actions programed) 1968 actual	1969 estimate	1970 estimate	Obligations 1968 actual	1969 estimate	1970 estimate
Direct:						
1. Fleet ballistic missile ships	254,435	318,300	462,600	83,112	341,200	404,400
2. Other warships	643,069	480,687	1,538,300	1,082,538	1,073,000	1,381,800
3. Amphibious ships	23,000	201,900	287,700	84,875	289,600	256,400
4. Mine warfare and patrol ships	43,270	50,380	43,735	182,691	267,200	113,700
5. Auxiliaries and craft	226,276	46,583	449,315	436,208	212,800	299,900
Total direct	1,190,050	1,097,850	2,781,650	1,869,424	2,183,800	2,456,200
Reimbursable:						
2. Other warships	12,300	60,000	64,000	39,850	29,000	68,000
3. Amphibious ships			3,000	2,839	500	1,500
4. Mine warfare and patrol ships	8,935	13,000	15,000	33,567	43,000	25,000
5. Auxiliaries and craft	1,570	4,065	1,506	13,263	15,500	10,500
Total reimbursable	22,805	77,065	83,506	89,519	88,000	105,000
Total	1,212,855	1,174,915	2,865,156	1,958,943	2,271,800	2,561,200
Financing:						
Receipts and reimbursements from:						
Federal funds	+21,875	−17,065	−23,506	−12,232	−25,860	−21,006
Trust funds	−930	−60,000	−60,000	1,759	−60,000	−60,000
Non-Federal sources [1]				−653		
Recovery of prior year obligations				−89,567		
Unobligated balance available, start of year:						
For completion of prior year budget plans				−3,311,906	−2,518,649	−1,263,259
Available to finance new budget plans	−22,392	−260,100	−150,250	−22,392	−260,100	−150,250
Unobligated balance transferred from other accounts				−2,201		
Reprograming from prior year budget plans	−127,258	−167,300				
Unobligated balance available end of year:						
For completion of prior year budget plans				2,518,649	1,263,259	1,564,715
Available to finance subsequent year budget plans	260,100	150,250		260,100	150,250	
Budget authority	1,300,500	820,700	2,631,400	1,300,500	820,700	2,631,400
Budget authority:						
Appropriation	1,297,000	820,700	2,631,400	1,297,000	820,700	2,631,400
Transferred from other accounts	3,500			3,500		
Appropriation (adjusted)	1,300,500	820,700	2,698,300	1,300,500	820,700	2,698,300

	Budget plan (amounts for procurement actions programed) 1968 actual	1969 estimate	1970 estimate	Obligations 1968 actual	1969 estimate	1970 estimate
Relation to obligations to outlays:						
Obligations incurred, net				1,858,250	2,185,940	2,480,194
Obligated balance, start of year				2,620,076	3,122,475	3,608,415
Obligated balance, end of year				−3,122,475	−3,608,415	−4,419,609
Outlays				1,355,851	1,700,000	1,669,000

[1] Reimbursements from non-Federal sources are derived principally from deductions from carriers, on account of loss of damage to materials in transit (31 U.S.C. 489(a)) and proceeds from the sale of personal property being replaced (40 U.S.C. 481(c))

OBJECT CLASSIFICATION (IN THOUSANDS OF DOLLARS)

	1968 actual	1969 estimate	1970 estimate
Direct obligations, personnel compensation:			
Permanent positions	4,171	.....	.....
Other personnel compensation	287	.....	.....
Total personnel compensation	4,458	.....	.....
Personnel benefits: Civilian	336	.....	.....
Transportation of things	1,081	1,000	1,000
Other services	520,313	563,500	611,600
Supplies and materials	78,609	83,000	90,000
Equipment	1,264,627	1,536,300	1,753,600
Total direct obligations	1,869,424	2,183,800	2,456,200
Reimbursable obligations:			
Other services	12,532	12,000	16,000
Supplies and material	2,685	2,700	3,000
Equipment	74,302	73,300	86,000
Total reimbursable obligations	89,519	88,000	105,000
Total obligations	1,958,943	2,271,800	2,561,200

PERSONNEL SUMMARY

Total number of permanent positions	506	.....	.....
Average number of all employees	411	.....	.....
Average GS grade	10.4	.....	.....
Average GS salary	$10,980	.....	.....
Average salary of ungraded positions	$7,542	.....	.....

Opening Remarks

Mr. Sikes. This afternoon the committee is ready to consider the shipbuilding and conversion Navy budget request.

The estimate for new budget obligational authority for fiscal year 1970 is $2,631,400,000. For fiscal year 1969, the Navy was appropriated $820.7 million for this purpose. The Navy estimates that the fiscal year 1970 direct-procurement program will total $2,781,650,000.

Admiral Colwell, we are glad to have you here again. This is your fourth appearance, is it not?

Admiral Colwell. That is correct, sir.

Mr. Sikes. We understand that you anticipate leaving us after this year's work?

Admiral Colwell. Yes, sir; this will be my last appearance.

Mr. Sikes. I would like to say, Admiral, that you have been a very able witness and a dedicated officer.

Admiral Colwell. Thank you.

Mr. Sikes. You have a very fine record of service, Admiral. The committee wishes you the very best in the years ahead.

Mr. Andrews. Mr. Chairman, I would like to concur in the statements you have made about the Admiral.

Admiral Colwell. That is very kind of you. Thank you.

General Statement

Mr. Sikes. Now, if you will proceed with your statement?

Admiral Colwell. May I present my biographical sketch for the record?

Mr. Sikes. Yes, you may.

BIOGRAPHICAL SKETCH OF ADMIRAL COLWELL

An ordnance specialist, Vice Admiral Colwell has been assistant experimental officer at the Naval Proving Ground, and has had tours of duty in the Bureau of Ordnance (Research and Development), as Deputy Director of the Fleet Ballistic Missile (Polaris) project, and as Senior Naval Assistant to the Director, Defense Research and Engineering, Office of the Secretary of Defense. He is a graduate of the Naval Academy, 1931, and the Naval Postgraduate School (Ordnance Engineering), 1939.

As a junior officer, he had duty in the battleships *Maryland*, *California*, and *New York*, and in destroyers *Rathburne* and *Aaron Ward*. In November 1942, he joined the staff of Admiral "Bull" Halsey, Commander South Pacific Force, as assistant gunnery officer, and later served as gunnery officer, until January 1944. After a tour of duty in the Bureau of Ordnance (1951–53), he was designated aide and administrative assistant to the Deputy Secretary of Defense, Washington, D.C.

From May 1954 to October 1955 he commanded U.S.S. *Elokomin*, then served as Deputy Director of the Fleet Ballistic Missile project, charged with development of the Polaris missile and weapon system, for which service he was awarded the Legion of Merit. In May 1958, he assumed command of the U.S.S. *Galveston* (CLG–3), first of the guided-missile cruisers.

He also served as a member of the General Planning Group, Office of the Chief of Naval Operations, Navy Department; Senior Naval Assistant to the Director, Defense Research and Engineering, Office of the Secretary of Defense; Director of the Long Range Objectives Group, Office of the Chief of Naval Operations, Navy Department; Commander Amphibious Forces, Pacific Fleet, where he was awarded a gold star in lieu of a second Legion of Merit, and in June 1965 was designated Deputy Chief of Naval Operations (Fleet Operations and Readiness), Navy Department.

Vice Admiral Colwell's additional medals and decorations are the Bronze Star Medal, with combat "V"; letter of commendation, ribbon, and combat "V"; Presidential unit citation ribbon (Destroyer Squadron 23); Brazilian Order of Naval Merit; American Defense Service Medal, bronze "A"; American Campaign Medal; Asiatic-Pacific Campaign Medal with one Silver and two bronze stars (seven operations); World War II Victory Medal; Navy Occupation Service Medal; the National Defense Service Medal, and the Vietnam Service Ribbon with two bronze stars.

Admiral COLWELL. Mr. Chairman and members of the committee, I am Vice Admiral John B. Colwell, Deputy Chief of Naval Operations for Fleet Operations and Readiness. I assumed my present duty in May 1965. It is a pleasure to appear before this committee again.

I will present the Navy's shipbuilding and conversion program proposed for fiscal year 1970. I am accompanied by Rear Admiral Fahy, Commander Naval Ships Systems Command, and Rear Admiral Gaddis, Navy Budget Officer, who are available to answer questions which fall more appropriately within their purview.

The program requested this year consists of 16 new construction ships and 17 conversions of existing ships, a total of 33 ships with a TOA of $2,782 million. This is a significant increase over the revised fiscal year 1969 program consisting of 6 new construction ships and 16 conversions with an adjusted TOA of $1,098 million. The size of the requested program is necessary to replace aged ships in the fleet and improve the capabilities of others. The current fleet is composed of approximately 900 ships of which about 58 percent are over 20 years of age. Some of these older ships are no longer economical to operate, repair, and modernize, primarily because of their age. Others are approaching this state. Since further modernization is no longer practicable for these older hulls, ship replacement will be required if we are to maintain a fleet capability which is responsive to the

demands of U.S. national policy. We are building more capability into our new ships, and therefore a one-for-one replacement will not be required, but a large number of ship replacements will be required in each of the next several years. The requested program is the beginning of this long-range replacement program, which will require even larger annual SCN budget requests than the one which is being requested this year. With the size of this year's program, and an expressed resolve to continue a sizable long-range program, we hope to encourage the shipbuilding industry to continue improving their capability in both physical plant facilities and manpower to enable them to build future shipbuilding programs with least cost in time and dollars.

Several of the ships requested for new construction in fiscal year 1970 are repeats of prior year designs already in commission or being built. However, we are requesting four new-design ship types. Two of these were requested in last year's budget, the general purpose destroyer (DD), formerly known as DX, and the fast deployment logistic ship (FDL). They were not approved for procurement; however, advance funding was provided for DX.

The DX is now termed the DD–963 class.

The third and fourth new designs being requested are a nuclear attack submarine (SSN) of the high-speed type and a nuclear guided missile frigate (DXGN).

In the proposed fiscal year 1970 program, seven of the 16 new construction ships are in direct support of the ASW program. They are: five destroyers and two nuclear attack submarines.

Total SCN funds contributing to the ASW effort this year are $806 million or 29 percent of the TOA requested.

Mr. Chairman, with your permission, I will now give you a brief description of each type of ship in the budget submission.

The format is the same as used last year, but with your permission I will go through the details of the first one to familiarize you with its contents. The name and letter designation of the ship type appears on the top line. Immediately under the name we show the number requested and the cost information. The next section gives the important physical data and the design characteristics. The production section gives the significant time goals for planning and production of the final end product. The prior program status section gives the total number of the type authorized since World War II, the number to be completed by the end of fiscal year 1969, and information on recent programing of this type ship.

I will now cover the ships in order of their budget activity.

FLEET BALLISTIC MISSILE SHIPS

Over $460 million of the TOA requested this year is for conversion of existing ships to the Poseidon ballistic missile system.

Six nuclear-powered fleet ballistic missile submarines (SSBN)

The six SSBN conversions requested this year are a continuation of the program begun in fiscal year 1968 to convert a total of 31 of our fleet ballistic missile submarines to accommodate the Poseidon

ballistic missile. Two of the six conversions requested in last year's program were approved by Congress on the basis that Navy should proceed with caution in this conversion program until Poseidon missiles had been successfully tested. The first six of the scheduled test shots have been launched from Cape Kennedy. Four were successful; a fifth was destroyed following a malfunction in the first-stage rocket. The sixth failed during ———. We will have completed a total of ——— test shots by July 1 of this year. The six conversions in the fiscal year 1970 program will cost $441 million. We expect to award the contract for these ships in the first quarter of fiscal year 1970 and the first conversion should be completed in fiscal year 1971.

OTHER WARSHIPS

One nuclear attack carrier (CVAN)

The CVAN in this year's program is the second nuclear-powered attack carrier of the *Nimitz* class. *Nimitz*, the first of the class, in the fiscal year 1967 program, began construction in the summer of 1968 at Newport News Shipbuilding & Dry Dock Co. These two ships and a third to be requested in fiscal year 1971 will be procured on a multiyear contract from a single shipbuilder in order to acquire them at least cost. We had planned to request this second ship in last year's program but, in order to hold the fiscal year 1969 SCN budget to the lowest possible level, a second increment of advance funding was requested and full funding rephased to this year. The second increment of advance funding authorized and appropriated last year will permit completion of construction on the original schedule in the third quarter of fiscal year 1974. This ship will cost $510 million.

Two nuclear attack submarines (SSN)

The two SSN's in this year's program, the first of the new SSN 688 class, are new-design high-speed submarines which will use a modified version of the ——— propulsion plant. The cost of these two ships is $383 million.

PERFORMANCE CHARACTERISTICS

Mr. MINSHALL. Will you give us some figures on the speed and so forth?

Admiral COLWELL. We expect that these submarines will achieve a sustained submerged speed of not less than ——— knots. The ship is expected to have a displacement of about ——— tons. It will have, of course, unlimited endurance from a nuclear plant and it will have a length of about ——— feet and a beam of about ——— feet.

Mr. MINSHALL. Is this the same type submarine Admiral Rickover was calling for several years ago?

Admiral COLWELL. Last year this is the one he was talking about, yes, sir.

Mr. SIKES. I think he has been asking for it longer than that.

Admiral COLWELL. He has been working on this as a concept for several years, that is correct, sir. We have just succeeded in getting approval.

Mr. MINSHALL. There was quite a flap as to whether you should

settle for ——— knots or ——— or whatever it was. There was a big spread there.

Admiral COLWELL. There was such a discussion, that is correct, sir.

Mr. MINSHALL. This ——— knots submarine is what Rickover asked for.

Admiral COLWELL. Yes, sir, and we wanted it too.

Mr. SIKES. ——— knots is the highest speed that it is reasonable to build into a submarine?

Admiral COLWELL. ———.

Mr. SIKES. What do you know about the speed of comparable Russian submarines?

Admiral COLWELL. We know that the new Russian submarines will do ——— and I believe that is as far as our intelligence people will go at the present time.

Mr. MINSHALL. These are operational submarines?

Admiral COLWELL. Yes, sir.

Mr. ANDREWS. What is the highest speed of our newest operational attack submarines in the fleet today, Admiral?

Admiral COLWELL. Our newest *Sturgeon* class will do at top speed about ———.

Mr. ANDREWS. This is the first time you have gone above that?

Admiral COLWELL. No, sir; we had some older submarines which would make more than that, ———. The latest ones are somewhat slower than the ones of similar design that we built a few years ago. This is because they have a greater displacement and a slightly different configuration. Some of these older ones that are slightly smaller made just about ———.

Mr. MINSHALL. How does the cost of this ——— knot submarine compare with the previous ones that go ———?

Admiral COLWELL. The follow cost for a 688 class is estimated to be $153 million. The bid prices for a *Sturgeon* class that we had last year were about 87. That same ship today is estimated at about 103 in 1970 dollars.

Mr. MINSHALL. Thank you.

Admiral COLWELL. The increased submerged speed of these ships will improve significantly the capability of our submarine force. In addition to the ——— propulsion plant, weapons and sensors for these ships will be improved over those of previous classes to the maximum extent feasible within the state of the art. They will incorporate all the modifications developed by the submarine safety program. In short, they will be the best that we can build. The contract for these two ships will be awarded in the third quarter of fiscal year 1970 and completion of the first is expected in fiscal year 1974.

Mr. SIKES. Your statement that it will be the best that we can build is a welcome comment. This committee, of course, has been concerned about this program for some time. Are you saying that nothing is being left out of this ship that the Navy feels will be useful for its purpose, either from the standpoint of speed, survival, or effectiveness in an attack?

Admiral COLWELL. I would answer that in the affirmative.

MISSILE FRIGATE

One nuclear-guided missile frigate (DXGN)

The DXGN is the first of a new class of nuclear-powered guided missile frigates and this ship will cost $222 million.

Speaking to the advance funding for the DXGN, you will recall that the fiscal year 1969 budget approved by you last year contained $52 million for two nuclear frigates. At that time it was our plan to request full funding for two DXGN, in the fiscal year 1970 program and two more in the fiscal year 1971 program. This year we have requested full funding for only one ship. However, with the total advance funding authorized last year plus that requested this year we will be able to meet the construction schedules previously planned for the four ships. Half of the fiscal year 1969 advance funding is now being applied toward the first ship in the fiscal year 1970 program; the balance toward the nuclear components of second ship now proposed for the fiscal year 1971 program.

The improved DXGN sensors and weapons systems will provide earlier warning, reduced reaction time and improved coordination and control over those installed in earlier nuclear frigates. For this reason and owing to the advantages of nuclear propulsion, the DXGN's will be well suited for employment either as escorts for nuclear attack carriers or independent missions. The ship is being defined by modified contract definition conducted in-house by the Navy. This is expected to be completed in August 1969. A request for proposal (RFP) to industry in September 1969 will lead to a production contract in the third quarter of fiscal year 1970. Completion of this ship is expected in early fiscal year 1975.

Five destroyers (DD)

These general purpose destroyers, the first of the DD 963 class formerly known as DX, is the beginning of a program to replace a substantial number of our older World War II destroyers which are approaching end of service life. The ships in this year's program will be the first destroyers procured in 10 years. Of approximately 198 destroyers now in the fleet, about 154 or 77 percent are over 20 years of age. Some will be replaced by ocean escorts (DE): others by the DD 963. The DD 963 class is optimized for ASW with shore bombardment capability and sufficient speed to permit operations with attack carrier strike forces. Contract definition contracts for this destroyer class were let in July 1968 to three contractors (General Dynamics Inc., Litton Industries., and Bath Iron Works). Proposals from these contractors in April 1969 will lead to selection of a preferred contractor and a multiyear production contract in November 1969. These five ships will cost $342.7 million. Delivery of completed ships in this series construction is expected to begin in fiscal year 1974.

One guided missile frigate (DLG)

The DLG conversion requested this year, is a continuation of the antiair warfare modernization program begun in fiscal year 1966. Improvements will include the improved longer range standard mis-

sile, improvements to the fire control radar and control system, the latest three-dimensional air search radar and the Navy tactical data system. This DLG-6 class conversion will be the last conversion of the obsolescent beam riding Terrier missile system to the modern homing Terrier missile system and will cost $39 million. Contract award is planned in the second quarter of fiscal year 1970. Completion of the conversion is expected in fiscal year 1971.

TYPE OF MISSILE TO BE USED

Mr. SIKES. We are going to get into this in more detail later, but do I understand that the Terrier missile is going to be phased out?

Admiral COLWELL. Not exactly; no, sir. The Terrier missile, as you know, has gone through several modifications and we now have in the fleet one that we call the improved Terrier and the current production is what we call the Standard missile, which is in fact the next step down the line along the Terrier production.

Mr. SIKES. What will this ship use, the Standard missile or the Terrier?

Admiral COLWELL. It will be able to fire either one. Either the improved Terrier or the Standard missile.

Mr. SIKES. Otherwise, I would have some serious misgivings about a conversion on a ship for a system that is going to be phased out soon.

Admiral COLWELL. We would not propose such a conversion.

Admiral GADDIS. This point came up in the PAMN hearings. Admiral Woods discussed the conversion to the Standard missile. He did not specifically point out, however, that all Standard missile ships can fire either the Terrier or the Tartar, which are the parent missile to the new Standard missile.

Mr. ANDREWS. Is the Standard missile a follow-on of the Terrier?

Admiral GADDIS. Yes, sir; an extended range follow-on.

Mr. ANDREWS. It will eventually replace all the Terriers?

Admiral COLWELL. Yes, sir.

Mr. ANDREWS. But launched from separate platforms?

Admiral COLWELL. Yes.

Admiral GADDIS. No change will make obsolete any of the prior Terrier or Tartar missiles.

AMPHIBIOUS SHIPS

Two general-purpose amphibious assault ships (LHA)

Admiral COLWELL. The LHA's requested this year are the second increment of the multiyear LHA procurement begun with one ship in the fiscal year 1969 program. The LHA will possess the capability of landing the major elements of a Marine battalion landing team by air and surface assault. Last year contract definition competition between three contractors—General Dynamics Inc., Litton Industries Inc., and Newport News Shipbuilding & Dry Dock Co.—led to the selection in May 1968 of Litton Industries as the preferred contractor.

Some necessary modifications to the Litton preliminary design have been made and a production contract is now under negotiation.

You will recall that advance funding of $63 million was approved last year to support three LHA to be requested in the fiscal year 1970 program. We now estimate that the first ship in the fiscal year 1969 program will cost $185 million, vice the $153 million appropriated. Accordingly we propose to program $32 million of the fiscal year 1969 advance funding toward the cost of the fiscal year 1969 ship; $17 million of the fiscal year 1969 advance funding will be used to support the two ships in the fiscal year 1970 program; the remaining $14 million will be applied to reduce the fiscal year 1970 NOA requirement. The two LHA's in this year's program will cost $287.7 million and start delivery in fiscal year 1973.

These ships will be built at the new yard at Pascagoula.

MINE WARFARE AND PATROL SHIPS

Ten ocean minesweepers (MSO)

The 10 MSO conversions this year are a continuation of the modernization program begun for these ships in fiscal year 1968. This conversion improves the reliability of the propulsion plant, improves the minesweeping capability, and adds minehunting capability in one hull. These 10 conversions will cost $47.9 million. Contract award is planned in the third quarter of fiscal year 1970 and completion is expected in fiscal year 1971.

Mr. SIKES. Where will they be converted?

Admiral COLWELL. They have not yet been bid so we don't know where it will be done. We would think they will be split between the east and the west coasts.

Two motor gunboats (PGM)

These motor gunboats ——— are elements of the military assistance program. They are capable of performing counterinsurgency, patrol, blockade, and reconnaissance missions. They are designed to engage in antishipping and small craft actions and to support troops in shallow, coastal, or restricted waters. These ships will cost $550,000 each for a total cost of $1.1 million. Completion is expected in the third quarter of fiscal year 1971.

CONSTRUCTION OF SUBMARINE CHASER

The PC requested this year is an element of the military assistance program. The ship is to be built in ——— on a cost-share basis with that government. The U.S. share is $1.9 million. The ship will have the capability of conducting counterinsurgency infiltration patrols in coastal waters ———.

Mr. ANDREWS. How much would it cost in total?

Admiral COLWELL. We are paying half. It is $3.8 million total.

Mr. MINSHALL. Where are these going to be built?

Admiral COLWELL. This is a single ship that will be built in ———. We pay 50 percent.

Mr. ANDREWS. Do they have a good capability to build these ships?

Admiral FAHY. They should be able to handle it. They will probably require technical assistance of some sort, but we are going to buy a lot of the SCN components and everything and send them into ——— for assembly.

Mr. ANDREWS. Do they build ships down there that you know of?

Admiral FAHY. They do, small craft.

Mr. MINSHALL. How many shipyards do they have in ———.

Admiral FAHY. I believe all they have is one, the ———.

Mr. SIKES. I am sure you researched this before you agreed to the proposal because it would be folly to undertake to build a ship for which they have no capabilities, but would you provide something for the record to confirm this?

Admiral FAHY. Yes, sir, we will.

(The information follows:)

CAPABILITY TO CONSTRUCT PATROL CRAFT

The proposed patrol craft construction for the ——— was first proposed by the U.S. naval advisors on the staff of the U.S. Military Assistance Command/Joint U.S. Military Advisory Group, ———. The proposal was reviewed and approved by the commander in chief, Pacific and the Secretary of Defense. In originating this proposal, our naval advisors determined that the ——— had the capability for undertaking this construction effort and for sharing equally with the United States the expenses of building this craft.

This vessel would be of the PC 1638 class, essentially the same as our World War II steel hulled 173-foot submarine chaser with diesel engine propulsion. This proposed craft would be built at the ———. This dockyard has already built two patrol vessels—a 110-ton geared turbine driven ship built during 1956–1958, and the T–91 patrol craft completed early this year, and equipped with combined diesel engines and gas turbines. The T–91 is a 100-foot, 113-ton displacement ship.

For the proposed patrol craft's construction, we would use the U.S. Navy PC1638 class general plans and specifications, from which five craft have been built in the United States. The construction of this ship would be supervised by the U.S. naval advisors in ——— (one of whom is an engineering duty only naval officer), assisted as needed by technical experts from our naval staffs in the Pacific area or from our naval shipyards.

INCREASED COST FOR REDUCED NUMBER OF LOGISTIC SUPPORT SHIPS

Admiral COLWELL. There are in the program three fast deployment logistic ships (FDL).

The FDL will be a new class of specialized military ships which, with the C–5A aircraft, will comprise the key military elements of the rapid deployment forces. These ships will provide a high speed, flexible military sealift force capable of rapid overseas deployment of Army equipment. They are requested to meet the strategic mobility requirement stated by the Joint Chiefs of Staff.

Last year four FDL were requested as the first increment of a 30 ship FDL program but were not approved by Congress.

Mr. SIKES. It is interesting to note your requirement goes down as time goes by. Is your picture any more favorable than it has been in the past in getting these ships authorized?

Admiral COLWELL. I have no real feel for the prospects for obtaining these ships; however, the requirement for the FDL ships has not been reduced. The JCS, in March of 1969, again validated the requirement for 30 FDL ships.

Mr. SIKES. I am a supporter of the program, as I think you know, but it certainly has had rough going for the last couple of years.

Admiral COLWELL. I have no feel for the reception that this may get from anywhere in the Congress, Mr. Chairman.

Mr. SIKES. I don't think you would have to prove very much.

Admiral COLWELL. The original JCS requirements for 30 FDL's still remains; however, in view of the past opposition to the program, a more modest 15-ship program is being submitted this year. The three FDL's in the fiscal year 1970 program, at an estimated cost of $186.7 million, are the first increment of this program. This reduced program will permit us to review, as a possible method of meeting the remaining FDL requirement, any new design proposals, from industry, or other sources, such as the proposed news MSTS multipurpose cargo ship.

Mr. SIKES. What was the proposed cost last year?

Admiral COLWELL. $183.6 million is the figure I am given, sir.

Mr. SIKES. That was for four?

Admiral COLWELL. That was for four.

Mr. ANDREWS. The three cost you more than the four?

Admiral COLWELL. Yes, sir.

(*Clerk's note:* Subsequent to the hearings the following information was presented for the record.)

The increase in the first year's program costs, of fiscal year 1970 over fiscal year 1969, is the result of a revised method of computing ship costs. Individual ship costs have increased, but not as much as indicated by a comparison of this year's and last year's program costs.

Mr. ANDREWS. Has the cost gone up that much in the last 12 months?

Admiral COLWELL. Some part of that is inflation, of course. Most of it, as I understand, is because this is a smaller program and therefore the unit cost is higher.

Admiral GADDIS. There is another point, sir, that the last year's program was budgeted on an average cost for all ships in the program. This program is based on the learning curve value of the ships at their position in the program. This represents an apparent increase but not an actual increase in ship costs.

Mr. ANDREWS. The figures would indicate a tremendous increase.

Admiral GADDIS. Yes, sir.

(*Clerk's note:* The following statement was subsequently provided by Admiral Colwell for the record.)

The cost are not exactly comparable. A better comparison can be made by comparing the average ship costs for the two programs. The average ship costs of last year's 30 ship program was $46.8 million. The average ship cost of the fiscal year 1970 program is $54.56 million, an increase of $7.76 million per ship. As I said previously, most of the cost increase can be attributed to the smaller 15-ship program. For example, I understand that in Litton's original cost proposals, the differences in average ship costs between a 14- and 30-ship program was about $6 million. Other reasons for the cost increase are the additional year's escalation and a revised, shallower, learning curve which results in an increase in average ship costs and hence greater overall program cost.

Admiral COLWELL. Contract definition has been completed and Litton Industries Inc., was selected as the contractor. Upon Congressional approval, a multiyear production contract will be let. Construction of

the first in this series of three ships is expected to be completed in fiscal year 73.

SERVICE AND LANDING CRAFT

The cost of service and landing craft in this year's program is $13.2 million for various types of service craft and $7.6 million for landing craft.

This slide will show you the numbers and pictures of the service craft requested. They include harbor tugs and repair, berthing and messing barges.

Landing craft included here consist of various assault boats whose combined functions include guidance and control of early wave of amphibious assault and the landing of personnel, all classes of vehicles and equipment. The 2 LCM MK 8 are elements of the military assistance program for the South Vietnamese Navy.

That completes the description of the ships in the fiscal year 1970 program.

NEW ITEMS IN BUDGET

Mr. SIKES. Are you preparing to lease any docks for this program?

Admiral COLWELL. Drydocks, sir?

Mr. SIKES. No, operational docks such as those in Vietnam. I am thinking of the Delong dock built under contract and in use in South Vietnam.

Admiral COLWELL. No, sir; there are none in this program.

Four new line items are in our SCN budget request this year: CVAN spares, outfitting spares, post delivery charges; and SCN cost increases. I will now explain these items.

Last year Congress recognized that spare nuclear propulsion components for the *Nimitz* class CVAN's would be required so that lack of long production time spares could not prevent timely repairs if necessary. Accordingly, $30.3 million was added by Congress to the fiscal year 1969 SCN budget as the first increment of these special CVAN spares. The second increment requested this year will cost $48 million. The third and final increment to be requested in fiscal year 1971 will be $20.7 million.

Heretofore, we have included the cost of outfitting spares in the end cost estimates of a ship in the budget request. Outfitting spares are the initial spares provided and carried in the ship to facilitate on board repairs as needed. Funds for these spares are not utilized until near the end of ship construction. To avoid requesting funds before they are needed we propose a new line item, "Outfitting spares," to be budgeted annually for obligation at lead time away from ship delivery. Accordingly, the cost of outfitting spares is not included in cost estimates of ships in the fiscal year 1970 program and $55.4 million is requested for outfitting spares of prior year ships scheduled to deliver in the near future. End cost estimates of prior year ships have been adjusted downward by an appropriate amount. This follows the practice used in other appropriation budgets.

Post delivery charges for conduct of tests and correction of deficiencies are proposed to be handled similarly; $23.1 million is requested this year for this purpose. These two changes in budgeting procedure will allow a one-time recovery of prior year funds to apply

to the fiscal year 1970 program and to fund price increases in prior year programs. While these changes appear to constitute a minor revision to end cost concept for shipbuilding, it is proposed in response to congressional and Navy concern over the large unexpended balance of funds in the SCN account. Additionally, the proposed budgeting procedure will provide funds for outfitting and post delivery at a point in ship construction schedules where they can best be definitized.

COST OVERRUNS

As the Secretary of Defense and the Secretary of the Navy have discussed with other committees, we are faced with actual and potential cost overruns in the SCN account estimated to be in the range of $600–700 million. In order to accommodate $183 million expected to mature before June 30, 1969, we propose to cancel and reprogram funds from 3 unawarded ships already authorized. These are a DE, and AS and an AD, totalling $182.7 million. To provide the additional $167 million expected to be required by the end of this calendar year, we have introduced a line item for "Ship cost overruns" in that amount. In addition we estimate a requirement of approximately $104 million prior to the end of fiscal year 1970. In order to cover this addtiional requirement we have deferred that amount of fiscal year 1969 and prior programs to serve as a possible reprograming source should our estimates be borne out. This amount is derived primarily from one ship, the AOE, in the fiscal year 1968 program. In order to accommodate these $167 million of increased costs requested in this budget, without increasing the fiscal year 1970 Navy budget, we have made selective balancing reductions in several budget line items. The SCN items thereby deleted from the original submission include $66 million for two DLG conversions, which are being deferred with interim overhauls; $7.1 million in advance procurement for MSO conversions which can be deferred; and a reduction of $10 million in advance procurement for DLG conversions to be requested in fiscal year 1971.

As the Secretary of Defense stated, some of these reductions, such as the AD and the AS, are in fact deferrals, but we feel they are required in order to bring the account into balance.

ADVANCE PROCUREMENT REQUEST

The advance procurement requested in the fiscal year 1970 budget to support long lead time items for ships to be included in future programs is as follows:

	Millions
To complete advance funding required for 7 SSBN conversions in fiscal year 1971 and provide the first increment of advance funding for SSBN conversions in fiscal year 1972	$157.5
For 5 SSN	119.2
For the remainder of advance funding required to maintain the production schedule for the 4 ship DXGN program	67.9
For 8 DD 963 Class	17.6
For 4 DLG (Conv)	39.0
For 2 LHA	17.0
Total	418.2

SUMMARY

In summary, we are requesting 16 new construction ships and 17 conversions of existing ships. The total cost of this program, $2777.6 million, less $414.2 million advance funding from prior fiscal years, plus $418.2 million advance funding for future ships comprises the requested Total Obligational Authority (TOA) of $2781.6 million.

Assets of $150.2 million are available from prior year programs, principally as a result of instituting the new budgeting procedure, for outfitting spares and for past delivery charges, which allows a reduction of the TOA and a new obligational authority (NOA) request of $2631.4 million. None of the funds requested are for industrial facilities.

Mr. Chairman, this completes my statement.

EXTENT OF COST OVERRUNS

Mr. ANDREWS. Admiral, on page 13 you say we are faced with a cost overrun estimated to be in the area of $600 to $700 million.

Admiral COLWELL. Mr. Andrews, this is a result of a number of factors and the total interplay of these things is rather complex. I would like to ask Admiral Adair of the Ship Systems Command to explain this in detail.

Mr. ANDREWS. What I am interested in is the overrun due to inflation.

Admiral COLWELL. It is not entirely due to inflation, but some of it is.

Admiral ADAIR. First of all, the potential deficit we face includes an overrun, and it is not all overrun. We recognized this as a potential problem approximately 1 year ago when we were awarding the ships authorized in fiscal year 1968 and some of the residual authorized and appropriated ships from 1967.

Now, this included the attack submarines. The award of the guided missile nuclear-powered frigate, and our preliminary indications of the cost of the *Nimitz*, the CVAN-68. Before we contracted for these ships, sir, we came and told you of our potential problem. We cut back program and reduced our reserves before we contracted so that we were not faced, first of all, in an overrun situation.

Now, in addition to that, we have faced some overruns. We have some in ships that we had already started; several conversions. One is the *Midway*. The CVA-41, where we opened the ship up, we found that further work beyond that which we had estimated, and which we had sought appropriations for were needed to put this ship back on the line to handle the aircraft of the mid-1970's. We faced an overrun in the NR-1, the deep diving nuclear-powered——

Mr. ANDREWS. Elaborate in the record on what you are talking about.

(The information follows:)

REASON FOR COST OVERRUNS

The Navy encountered significant cost problems in the shipbuilding program during fiscal year 1968 when, based on quotations being received, it became

evident that funds appropriated for a number of ships in fiscal year 1967 and 1968 shipbuilding programs would be inadequate to permit the award of these ships. Some of the significant cost growth encountered at this time was associated with the CVAN–68 (*Nimitz*), the DLGN–36 and –37, and the SSN–685 (the turbine-electric quiet) submarine. This cost growth was discussed in testimony before various congressional committees last year. The principle reason for the significant increase in funding requirement to award the contracts for these ships was the unexpected change in market conditions and the inflationary trend which has developed. This was discussed in testimony before the House Appropriations Committee last year on May 2 (hearings before a subcommittee of the Committee on Appropriations, House of Representatives, 90th Cong. (1969), pt. 6, p. 321) where it was pointed out that large increases were being experienced due to higher than anticipated labor rates, increased material costs, higher profits and limited sources of supply.

In order to provide sufficient funds for award of the fiscal year 1967 and 1968 ships as well as to provide for indicated cost growth in some ships already under construction and conversion it was necessary to cancel the construction of certain ships previously authorized by the Congress. This was done in lieu of requesting additional obligational authority from the Congress. Reserves normally held for technological changes in ships under construction and for anticipated cost growth were cut to bare minimums in order to avoid additional program cuts.

Cost overruns have been encountered in some programs in addition to the problem generated by the unusual conditions described above. Some examples of these are the cost of the nuclear deep dive research vehicle (NR–1), the modernization of the U.S.S. *Midway* (CVA–41), and the modernization of the U.S.S. *Albany* (CG–10). These costs overruns stem from a variety of reasons. In the case of NR–1, the full impact of the developmental effort required to produce equipment capable of operating for extended periods of time on the ocean floor was not fully recognized. In the case of the conversions the Navy underestimated the extensive rehabilitation of hull and machinery the two ships would require. In addition, the cost of the *Midway*, in particular, was affected by the disruption caused by the heavy influx of high priority shipwork into the shipyard resulting from the Southeast Asia conflict and the west coast shipyard strikes.

At the time the fiscal year 1970 shipbuilding budget was prepared it appeared that the cost problems as then known could be resolved by intensive effort which had been undertaken by the Navy to recover unexpended funds from ship programs in prior years which were completed or nearing completion. After 6 months of intensive review by a team of auditors from the Naval Audit Service working with personnel of the Navy's Systems Commands it is now apparent that the recapture of unexpended funds will not be as great as anticipated and that some other source of funds to cover the cost growth must be found.

In addition to the above fund recovery effort shortfall, problems were encountered during the past year which made it quite evident that the cost problem could not be handled as anticipated at the time of budget preparation. The most significant of these problems was the filing of a large number of claims by various shipbuilders. This claim problem was noted by Secretary Laird in his statement before the Senate Armed Services Committee on March 19. The claim mentioned by Mr. Laird against 14 of the DE–1052 class ships which has just been settled was received in several sections with the principal portions being filed subsequent to April 1968. Other claims of significant magnitude have since been received during the months of November and December 1968 and January 1969. In addition, other claims are anticipated based on informal notification of intent to file by various shipbuilders.

This problem of shipbuilder claims is a particularly thorny one. The claims are against ship programs largely in the fiscal year 1962 through 1965 shipbuilding programs. The ships during this period were awarded on a competitive fixed price basis and the unusual inflationary situation has placed the shipbuilders in a loss position causing them to resort to the claims route to recoup losses. The claims are based on a variety of reasons such as (a) specification ambiguities which experience proved impossible to meet within the contract period,

(b) failure of the Government to provide timely design information for Government furnished equipment currently under development, (c) late Government plan approval, (d) Government directed technical changes, and (e) more stringent Government administration of inspection and quality assurance requirements on both surface ships and submarines following the *Thresher* tragedy. The majority of these recent claims are not yet settled. Because of the wide variety of factors on which the claims are based, the ratio of settlement cost to claim face value can vary widely. The settlement ratio on the recently settled claim mentioned by Secretary Laird is therefore not necessarily indicative of the ratio which will obtain as the other claims are negotiated.

In addition to the shipbuilder claims, cost growth has been encountered in other programs. A most significant factor has been delay and disruption of work on ships under construction or conversion in Naval shipyards where significant segments of the work force had to be diverted from the new construction and conversion effort to higher priority ship repair/overhaul work which has expanded significantly since the beginning of Southeast Asia hostilities. Other significant cost growth has been encountered in the purchase of equipments (radars, sonars, electronic ordance and fire control equipments), which the Government must furnish to the shipbuilders.

Because of the recent cost growth problem it has been necessary to apply all recovered funds to cover the cost growth. This has interfered with the capability to meet recoupment objectives which have been included in the financing of the SCN appropriation since fiscal year 1966. The fiscal year 1968 recoupment or at least a sum of money equivalent to the recoupment objective will be provided by changes in budgeting procedure in fiscal year 1970 which will allow a one time recovery of prior year funds to apply toward the price increases we have been discussing. The fiscal year 1969 recoupment objective of $100 million is included in the $600 million to $700 million deficit currently projected.

In summary, market conditions which I ascribe to be limited supply sources, nonavailability of skilled manpower and escalation of labor and material beyond that which was budgeted have contributed significantly to the SCN deficit. In view of the interfacing of the above factors, it is difficult to specifically identify that portion of the deficit which is attributable to market conditions.

In reply to Mr. Andrews' specific question regarding the impact of inflation, it is my judgment that the market conditions are responsible for 40–60 percent of the total deficit.

INCREASE IN SHIP CONSTRUCTION COST

Mr. ANDREWS. What I am interested in, if you can tell me, is how much increase in cost of ship construction have you noticed in the last 2 years, percentagewise? Can you answer that question? Just put something in the record about it.

Admiral ADAIR. We will be pleased to put something in the record.

(The information follows:)

Ship construction costs over the past 2 years appear to have increased 15 to 25 percent above that which was previously being experienced.

Mr. ANDREWS. When I read here that the overruns are estimated to be in the range of $600 million and $700 million, that is a lot of money.

Admiral ADAIR. Yes, sir.

Mr. SIKES. All right, gentlemen, the committee will reconvene at 10 o'clock in the morning.

Thank you very much.

WEDNESDAY, MAY 14, 1969.

FISCAL YEAR 1970 FUNDING

FUNDS DERIVED FROM BUDGET CHANGES

Mr. SLACK. The committee will please come to order.

This morning we will continue our consideration of the appropriation request for "Shipbuilding and Conversion, Navy." It is my understanding that on yesterday afternoon Admiral Colwell completed his statement with regard to this request and thereafter the committee adjourned for the day. The first item is entitled "Outfitting Spares and Post Delivery Charges."

Admiral Colwell, your statement indicates that the cost estimates of ships no longer include costs of outfitting spares and postdelivery charges, and that fiscal year 1969 and prior year costs have been adjusted downward. What is the amount of the one-time recovery of prior year funds?

Admiral COLWELL. May I ask Admiral Gaddis to answer that question?

Admiral GADDIS. The one-time recovery for outfitting material, sir, is $127.2 million for all fiscal years up to and including 1969. The comparable number for post delivery charges is $110.2 million, a total of $237.4 million, sir. From this total $122.4 million has been used to offset NOA for the fiscal 1970 program, $12.8 million was used as a source of funding for the increased cost of the AOE–5 in reprogramming action SCN 69–61 submitted to this committee, and $102.2 has been used to offset the recoupment objective for 1968.

FISCAL YEAR 1970 EXPENDITURE ESTIMATES

Mr. SLACK. Admiral Colwell, will you provide for the record a breakdown of estimated expenditures in fiscal year 1970, by budget activity, showing for each activity the estimated expenditures from fiscal year 1970 appropriations and those from each of the prior year programs?

(The information follows:)

FISCAL YEAR 1970 ESTIMATED EXPENDITURES, SHIPBUILDING AND CONVERSION, NAVY

[In thousands of dollars]

	Fiscal year 1970	Fiscal year 1969	Fiscal year 1968	Fiscal year 1967	Fiscal year 1966	Fiscal year 1965	Fiscal year 1964	Fiscal year 1963 and prior years	Total
Budget activity 1—FBM ships	42,000	67,000	102,000	.....	.....	.....	19,000	.....	230,000
Budget activity 2—Other warships	46,000	67,000	145,000	242,000	98,000	36,000	56,000	43,000	733,000
Budget activity 3—Amphibious ships	9,000	28,000	0	63,000	54,000	32,000	8,000	5,000	199,000
Budget activity 4—Mine warfare and patrol ships	1,000	7,000	13,000	78,000	57,000	48,000	18,000	5,000	227,000
Budget activity 5—Auxiliaries and craft	13,000	6,000	55,000	82,000	61,000	55,000	5,000	3,000	280,000
Total	111,000	175,000	315,000	465,000	270,000	171,000	106,000	56,000	1,669,000

Mr. SLACK. Last year you stated you expected to expend $1.65 billion in fiscal year 1969. The program and financing schedule indicates it will be $1.7 billion. Is this still your best current estimate?

Admiral GADDIS. The current estimate for fiscal year 1969 expenditures is $1.9 billion.

PRIOR YEAR RECOUPMENTS

Mr. SLACK. In fiscal year 1968, you had a recoupment objective of $115 million, and for fiscal year 1969, it was $100 million. You did not recoup any in fiscal year 1968 because of cost overruns. How did you do in fiscal year 1969?

Admiral COLWELL. May I again ask Admiral Gaddis to answer?

Admiral GADDIS. That $115 million in 1968 is in the program presently before you. The fiscal 1969 recoupment objective of $100 million has not been achieved, sir, and has been addressed as a part of the total overrun problem as presented by the Secretary of Defense.

Mr. SLACK. What is your recoupment objective in fiscal 1970?

Admiral GADDIS. Zero, sir.

UNOBLIGATED BALANCES

Mr. SLACK. Please submit for the record a tabulation showing (a) the unobligated balances as of the last reporting date by budget activity and by fiscal year; and (b) the estimated unobligated balances at the end of fiscal years 1969 and 1970 by budget activity.

(The information follows:)

SHIPBUILDING AND CONVERSION, NAVY, UNOBLIGATED BALANCE AS OF MAR. 31, 1969

[In thousands of dollars]

Program year	Fleet ballistic missile ships (1)	Other warships (2)	Amphibious ships (3)	Mine warfare and patrol ships (4)	Auxiliaries and craft (5)	Total
1969	208,485	265,822	201,816	55,995	106,544	838,642
1968	134,140	198,560	667		115,407	448,774
1967		440,579	47,257	78,802	43,450	610,088
1966		38,572	20,968	27,917	25,038	112,495
1965	6,134	62,346	11,053	103,849	25,309	208,691
1964		24,933	6,594	21,774	3,427	56,728
1963	13,909	30,131	4,161	10,313	3,540	62,054
1962 and prior years		57,023				57,023
Subtotal	362,648	1,117,966	292,516	298,650	322,715	2,394,495
Anticipated recoupment						−100,000
Resources for financing subsequent year programs						+150,250
Total unobligated						2,444,745

SHIPBUILDING AND CONVERSION, NAVY, UNOBLIGATED BALANCES

[In thousands of dollars]

Budget activity	As of June 30, 1969	As of June 30 1970
1. Fleet ballistic missile ships	180,396	238,596
2. Other warships	417,786	574,312
3. Amphibious ships	101,809	133,151
4. Mine warfare and patrol ships	84,349	14,298
5. Auxiliaries and craft	241,188	390,621
Subtotal	1,263,259	1,564,715
Unprogramed balance available to finance subsequent year requirement	150,250	
Total unobligated	1,413,509	1,564,715

NUMBER AND TYPES OF CONTRACT AWARDED

Mr. SLACK. Based upon the DD Forms 350, for all Navy procurement accounts how many contracts were awarded in fiscal year 1968 and what was the value of those contracts?

Admiral COLWELL. For the "Shipbuilding and conversion, Navy," appropriation, 63 contracts were awarded in fiscal year 1968 at a value of $721,876,000.

Mr. SLACK. How many letter contracts were awarded in fiscal year 1968 and what was the total value of these letter contracts?

Admiral COLWELL. For the "Shipbuilding and conversion, Navy," appropriation, 16 letter contracts were awarded in fiscal year 1968 at a value of $271,341,000.

Mr. SLACK. How many fixed price contracts were awarded sole source in fiscal year 1968 in number and value, and how does this compare with the number and value of fixed price contracts awarded as a result of competition? You can provide that for the record.

(The information follows:)

For the "Shipbuilding and conversion, Navy," appropriation in fiscal year 1968, information requested is as follows:

Type of contract	Number	Value
Fixed price type sole source	9	$10,860,000
Fixed price type competitive	36	409,384,000

Mr. SLACK. How many cost-plus-fixed-fee contracts were awarded in fiscal year 1968 in number and value?

Admiral COLWELL. For the "Shipbuilding and conversion, Navy," appropriation in fiscal year 1968, two cost-plus-incentive-fee contracts were awarded at a value of $30,291,000.

Mr. SLACK. Based on procurement contracts of $10,000 or more in value, what has been the trend in the percentage of awards on a competitive basis for the past 7 fiscal years? Answer that for the record.

(The information follows:)

For the overall Naval Ship Systems Command headquarters procurement effort which includes "Shipbuilding and conversion, Navy," "Other procurement, Navy," "Research, development, test and evaluation, Navy," and "Operations and maintenance, Navy," appropriations, the trend in percentage of awards on a competitive basis for the last 7 fiscal years is as follows:

	Percent competitive	Percent noncompetitive
Fiscal year:		
1962	56.2	43.8
1963	68.7	31.3
1964	60.7	39.3
1965	65.5	34.5
1966	55.7	44.3
1967	57.4	42.6
1968	45.8	54.2

The downward trend in fiscal year 1968 in the competitive area is primarily because of the necessity to award one large warship on a noncompetitive basis.

Mr. SLACK. How many contract modifications were awarded in fiscal year 1968 and the total value of these modifications?

Admiral COLWELL. For the overall Naval Ship Systems Command Headquarters procurement effort which includes "Shipbuilding and conversion, Navy," "Other procurement, Navy," "Research, development, test, and evaluation, Navy" and "Operations and maintenance, Navy," appropriations, 380 now procurement modifications were issued in fiscal year 1968 having a value of $154,458,146.

POSEIDON/POLARIS CONVERSION PROGRAM

REPROGRAMING ACTION FISCAL YEAR 69-03 P/A

Mr. SLACK. Before proceeding with the fiscal year 1970 SSBN program, I would first like to discuss a pending prior approval reprograming action for this budget activity. Last year, the Congress appropriated $269,500,000 for the Poseidon/Polaris conversion program. These funds provided $139 million for the conversion of two SSBN submarines, $34.5 million for advanced procurement for six Poseidon conversions and overhaul in 1970, and $96 million for additional conversion.

Of the $96 million, $30 million was for the advanced procurement associated with the overhaul of four SSBN's, and $66 million for advanced procurement associated with the fiscal year 1970-71 overhaul and conversion program. It is the committee's understanding that the Navy placed the $96 million in a separate account designated ballistic missile submarine (nuclear) conversion/shipwork, to be available for conversion when the Congress considers that reliability of the Poseidon has been adequately demonstrated.

The reprograming action being considered today, therefore, would transfer $83.7 million of the $96 million from the special account to the account for advanced procurement of SSBN conversion and overhaul. Added to the $34.5 million appropriated for advanced procurement this would make total availability of $118.2 million for conversion and overhaul.

How much of the $118.2 million will be used in conversion and how much is for advanced procurement associated with SSBN overhaul work?

Admiral GADDIS. We propose, sir—and I would ask Admiral Smith to amplify anything you would desire on this—that the total $118.2 million would be used in support of the conversion program in fiscal 1970 and 1971. If this reprograming is approved and our 1970 budget submission is approved, the overhauls will not take place, but the entire conversion program will be conducted on a revised schedule basis. The change is related to the fact that we now have confidence in the Poseidon program based on the test results reported by Admiral Smith in prior hearings yesterday.

USE OF CONVERSION FUNDS

Mr. SLACK. Will you provide a breakdown of the $118.2 million, by fiscal year, showing how much is in support of the overhaul program and how much in support of the conversion program.

Admiral GADDIS. Yes, sir.

Could I correct the record on that point? There will be no overhaul advance funding in the $118.2 million.

Admiral SMITH. I can provide some of that information at this point, if you desire, sir.

Mr. SLACK. Please proceed.

Admiral SMITH. The amount that Admiral Gaddis spoke of against the 1970 program as shown in the reprograming request is $95.3 million. Of that amount $25.8 is for ship sub-system work, and is the same work whether the ship is overhauled or is converted; $69.5 is for Poseidon weapons system. Of that amount, $19.9 is for navigation sub-system of the weapon system, which would be the same whether the ship is overhauled or converted.

In other words, it is a navigation system that is not peculiar to Poseidon, although it was developed in the Poseidon program.

The remaining approximately $49 million is peculiar to the Poseidon weapon system, but in our opinion as presented to the conference committee last year by the Secretary of Defense, is also necessary in order to protect the quality of the equipment, which cannot in our opinion be protected if we stop the production and then start up again; $22.9 million of the $118.2 is for the 1971 program; $12.1 of that is for the ship sub-system, and $10.8 is for the Poseidon weapon system, including the navigation system.

Mr. SLACK. Thank you very much.

How many conversions will be made in fiscal year 1970 and also in fiscal year 1971?

Admiral SMITH. Our plan, as submitted to the Congress, is for conversion of six in the fiscal year 1970 and seven in the fiscal year 1971.

Mr. SLACK. What plans do you have for the remaining $12. 3 million in the special account?

Admiral GADDIS. Of the $12.3 million in resources available for reprograming on the document, sir, $4.9 million is for a below threshold reprograming to the two SSBN Poseidon conversions in fiscal 1969. The balance of $7.4 million is reserved to offset fiscal 1970 NOA requirements as a part of the total of $150.2 difference between the fiscal 1970 TOA and NOA program.

Mr. SLACK. Has this reprograming action been approved by the Armed Services Committees of the House and Senate?

Admiral GADDIS. Only of the House.

Mr. SLACK. What is the status of the Senate action?

Admiral GADDIS. It is my understanding, sir, that their action is awaiting your review. It has been reviewed in staff but has not been formally responded to by the committee.

Mr. SLACK. Do you know whether or not the Senate plans to conduct a hearing on this reprograming action?

Admiral GADDIS. It is my understanding at this time that they do not.

RESULTS OF MISSILE TESTS

Mr. SLACK. Admiral Smith, you have completed six Poseidon missile tests through April 9, 1969, and the 7th is scheduled for May 16, 1969. It is our understanding that you have had some success, some partial success, and some failures; the ——— test having been a failure. Would you discuss for us at this time the six tests conducted thus far?

Admiral SMITH. The first two tests were successful in meeting their test objectives ———. The third test failed during the first stage of propulsion ———. The fourth test was satisfactory and successful in functioning as intended.

The fifth test met better than ——— percent of its test objectives. ———. The sixth test failed during ———.

COMPARISON WITH POLARIS MISSILE

This program is very much more successful than the A–3 program which at its completion resulted in a highly reliable and successful missile program. In fact, it was not until after the 8th test that the A–3 performed as well as the first of this Poseidon series.

Based on the conservativeness of the design, the extensive and highly successful ground test program, and these six flight test programs, I am convinced that if the program is carried out as planned and proposed, that the missile will be at least as reliable as the A–3.

I would note that, because of a conflict between the scheduling of Apollo 10 and Poseidon, we have rescheduled the seventh test to May 22.

Mr. SLACK. Is it fair to compare the Poseidon test program with your A–3 test experience? Is not Poseidon a more complex weapon?

Admiral SMITH. It is fair in two regards: One, the same engineering, manufacturing, and management team that successfully developed the Polaris A–3 is and has been working on the Poseidon. So this is a direct comparison of their retained capabilities. If that team were as successful as history shows it to have been on the A–3 with a much more problem ridden early start, I think there is a basis of comparison that is useful in arriving at a judgment as to the success on the Poseidon.

Mr. SLACK. Then it is your belief that the results of these six Poseidon tests have given you full confidence to go forward with the proposed Poseidon conversion which you have scheduled.

Admiral SMITH. It is.

Mr. SLACK. Admiral Colwell and Admiral Fahy do you both share the same thoughts with regard to this?

Admiral COLWELL. I do, sir.

Admiral FAHY. I am confident we are making better progress here than we did at comparable times in the A–3.

Mr. SLACK. Are there questions on this reprograming?

Mr. LIPSCOMB. No, Mr. Chairman. Not at this time.

Mr. MINSHALL. No, Mr. Chairman.

CONVERSION OF FLEET BALLISTIC MISSILE SUBMARINES IN 1970

Mr. SLACK. The fiscal year 1970 program for fleet ballistic missile submarines is $462.6 million, which an increase of $144.3 million over the fiscal year 1969 program. Does the $318.3 million estimate for fiscal year 1969 include the reprograming action we have just discussed?

Admiral GADDIS. Yes, it does.

Mr. SLACK. The fiscal year 1970 program provides $301.4 million for six SSBN conversions for the Poseidon missile. If approved, this

will provide funding for a total of 10 such SSBN conversions through fiscal year 1970. How many of these 10 SSBN's will be off station at any one time and for how long while this conversion work is going on?

Admiral COLWELL. We can furnish that for you, Mr. Chairman. In order to save time, you would agree to supplying that for the record?

Mr. SLACK. Very well, if you will provide that for the record.

(The information provided the committee is classified.)

Mr. SLACK. To what extent has this been coordinated with the planned Air Force conversion to Minuteman III?

Admiral COLWELL. Admiral Smith advises that this coordination occurs at the level of the Secretary of Defense and his office.

Admiral SMITH. In the sense that both schedules are reviewed and approved by the same group in the Office of the Secretary of Defense.

Mr. LIPSCOMB. Don't you know now the scheduling on these Polaris submarines conversions, so you can tell us?

Admiral FAHY. Yes, sir. We have the start of conversion and delivery here.

Admiral COLWELL. I have it right here. The planned force levels of SSBN's deployed by fiscal years, ———.

Mr. LIPSCOMB. These are deployed.

Admiral COLWELL. Yes, sir. The corresponding numbers for the SSBN's which will be in conversion or in overhaul and in shakedown for those same years are——— making the total of 41 in each case.

Mr. LIPSCOMB. In ——— we will have ——— deployed.

Admiral COLWELL. Yes, sir.

Mr. LIPSCOMB. How many of those —— working at the present scheduling, would be on station?

Admiral COLWELL. About ———.

Mr. LIPSCOMB. If I have been listening correctly, that is a period of high risk. Can we afford this degradation of our nuclear capability for this length of time?

Admiral COLWELL. These conversions and overhauls are all geared to the recoring, or refueling. This is something which has to be conducted.

Mr. LIPSCOMB. It has to be conducted, but what comes first? Can you afford to have your nuclear strike capability cut to this degree in ———. There must have been thought given to this.

Admiral COLWELL. Yes, sir.

If the ships have to be refueled we have no choice. We have to bring them into the yard for the refueling. We do the overhaul and conversion at the same time.

EXPOSURE OF POLARIS SUBMARINES TO ATTACK

Mr. LIPSCOMB. Do you know that last fall at Rota, Spain, there were four nuclear Polaris submarines tied up at one time at the dock? Will this happen at a time of deployment of only ——— on station?

Admiral COLWELL. I am not familiar with the exact circumstances at that time, sir. Normally the patrol schedules are worked out a considerable time in advance as you know. This may have been at a time when one or more were temporarily under repair. I do not know the circumstances of which you speak. However, these would fall into

the category of SSBN's that are in refit or conducting refresher training.

Mr. LIPSCOMB. I was concerned about it, but the officers who had the responsibility were not concerned. It seemed all right to them. They are the ones that had the responsibility and the knowledge and the background. When you mentioned ——— deployments, ——— on station, and then have three or four of them exposed in one location all at once, this seems very dangerous. Would there be any evaluation made of a policy of this nature?

Admiral COLWELL. The matter of simultaneous exposure of more than one is certainly a matter that has received a great deal of consideration. The only kind of an attack that we can be talking about which would cause concern has to be a Russian nuclear attack. They have long-range capabilities. So whether your exposure is in Rota or Charleston, S.C., is not really very meaningful.

Mr. LIPSCOMB. Having three Polaris submarines tied up together, one on one side of a dock and two tied together on the other, certainly would provide a good target. A better target than if they were spread at locations we have available for them.

Admiral COLWELL. There are not very many locations which are available to us for the refit of the Polaris submarine between patrols.

We have the Rota Base, we have Holy Loch, and we have Charleston, S.C., on the Atlantic. We just do not have available to us a large number of dispersal sites that we can use normally.

In case of a strategic alert, which I would hope that our intelligence would be good enough to give us, we would certainly disperse those boats. They would go to sea. ———.

Mr. LIPSCOMB. For the record, would you give an explanation of policy? For instance, the Mediterranean is not exactly a quiet spot at this time and the Russian fleet is now depleting itself in the Mediterranean. With three or four Polaris tied up at Rota all at the same time, I wonder whether this is good policy or not. Maybe you can clarify and ease my mind on this.

Admiral COLWELL. I can attempt to do so; yes, sir.

Mr. LIPSCOMB. Do you think this has been looked at or considered?

Admiral COLWELL. Yes, sir.

Mr. LIPSCOMB. Maybe you can set forth what the policy is.

Admiral COLWELL. I will attempt to do that; yes, sir.

Mr. LIPSCOMB. When they are taken off station in order to repair the ship.

Admiral COLWELL. This is essential. We cannot keep them on patrol all the time. They must come into port. May I send you a memorandum or a letter on this subject of just how we do it and why we do it that way?

Mr. LIPSCOMB. I would appreciate it because when I visited Rota, which I think is an excellent operation, it was of some concern to all of us on that particular visit to see all of these tied up so close together.

Admiral COLWELL. Yes, sir.

We have the same problem existing continuously. I think we must address this from the point of view that we are not at war.

Mr. MINSHALL. We weren't at war at the time of Pearl Harbor, either.

Admiral COLWELL. May I send you a memo or letter?
Mr. LIPSCOMB. Submit it for the record.
(The information provided was classified.)

ADEQUACY OF DOCKING SPACE FOR POLARIS SUBMARINES

Mr. LIPSCOMB. Is that really the military's position, to have the view that we can be a little free and a little easy in how we maintain our security because we are not at war.

Admiral COLWELL. There certainly are operational differences.

Admiral GADDIS. There is a specific program, particularly in this area, to minimize at all times the number of SSBN's and other ships in a single port. I recall a circumstance when it was necessary to divert, I believe, two boats—maybe it was only one—from the Holy Loch tender to the Rota tender for a specific purpose. It is very probable that this happened during the time you were there.

Mr. LIPSCOMB. I should think we would maintain the highest security particularly for our Polaris deterrent.

Admiral COLWELL. I think we do attempt to do that, sir, consistent with the requirements for maintaining the material condition of the ships and maintaining the morale and proper conditioning of the men involved.

Mr. LIPSCOMB. Maybe we need more docking space.

Admiral COLWELL. Maybe.

Mr. LIPSCOMB. Have you asked for that? We build a lot of missile sites on land. Have you ever asked for more space?

Admiral COLWELL. I believe a few years ago we contemplated building an additional tender for the SSBN's. This is sometime ago and my memory is not exact on it. I believe we did have programs within the Navy for an additional tender. This one has not been built.

Mr. MINSHALL. For practical purposes, how many submarines can one of these tenders serve at once?

Admiral COLWELL. The new tenders that we have built and are building for the SSBN's, and they are specialized for this purpose, can serve up to ten SSBN's and can handle four SSBN's alongside at one time very comfortably and can expand up to perhaps six for brief periods.

Mr. MINSHALL. I think what Mr. Lipscomb's concern was, and I never heard of this incident before, to have four of these boats tied up together, they are subject not only to attack of various kinds, whether it be nuclear or sabotage or just an accident. It seems you should not have all your eggs in one basket. I thought we learned that.

Admiral COLWELL. It certainly is a matter of concern. I think we are taking all the precautions that we know how to take. It is not feasible to take every SSBN that comes in from a patrol——

Mr. MINSHALL. You cannot stagger these?

Admiral COLWELL. They are staggered.

Mr. MINSHALL. Is this a common practice, to always have four there, then?

Admiral GADDIS. No, sir.

Mr. MINSHALL. What was the special instance here, an emergency repair on these subs or more than one?

Admiral COLWELL. The average is probably about three. I am not familiar with these particular circumstances but I would suggest that

there probably was one ship there at one time that was under unscheduled repairs, making a fourth. It is not feasible to take every one of these ships that comes off patrol and put it in a different anchorage. This is just not feasible.

PERIOD REQUIRED TO CONVERT POLARIS SUBMARINES

Mr. MINSHALL. I have one other question as to the conversion of these ships. You say you are tying it in with the regular overhaul period.

Admiral COLWELL. Yes, sir.

Mr. MINSHALL. How much times does the conversion add to the overhaul time, if any?

Admiral COLWELL. About 1 month additional time.

Mr. MINSHALL. How long does it take for the normal overhaul?

Admiral COLWELL. I will ask Admiral Smith to answer that.

Admiral SMITH. We have overhauled—the completed overhaul—608 and 616 class 5 of the 608.

I exclude the 598 because of its conversion to A–3. The actual time in overhaul averaged over those seven or eight ships was ——— months out of the fleet. That is from the time it leaves the fleet, does its overhaul, the refresher training and tests and so forth after that, until the time it gest back to the fleet.

Mr. MINSHALL. That is ——— months and conversion adds about 1 month to that time.

Admiral SMITH. About 1 month, yes, sir.

Admiral COLWELL. I would like to emphasize in that connection that total time includes about ——— months in the shipyard, plus an additional ——— months for shakedown, training, and preparation actually to go on patrol. In an emergency this could be shortened some. To go back to the previous question about additional tenders, we had programed in 1965, one additional SSBN tender. This was canceled and the funds were applied against the next fiscal year, 1966.

Mr. MINSHALL. Why was it canceled, do you know?

Admiral COLWELL. It was canceled by the Secretary of Defense.

Mr. MINSHALL. When? Do you mean McNamara or Clifford?

Admiral COLWELL. This would have been Mr. McNamara. As I said, my memory is hazy on this. I do not recall the reason.

Mr. MINSHALL. When these ships come into a port like Rota, how long do they stay in there? What is the normal layup time there, to give the crew time off, and so forth?

Admiral COLWELL. Just about a month, 28 days, I believe, is the planned time, so it is just about a month.

Mr. MINSHALL. They will be there about a month and another one comes in and takes its place?

Admiral COLWELL. Yes, sir.

Mr. MINSHALL. But normally you have three nuclear subs at Rota at one time?

Admiral COLWELL. That would be the average.

Mr. MINSHALL. Thank you very much.

Mr. SLACK. How long does it take to convert one SSBN to the Poseidon capability?

Admiral COLWELL. This was touched on a moment ago. The expected time in the shipyard is about ——— months.

The expected time actually off the line becomes about ——— months, because to the ——— one must add the shakedown and training time and transit time before the ship is back on patrol.

COST OF POLARIS CONVERSIONS IN 1970

Mr. SLACK. How many SSBN's do we have in the yards at the present time going through this conversion?

Admiral SMITH. In conversion, two.

Mr. SLACK. You have $22.9 million funded in fiscal 1969 to apply to fiscal year 1971 SSBN conversions, and you are requesting $128.6 million in fiscal year 1970 to apply to fiscal year 1971 conversions. How many SSBN's conversions do you propose for your fiscal 1971 program?

Admiral COLWELL. Seven, sir.

Mr. SLACK. Why do you need $28.9 million in fiscal year 1970 for your fiscal 1972 planned conversions?

Admiral COLWELL. May I ask Admiral Smith to speak on this?

Mr. SLACK. Please do.

Admiral SMITH. These amounts are for engineering and procurement of equipment and materials, whose leadtime is such that to have them ready the schedule requires procurement in fiscal year 1970. Of the $28.9 million, $22 million is for the ship system engineering and material procurement, and the remainder for the weapon system.

I have and can make available for the record a listing by hull of the ——— SSBN's currently planned for fiscal 1972.

Mr. SLACK. Please do.

(The information provided the committee was classified.)

Mr. SLACK. What type of engineering is involved?

Admiral FAHY. In ——— we go into a new class, the 640 class of conversions, which is the same as having a lead ship design when we went into the 627 class. We shifted over from the 27's and started on the 40's in the ——— program. This is a different class so it means you will have to have class design plans.

Mr. SLACK. Do you need this money this far in advance?

Admiral SMITH. Certainly all of our experience to date on the work that has been done says that the only way we are going to get these overhauls or conversions accomplished with the minimum time out of the fleet, the times we cited to you; it is necessary to get this planning, engineering and material procurement started this early. I might observe that the engineering has to be done before you can order the material.

Mr. SLACK. Are there any questions at this point?

Mr. MINSHALL. No, thank you.

CONVERSION OF OTHER SHIPS IN SUPPORT OF POSEIDON PROGRAM

Mr. SLACK. How firm are your estimates for the conversions of the submarine tenders, the tender resupply ship, and the range instrumentation ship funded in fiscal year 1968 and 1969.

Admiral FAHY. We believe they are as good as we can make them at this time.

If we have any wild galloping inflation, it could affect us, or if the

economy is such that we have difficulty in getting materials in some areas, it could affect us.

Mr. SLACK. At this time you feel they are firm estimates?

Admiral FAHY. Yes, sir.

Mr. SLACK. Will all of these ships enter the yards on schedule? You might provide the schedules for the record at this point.

Admiral FAHY. We had better do that because we have had some juggling of schedules because of the manpower situation.

Mr. SLACK. Please provide that information for the record.

Admiral COLWELL. May I suggest in order to make a complete reply for you we give you the present schedule and we can compare it with the original schedule and explain any differences.

Mr. SLACK. However, you determine best to clarify the record.

(The information follows.)

The original and current start schedules for the fiscal year 1968 and fiscal year 1969 ships to be converted in support of the Poseidon program are as follows:

	Ship	Original start	Current start	Reason for difference
Fiscal year:				
1968	AS34	May 1, 1969	June 3, 1969	Operational commitment.
1969	RiS	Oct. 1, 1969	Oct. 1, 1969	
1969	TAK 282	Dec. 10, 1968	Oct. 10, 1968	
1969	AS33	June 1, 1970	June 15, 1970	Do.

OTHER WARSHIP CONSTRUCTION

The fiscal year 1970 program for other warships totals $1 billion, 538.3 million, which is an increase of about $1.1 billion over your fiscal year 1969 program.

AIRCRAFT CARRIER "NIMITZ" (CVAN-68) COST OVERRUNS

The Navy has experienced cost overruns in the amount of $116.7 million in the fiscal year 1967 CVAN-68 attack aircraft carrier *Nimitz* construction program. What are the reasons for the cost overruns?

Admiral COLWELL. May I ask Admiral Fahy to address that, sir?

Admiral FAHY. The reasons for the cost growth in the Nimitz from the $427 million to $544.2 million is attributable as follows: Shipyard costs, $73.4 million, nuclear fuel and machinery, $30.0 million, air systems—aviation requirements—$2.9 million, and other $10.4, making a total of $116.7. From this, outfitting and post delivery must be subtracted making the overall $108.7 million for a new total cost of $536.2 million. There were several reasons for this. We had an unpredicted upward swing in the labor and material cost beginning in about July, 1965, which is now beginning to show in the BLS indices. Moreover, we called out added specification requirements which increased the task on the shipbuilder. We made the quality requirements in these areas higher.

The nuclear component and fuel costs went up because there is a decreased number of naval nuclear components and fuel suppliers, due to the rapidly expanding market for civilian nuclear power plants. The Naval nuclear work has to compete with the civilian nuclear market for production capacity. Our nuclear work is less attractive to them because it represents only a small portion of their sales and re-

quires more careful work on their part. Therefore we have to pay more for the work they will accept.

Another factor is that there is only one shipyard capable of building this type ship at this time.

In addition we must now charge against this ship design certain so-called software programs that formerly were carried in O & M.N. or R. D. T. & E. areas.

(CLERK'S NOTE: The following additional information was subsequently provided.)

In addition, shipbuilders are insisting on more than twice the profits they previously accepted. You should understand that we don't price ships, we estimate what we think industry will ask to pay in the free enterprise system. There are many aspects of ship costs over which we have little control.

Mr. SLACK. Would not competition tend to reduce some costs?

Admiral FAHY. Yes, sir. You mean in the areas of commercial competition?

Mr. SLACK. You mentioned the lack of adequate competition.

Admiral FAHY. In the case of nuclear components and fuel it is not competition in the sense of several suppliers competing to get our business; if that situation prevailed we would get lower prices. Unfortunately we are in the position of competing for production capabilities for our small amount of orders with the large orders that the civilian electrical utilities are placing for nuclear power plants. Further they are placing orders for a long sustained program of improvement over the years so that they know what they can plan on in the way of actual work in hand or in prospect. They give the civilian electrical utilities more attention than we can get without an approved long-range nuclear shipbuilding program.

EFFECT OF SOUTHEAST ASIA EXPERIENCE ON "NIMITZ" CONSTRUCTION COST

Mr. SLACK. Why was the ship increased in size during its construction?

Admiral FAHY. We start designing these large ships well in advance of the actual construction. During this period a considerable amount of experience with carrier operation in wartime conditions which was derived from our operations in Southeast Asia. Consequently that plus the additional equipments and systems needed for countermeasures and the increased air wing support required more equipment and more space than originally estimated, and also the fact that you need more people on board in these various areas. The growth referred to occurred during this preliminary design and before award of the construction contract.

Mr. SLACK. In discussing cost increases for this carrier last year, Admiral Fahy, you testified that "the change of requirements brought on by our experience as the war continues in South Vietnam has added considerably to the characteristics of this ship."

Are we permitting that war to influence greatly a carrier to meet requirements in the late 1970's and 1980's?

Admiral COLWELL. I don't think we are committing ourselves to live in the past in this design. One of the things that we have made changes in that we are building into this new ship is vastly improved

fire fighting as a result of our unfortunate experiences in the past few years, so our ability to handle fires and explosives will be greatly enhanced in this ship. This is a type of improvement we are building and certainly that could not be considered as looking backward.

Mr. SLACK. Then you are not permitting that war to influence greatly the commission of carriers in late 1970 and the 1980's?

Admiral COLWELL. Not wittingly, no.

Admiral GADDIS. ———. This has had an effect on the assigned characteristics in these areas.

Mr. SLACK. Why are we just now emphasizing the reliability, maintainability, quality assurance, work study requirements, standardization at the subcontractor level, and new levels of essentially in piping systems in the construction of this carrier?

Admiral FAHY. We are not suddenly coming on these programs for this carrier. We have been building up over a considerable period of time increases in the quality assurance requirements, in the reliability and in the maintainability requirements of all equipments and systems in all of our ships, new construction particularly, because we feel if we have a breathing spell now without a war on our hands, such as we had during World War II when the bulk of our fleet was built, that we can take the time to build into the ships these particular types of things that ought to be there.

Now, all along we have emphasized quality; we have emphasized reliability but not to the extent and not with the special attention they are getting now in these particular programs.

The systems are getting rather complex and in order to keep them on the line a considerable amount of added engineering has to be done to be sure that they will keep operating without failure and to increase the time between failures if they are going to fail.

These programs have been going on, you might say, in an evolutionary process all along. As the equipment has gotten more complex, it was necessary to spend more money and give more attention to these particular types of things.

Mr. SLACK. Is there any deficiency that you know of in your planning and design?

Admiral FAHY. Do you mean as to why there are changes——

Admiral ADAIR. To amplify the response to the last question, sir, we find as times go on and as market conditions change, things that we got without specifying them in detail in the ship specifications we no longer get. The builders, faced with rising costs, are looking for ways to give us precisely what we have called out. Therefore, when we write specifications, we have been forced to formalize our requirement in greater detail for reliability, for quality assurance, than we have heretofore.

Now, as to your second question, the reason for changes, as time goes on and as we get additional operational experience, we want to make sure that these ships that take a significant length of time to build are indeed modern when they are delivered. Second, we from time to time do call out in our ship specifications equipment that are under development. As is always the case, developments never follow precisely a planned course. They take longer. The equipment is different than you originally thought and you, therefore, have to modify the ship to accommodate to these differences.

TOTAL COST OF "NIMITZ"

Mr. SLACK. What will be the total estimated cost of this carrier when it becomes operational with the fleet?

Admiral FAHY. We estimate $586.2 million.

Admiral ADAIR. $536.2 million plus outfitting and postdelivery, which are funded separately in the year in which outfitting and postdelivery will occur.

Admiral FAHY. That will be about $5 million for postdelivery and $3 million for outfitting costs.

Admiral COLWELL. I think that totals to about $545 million to give a complete answer to your question, Mr. Chairman.

Mr. SLACK. Are there questions at this point?

COST OF NEW CARRIER IN 1970 BUDGET

How confident are you in the $510 million cost of a second *Nimitz* class carrier now in the fiscal year 1970 budget, especially in view of your experience with the *Nimitz*?

Admiral FAHY. Since the *Nimitz* cost of $536 million is certainly well within the negotiable range with the contractor, as the price he submitted in October of 1968, we feel that since this is a follow-on and is within a close enough time span to benefit by some of the projected learning from the *Nimitz*, it ought to be pretty close to being a good figure.

(CLERK'S NOTE: Subsequent to the hearings Admiral Fahy's answer to the previous question was changed to read as follows:)

Admiral FAHY. Sir, the CVAN-69 is going to be a second *Nimitz* and will be built by the same contractor. The major portion of the cost of those ships is the contractor's price for construction. Until we have agreed with the contractor on his price for *Nimitz* we are not able to answer your question with a positive yes or no. We have been analyzing the contractor's proposal for construction of *Nimitz* in depth for several months. He is now in the process of updating his proposal in compliance with Public Law 87-653, the Truth in Negotiations Act. We expect to be in negotiation with him in July and to reach a price agreement in September. The contractor's price agreed to by us for *Nimitz* will bear directly on the price we agree to for CVAN-69. The CVAN-69 will reflect nonrecurring cost savings and savings achieved by multiple procurement actions. At that time we will be able to tell whether or not the $510 million is enough, just right, or not enough for CVAN-69. The one factor over which we have no control is the change in market prices for labor and material as the economic environment of the United States changes, either pushing prices up or down or holding them steady over the building period of the ship. If this change is different than what we have been permitted to allow for in the budget, the estimated end cost will change accordingly.

Mr. SLACK. The $510 million does not include postdelivery and outfitting costs. What are these additional costs by category?

Admiral FAHY. They would run approximately the same as the *Nimitz I*, about $5 million for postdelivery and, incidentally, in the *Kennedy* it was about 5.3, and in the outfitting costs, about $4 million. In the *Kennedy* it was 3.975.

Mr. SLACK. What will be the speed of this carrier and what weapons will it have aboard besides aircraft?

Admiral COLWELL. We expect this carrier will have a trial speed of about ——— knots and the self-defense weapons which it will carry will be ———.

Mr. SLACK. Where did you find the $2 million which was added to the $48.5 million and the $82.4 million of advance procurement funding for fiscal year 1968 and 1969 respectively, to make up the $132.9 million applied to the fiscal year 1970 program?

Admiral FAHY. We reprogramed the funds from the 1967 DLG conversion program, sir.

Mr. SLACK. How much of the $39.3 million in nuclear propulsion spares funded in fiscal year 1969 will be applied to each of the three carriers?

Admiral COLWELL. It is my understanding, Mr. Chairman, that these nuclear spares which we are purchasing over a period of 3 years' funding will be applicable to any of these three *Nimitz* class carriers. Not necessarily to any particular one hull number, but will be applicable to any of the three.

Mr. SLACK. Then how did you arrive at a cost figure of $39.3 million?

Admiral COLWELL. This was added last year by the Congress. It was the number which was obtained from Admiral Rickover's office.

Mr. SLACK. Has the construction schedule for this ship slipped and, if so, why, and how far has it slipped?

Admiral FAHY. There is no slippage in it of which we are aware at this time, sir. As you know the *Nimitz* will incorporate the first of the new two-reactor carrier nuclear propulsion plants. The development and manufacture of equipment for this propulsion plant has always been on a very tight schedule to support the expected delivery of the ship.

FUNDING FOR CARRIER TO BE REQUESTED IN 1971

Mr. SLACK. Why is there no advance funding for the third ship to be requested in fiscal year 1971?

Admiral COLWELL. In the original Navy planning for this year's budget, we had included some advance funding for the ship which we hope will be authorized in 1971. This advance funding was not allowed in the final review by the Office of the Secretary of Defense. It was the decision in that Office that the entire ship could then be requested in 1971 without advance funding in 1970.

Mr. SLACK. How can this be done?

Admiral COLWELL. It will cause a delivery later than would otherwise be the case.

Mr. SLACK. Would it cause construction to slip back to fiscal year 1972?

Admiral FAHY. The third ship would slip if there is no advance procurement in fiscal year 1970. We asked for $97.2 million in fiscal year 1970 for procurement of longlead propulsion plant component.

Mr. SLACK. For how long?

Admiral FAHY. About a year. But it is a little more complex than that because of the problems we are having with the reactor plant equipment suppliers. If we break the production line, we will run into

the problem of restarting these lines, and a greater reluctance on their part to contract for aircraft carrier nuclear propulsion plant components. We could find that the delay was maybe longer than just the year delay in availability of funds.

(CLERK'S NOTE: The following additional information was subsequently provided for the record.)

The nuclear components for the *Nimitz* class carriers are the largest and most complex components ever built in the Navy's nuclear propulsion program. We had to have industry establish special production facilities for these components with highly competent engineering and production people. These facilities and people, of course, are the type which are quickly reassigned to the expanding civilian utility orders as soon as there are no Navy orders to work on.

COST OVERRUN CONVERSION OF "MIDWAY"—CVA–41

Mr. SLACK. The Navy has experienced a total of $119.9 million in cost overruns on the conversion of the aircraft carrier *Midway* (CVA–41). Of the total cost overrun, $26.6 million is included in the overall SCN funding deficiency account in the fiscal year 1970 budget request. When did the *Midway* enter the shipyard for overhaul and conversion?

Admiral ADAIR. February 1966.

Mr. SLACK. What was the original estimated cost of the work to be done?

Admiral ADAIR. $84.3 million, sir.

WORK ORIGINALLY PLANNED

Mr. SLACK. Describe generally, if you will, the conversion or overhaul work to have been done when the *Midway* first entered the shipyard.

Admiral ADAIR. The conversion was one to extend the flight deck to handle modern aircraft which will be in the fleet inventory in the 1970s. It was to remove the older center line elevator and replace it and other elevators with high capacity deck edge elevators.

It was to install the most modern arresting gear. It was to give improved weapons handling and storage facilities. Additional spaces were made available below the extended flight decks to house additional personnel needed for maintenance of modern aircraft.

Additional laundry, distilling and other hotel facilities commensurate with the added personnel were to be put into the ship.

The ship was to be completely air-conditioned and the existing machinery was to be thoroughly overhauled, sir.

CHANGES IN WORK PLANNED

Mr. SLACK. Tell us what changes in the scope of the conversion have been made since that time.

Admiral ADAIR. Incident to our experience in operations in Southeast Asia, we have made additional improvements in the firefighting abilities of this ship. We have made further changes or increases to the habitability, the aircraft maintenance facilities and the electronics to be added to the ship.

In the course of the conversion, we found that our estimates for the rehabilitation of machinery were grossly insufficient and we have

spent significantly more funds for repair of machinery than we had contemplated.

If I may add in amplification, in the course of the planning and the execution of the work, we have had significant disruptive effect of other higher priority work being injected into the shipyards. This required the manpower and the materials scheduled for this ship to be diverted to the more urgent fleet effort, bringing the cost of this ship upward, not only through the disruptive effect, but the fact that the planned manpower is spent several years later than planned and, therefore, at a significantly higher labor rate.

One of the examples was the unfortunate fire that occurred on the *Oriskany* in the summer of 1966. The ship was put into San Francisco, taking the manpower and materials scheduled for the *Midway* and setting the *Midway* back.

The west coast strike which shut down the private shipyards and forced unplanned work into the naval shipyards was another significant factor.

NEW CARRIER AT SUBSTANTIALLY THE SAME COST

Mr. SLACK. What is the estimated total cost of the overhaul and conversion work as presently planned?

Admiral ADAIR. $204.2 million, sir, which includes $2.2 million for fast delivery.

Mr. SLACK. When will the Midway be ready for fleet operations?

Admiral COLWELL. The *Midway* is presently scheduled to come out of the yard in ———. We have hopes that we will be able to anticipate that date somewhat. After she leaves the yard, we can expect that she will have approximately a 6 months' shakedown and workup period. This is about a normal estimate. In the case of emergency, it would be shortened.

Mr. SLACK. What is the approximate cost of a new CVA-class attack carrier and the cost of a new CVS-class ASW support carrier?

Admiral COLWELL. The only experience we have with a new CVA is with the *John F. Kennedy* and the final price on that was how much?

Admiral ADAIR. About $280 million. That ship, of course, was authorized in the 1963 program.

Admiral COLWELL. Now, if that same ship were to be built with 1970 dollars, we could expect that it would go up. It would be difficult to make any close estimate because the *John F. Kennedy* does not have equipments we are going to put in the *Nimitz*, for example. It would be hard to estimate but it would be substantially greater than the completed price of the *John F. Kennedy*.

We have no estimate on what a new CVS carrier would cost because we do not have such a ship in the program.

Mr. SLACK. When the Navy states that 58 percent of the 900 ships in the fleet are over 20 years of age, will the carrier *Midway* be included in this category, even after this thoroughly extensive and costly modification and modernization work has been completed?

Admiral COLWELL. It will be carried in that category because we make no effort to change the birth date of a ship when we modernize it. However, a massive modernization of this type will add a number of years to the operating life of the ship. It won't change its birth date, but it will change its date of death, if you wish to use that term.

NUMBER OF CARRIERS IN FLEET

Mr. SLACK. How many carriers by type does the Navy plan to have in fiscal year 1970?

Admiral COLWELL. We plan to operate 15 attack carriers and included in that number are eight conventionally powered—that is, the *Forrestal* or later class; one nuclear-powered, the *Enterprise*; two of the *Coral Sea* class, which are almost identical to the *Midway;* and four of the *Hancock* class, which are World War II.

As the newer ships are completed and as *Midway* completes, they will replace the *Hancock* class.

Mr. SLACK. How many carriers, by type, will be in the yards for overhaul or conversion and how many carriers, by type, will be inactivated or in mothballs during any part of fiscal year 1970?

Admiral COLWELL. During fiscal year 1970 at one time or another there will be ——— attack carriers in overhaul. There will be one attack carried in conversion—that is *Midway.*

During fiscal year 1970, we are presently programing the inactivation of two CVS's. Those are ASW carriers, or support carriers. That will result in a reduction of the CVS force level to six.

Mr. SLACK. A reduction by six.

Admiral COLWELL. To six. From seven to six, because one attack carrier will fall out of that category into the support carrier class.

Mr. SLACK. Which one is that?

Admiral COLWELL. The *Ticonderoga* presently is an attack carrier and will become a support carrier.

Mr. ADDABBO. Admiral, in the last several years we have had two major fires aboard aircraft carriers. In these carrier conversions and in the new construction of aircraft carriers, can we expect anything new to correct what has happened in the past?

Admiral COLWELL. We are doing two things which we expect to have a significant effect in making an improvement along this line. One of these is a vastly improved method of handling the ordnance within armored and protected spaces rather than out in the open as we frequently had to do in the past. This should be a significantly safer operation.

The second thing is a very large effort to improve our firefighting ability with new installations and new equipment and actually new firefighting liquids. Those two large efforts we expect to be very beneficial.

Mr. ADDABBO. Thank you very much. No further questions.

SSN ATTACK SUBMARINE CONSTRUCTION PROGRAM

COST OVERRUNS IN CONSTRUCTION PROGRAM

Mr. SLACK. In connection with your SSN attack submarine construction program, you had cost overruns of $54.1 million in the fiscal year 1967 program and $63.3 million in the fiscal year 1968 program. How many submarines are involved in these cost overruns?

Admiral FAHY. In the 1968 program we have three submarines and in the 1967 period we have five, but I didn't recognize the figure that you gave, sir.

Mr. SLACK. The figures I read were cost overruns of $54.1 million in fiscal year 1957 and $63.3 million in fiscal year 1968.

Admiral FAHY. I don't recognize those figures for those 2 fiscal years. For submarines from fiscal year 1962 to 1969, a total of 36 SSN's, the total cost increase associated with these 36 SSN's is $141.5 million.

Mr. SLACK. I obtained it from an OSD document provided the committee. For 1967, involving five ships, there was an increase of $48.2 million (reflected in DD1415 DOD, fiscal year 1968—154) required because of higher than anticipated bids from prospective shipbuilders and increased costs of the primary sonar system. There is still to be funded $5.9 million for Government-furnished material and contractor claims.

Admiral FAHY. What you are talking about is that the bids came back higher than the budgeted amounts we had for contracting and in order to meet these we had to reprogram some funds. The increases in cost are brought about in considerable measure by, you might call it, the state of the market; the prices for these equipments and for the things that are put into these ships, as well as the manpower, have gone up considerably. Last fall Admiral Rickover spoke to this before another committee and indicated just how drastically prices were going up. He gave as an example the price of the turbines and gears which went from $5.5 million for the *Enterprise* to over $10 million for the *Nimitz*. That is 100 percent in space of time. It is just the state of the market, I guess.

(CLERK'S NOTE: The following additional information was subsequently submitted for the record.)

What Mr. Slack was describing are not overruns but rather the amounts which we found it necessary to increase our original budgeted estimates for fiscal years 1967-69 SSN's before we contracted for these ships. The bids for construction of these ships and the prices for material and components came in higher than anticipated—higher than the budgeted amounts. In order to award the contracts for these SSN's we had to reprogram funds. We have not overrun the budgeted estimates.

The primary reason these bids were higher than we had originally budgeted is higher labor and material costs than anticipated. Labor and material costs throughout the country have escalated rapidly due to the Vietnam war. These higher costs were not foreseen when we prepared the original budget estimates for these SSN's.

Mr. SLACK. The $63.3 million was made up of $51.2 million for the SSN 685 and $12.1 million for SSN 683 and 684.

Admiral FAHY. The 685 was a special "one of a kind" design and only one ship could be built of that design which would cause its cost to go much higher because of all the design and engineering work.

(CLERK'S NOTE: The following additional statement was subsequently submitted for the record.)

The SSN 685 should be discussed separately from the SSN 683 and SSN 684. The SSN 685 is a new design submarine in which we expect to make sizable gains in our capability to design and build especially quiet SSN's. The SSN 683 and SSN 684 are follow ships in the SSN 637 class. The cost of the ship includes the design and its installed equipment and for preparation of the detailed construction plans.

Mr. SLACK. Were any of these overruns attributable to the Navy for such things as changes in scope, specifications and delays in providing GFE?

Admiral FAHY. Some of it is, yes, sir. For example, in the 1967 ships about $3 million of it was caused by an increase in the changes in Government furnished material. It is about $8 million in 1968 on three submarines, was increased because of increases in the propulsion and Government-furnished material causing a certain amount of change in construction, but we didn't delay the ships. Some of the increase for the seven fiscal year 1967 and 1968 SSN 637 class is associated with design modification to achieve quieter operation.

Mr. SLACK. Approximately $3 million in 1967 and $8 million in 1968?

Admiral FAHY. That is the cost of Government-furnished material.

Now, there is no claim for delay or disruption on those ships from the shipbuilder. The GFE cost increases are the only growth cost since the contract was let.

Mr. SLACK. This document furnished the committee states that for fiscal year 1969, an increase of $32.2 million for the estimated cost of basic construction and associated areas is considered necessary for award when bids are received. How many submarines are involved in this increase?

Admiral FAHY. Two submarines, sir.

Mr. SLACK. What was the original estimated cost of each of the submarines we have discussed and what is the current estimated cost to complete construction of each ship? A total of 10.

Admiral FAHY. For as two fiscal year 1969 SSN's 81.3 was the original estimate and the current estimate to complete is——

Admiral GADDIS. About $95 million.

Admiral FAHY. Approximately 95. We can get a more accurate figure for the record.

These, of course, have not been let yet because we haven't the money in hand. I understand 95 is correct.

Mr. SLACK. Provide something for the record on the total of the 10.

Admiral FAHY. For the 1967, 1968 and 1969?

Mr. SLACK. That is correct.

Admiral FAHY. Yes, sir, we will do that.

(The information follows:)

SUMMARY OF SUBMARINE COST ESTIMATES

[Dollar amount in millions]

Fiscal year	Hull No.	Original budget cost	Current estimate
1967	SSN 678	$70.0	$84.8
1967	SSN 679	70.0	76.6
1967	SSN 680	67.0	74.5
1967	SSN 681	67.0	76.5
1967	SSN 682	67.0	76.6
1968	SSN 683	74.3	77.7
1968	SSN 684	68.9	84.0

Explanation: The increase in cost estimate for these Sturgeon class submarines is due to higher than anticipated competitive proposals from prospective shipbuilders. These proposals reflect their most recent experience with similar complex ships and are influenced by rapidly rising prices being paid to their suppliers of components and materials. A secondary reason for the increase are design modifications based on experience with 637 class SSN's already delivered

to achieve quieter ship operation. Increased cost of the primary sonar system is also affecting the cost.

1968:	*Millions*
SSN 685	$100.8
SSN 685	148.9

Explanation: The Navy's total end cost estimate for the turbine electric drive submarine when it was authorized in the fall of 1966 was $100.8 million. The Navy's current total end cost estimate is $148.9 million. ($148.9 million does not include $2.9 million for outfitting and post delivery deficiency correction. This reflects a Navy program-wide decision to remove outfitting and post delivery costs from individual ship estimates and budget them on an annual multi-ship basis).

In the fall of 1967, the Navy's initial estimate of $100.8 million was increased to $124.5 million. There were three reasons for this increase.

(*a*) The ship characteristics for the turbine electric drive submarine had changed since the initial estimate was prepared. This resulted in additional equipment and increased the size of the ship. The ship originally had been priced using fiscal year 1966. SSN 637 class submarine military characteristics. In July 1967 CNO decided to include all of the military characteristics of the fiscal year 1967–68 SSN 637 class submarines in the turbine electric drive submarine.

(*b*) The ship grew in size as more was learned about the design and the weight of the equipment selected for installation.

(*c*) The sole source supplier of the main propulsion equipment for the turbine electric drive submarine initially refused to bid on the design and manufacture of this equipment. Although the supplier finally agreed to accept the order, it become clear during the subsequent discussions with the supplier that the Navy woud have to pay more than had been estimated for the main propulsion equipment for this submarine.

In the fall of 1968, the total end cost estimate for the turbine electric drive submarine was increased to $148.9 million. There were three reasons for this increase.

(*a*) In early 1968 NAVSHIPS received the shipbuilders' bids for construction of the fiscal year 1967–68 SSN 637 class submarines. These bids showed substantially higher than anticipated labor and material costs for ship construction. This reflected the marked increase in the escalation of labor and material costs throughout the country associated with the Vietnam war.

(*b*) Bids received by the shipbuilder for long lead-time components for the turbine electric drive submarine were more than anticipated due to higher labor and material costs and much higher profits insisted on by component manufacturers. For example, one component manufacturer insisted on 12 to 13 percent profit on a cost-plus fixed fee subcontract for major propulsion equipment compared to the DOD average of 6.9 percent profit for this type contract. Another component manufacturer insisted on 20 percent profit on a fixed priced subcontract for the manufacture of existing design pumps for this submarine compared to the DOD average of 11.0 percent profit for this type contract.

(*c*) Construction of the turbine electric drive submarine was delayed for about 6 months during the summer of 1968 by the civilian staff of the Secretary of Defense while they conducted additional studies.

The increase in total estimated end cost for the turbine electric drive submarine from $100.8 to 148.9 million is an increase in the budget estimate. There has been no cost overrun.

1969:	*Millions*
SSN 686	$81.3
SSN 686	95.8
SSN 687	81.3
SSN 687	94.3

Explanation: The increase in estimate reflects cost increases for contract award of the fiscal year 1969 Sturgeon class submarines and is based on market conditions as evidenced by competitive bids recently received and is in consonance with experience on similar ships particularly the fiscal year 1967 and fiscal year 1968 submarines awarded in June 1968. The $82.2 million requested increase is offset by a $4.6 million below threshold decrease to the ships' end costs which has already been applied to offset fiscal year 1970 total obligation authority requested in the congressional budget submission.

COST OF FISCAL YEAR 1970 PROGRAM

Mr. SLACK. Are there any lawsuits or claims pending or planned by contractors involved in the construction of these submarines?

Admiral FAHY. No, sir; there are not.

Mr. SLACK. In view of your experience with the construction of these submarines, how confident are you in your estimate of $383.3 million for two new SSN 688 class submarines in the fiscal year 1970 budget?

Admiral ADAIR. We are quite confident in that number, sir, and let me explain why. We had poor confidence in the 1969 two submarines and we spoke to you just a year ago and expressed that lack of confidence based on the award prices we were receiving for the 1967 and 1968 ships. That experience on the 1967 and the 1968 submarines and the bids we have today on the 1969 submarines confirmed our estimates for the 1970 procurement.

Mr. SLACK. The $383.3 million for these two submarines, does not include advance procurement, post-delivery, and outfitting costs. What are these additional costs by category? You may submit that for the record.

(The information follows:)

The $383.3 million for two submarines, includes $31.5 million advance procurement appropriated in fiscal year 1969. It does not include $1 million per ship for outfitting and $3.4 million per ship for post delivery.

PERFORMANCE CHARACTERISTICS OF NEW SUBMARINES

Mr. SLACK. Will these two submarines be identical?

Admiral FAHY. Yes, sir.

Mr. SLACK. Your P-1 lists them separately and having different unit costs, and we are wondering whether or not they will be identical?

Admiral COLWELL. They will be identical. The reason they are listed separately is that one is a lead ship and the other is the follow ship.

Mr. SLACK. What will the submerged speed of these submarines be, compared with our fastest SSN?

Admiral COLWELL. We expect the submerged speed of these submarines to be at least ——— knots. By comparison, a Sturgeon class, as we build it today, will do about ———. Now, we have built some nuclear submarines in the past which were somewhat faster, about ——— knots, but they were somewhat smaller and far less capable than the Sturgeons. We expect these new ones to recapture the high speed, which we consider necessary in order to combat the latest Russian types.

Mr. SLACK. What weapons and sensors will they have which will be an improvement over those of previous classes?

Admiral COLWELL. The weapons which are presently available to go in this new class which we call the SSN 688, are the same as those which are available to the 637. That is, the Sturgeon.

However, the systems which will be built into the 688, are a substantial improvement. The fire control will be optimized for the new Mark 48 torpedo. It will also take care of SUBROC and it will have enough growth potential, to take care of future weapons developments which we are now considering.

———. These submarines will have an improved modification of the fire control system which is known as the Mark 113. ———.

Mr. SLACK. The $119.2 million in advance procurement for fiscal year 1970, will support construction of five new SSN's in future years. Will they be of the high speed SSN 688 class?

Admiral COLWELL. They will.

Mr. SLACK. Will you briefly describe our SSN program, indicating how many we have in the operational fleet, how many under construction, how many funded and our total future program?

You may do that for the record if you will, please.

Admiral COLWELL. I will supply that for the record, sir.

(The information provided the committee was classified.)

FUTURE DESIGN OF ATTACK SUBMARINES

Mr. MINSHALL. For the future program, do you have anything on the drawing board for a submarine with even more capability than the ——— knot boat?

Admiral COLWELL. I would not say we have anything on the drawing board but we have a group which is working ——.

Mr. MINSHALL. Something in R. & D. is what I meant.

Admiral COLWELL. Yes, sir, we have a group which is working on a later model which we currently expect to be put into the program in 1975.

Mr. MINSHALL. What will the capabilities of that boat be? What are they designing into it?

Admiral COLWELL. We haven't gotten that far yet, sir. We expect that it will have a new power plant which would be nuclear, of course, and we expect that it will incorporate whatever new weapons we are successful in designing by that time and probably a new sonar. We are actually just in the very early stages of this program.

Mr. MINSHALL. How about the speed?

Admiral COLWELL. We will have all the speed we can get out of the power plant which is furnished to us, sir.

Mr. MINSHALL. Have you any estimate of what that will be?

Admiral COLWELL. It certainly would not be less than ——— knots that we are going to get in the 688. I would hope it would be more.

Mr. MINSHALL. How much would it entail from an engineering standpoint to design a boat that would go ———. Is that feasible?

Admiral COLWELL. ———.

NOISE LEVEL OF NEW SUBMARINES

Admiral GADDIS. We have an alternate point here, Mr. Minshall. That is the conflict of quietness versus speed.

Mr. MINSHALL. Yes, we have been through that before.

Admiral GADDIS. Our electric drive submarine is designed to be the ultimate in a quiet submarine. The high being high speed, speed at the SSN 688, gives up a little in quietness. Any increase in speed has to be measured against this same quieting effect.

Mr. MINSHALL. The reason I asked this question, Admiral, you indicated yesterday, if I remember correctly, that the ———.

Admiral COLWELL. They have ——— knot submarines at sea now.

Mr. MINSHALL. And I am sure that they are working on something that will go a lot faster, too.

Admiral COLWELL. I am sure they are.

Admiral FAHY. ———.

Mr. MINSHALL. Where does that come in the budget, in R. & D.?

Admiral FAHY. Yes.

Mr. MINSHELL. Perhaps you should give us more information on it.

Admiral COLWELL. Yes, sir.

(The information provided the committee is classified?)

Mr. SLACK. How quiet will the 688 class submarines be as compared to our more recent submarines?

Admiral COLWELL. ———

Mr. ADDABBO. Admiral, with the disaster of the *Scorpion*, is anything being contemplated ———

Admiral COLWELL. ———

Mr. ADDABBO. ———

Admiral COLWELL. ———

Admiral FAHY.

Admiral COLWELL.

POGY SUBMARINE

Mr. SLACK. Will you bring us up to date on the submarine Pogy and tell us how you settled this case with the New York Shipbuilding Co.?

Admiral FAHY. That is still in the field of negotiation.

Admiral ADAIR. The settlement of the New York ship claim is still going on. As you know, we have executed a contract with the Ingalls Shipbuilding Division to and complete construction of Pogy. In the course of that work, we have uncovered some deficiencies of the workmanship of New York Ship, and this failure on their part will be a consideration our settlement with New York Ship.

Mr. SLACK. What is the cost to complete this submarine by Ingalls Shipbuilding Co.? You may supply that for the record if you do not have the figures at hand.

Admiral ADAIR. I do not have it at hand, but do you wish the cost of our contract with Ingalls rather than the total cost of the ship?

Mr. SLACK. We would like to have both. We would like to have you include the entire cost and then the cost to complete the submarine by Ingalls.

Admiral ADAIR. We will supply both numbers for the record.

Mr. SLACK. You might also compare this cost with the cost of a new submarine today of the Pogy class.

(The information follows:)

The estimated cost of Pogy (SSN 647) is $90.2 million against an initial estimate in 1961 of $58.0 million. The New York Shipbuilding cost is estimated at ——— when settled. Ingalls Shipbuilding Corp. cost is estimated at ——— with $27.4 million estimated for Government furnished material and services. The estimated cost of a fiscal year 1970 submarine of this class is $90.0 million.

Mr. SLACK. If there are no further questions, we thank you gentlemen, and the committee will adjourn until 2 o'clock this afternoon. We thank you very much.

AFTERNOON SESSION

STATUS OF SUBMARINE PROGRAM

Mr. SIKES. The committee will come to order.

Admiral Colwell, I am not sure that I have all the facts or that the committee has all the facts that it should have on the Navy's own thinking about the submarine program this country needs in order to stay modern and to at least attempt to stay abreast of the Russian submarine threat. You are funding this year two, and you have some long leadtime money for a third one, is that correct?

Admiral COLWELL. There is long lead money requested which will actually support a total of five for next year.

One element of that long lead money is somewhat larger than we would normally ask for in order to maintain the impetus while building two this year instead of three.

Mr. SIKES. It is your hope that though you are actually getting two submarines funded this year, you will be able to program five next year?

Admiral COLWELL. That is correct.

Mr. SIKES. How many did you seek to fund this year?

Admiral COLWELL. Our original document which we call our program objectives, and which is our basic budgeting document for a new year, called for five.

Mr. SIKES. When is the last time you had five submarines funded?

Admiral GADDIS. 1967, sir.

Mr. SIKES. Do I recall that five is the number that the Navy feels—new submarines, that is—are needed each year in order to stay modern and to keep up with progress in other submarine fleets?

Admiral COLWELL. Yes, sir.

Mr. SIKES. Where do you get that figure five? What is the figure based on? At this point will you file in the record completely, why five?

Admiral COLWELL. Yes, sir, I would be happy to.

Mr. SIKES. I want a very complete answer why you want five.

Admiral COLWELL. Yes, sir.

(The information follows:)

Submarine procurement requirements

1. The point has already been passed where procurement of new SSN's at a practicable rate (such as five SSN's per year), could maintain force levels in the face of aging diesel submarines. This problem will become more critical each year until an adequate SSN procurement program is established and followed. Due to the length of time required for construction of SSN's, the situation is irreversible until ———. Delivery of authorized or recommended SSN's in the out years is currently projected to be:

Year of delivery	SSN's delivered (by fiscal year authorization)	Total SSN's [1]
———	———	———
———	———	———

[1] Does not include "Triton," "Scorpion," or "Thresher."

2. In order to achieve required attack submarine force levels, SS's must be retained in the inventory, all but 12 of which were built during World War II. A tabular display of the problem of aging submarines is shown below. The num-

bers are based on the currently authorized force level of 105 attack submarines with SSN procurement as shown above and inactivation of an SS for each SSN delivered.

NUMBER OF SUBMARINES IN FORCE LEVEL OF AGE INDICATED

Fiscal year	Age					
	28 years old	29 years old	30 years old	31 years old	32 years old	33 years old
1973	13					
1974	12	8				
1975	2	12	6			
1976	1	2	12	3		
1977	2	1	2	6	1	
1978	1	2	1	1	5	1

3. There is no absolute or precise limit to the service life of an attack submarine. Any consideration of such a limit depends primarily upon the capability of the submarine vis-a-vis the threat or mission requirements. For auxiliary submarines, such consideration would be largely determined by the material condition of the ship. It should be noted, however, that the longest the United States has ever operated a submarine was 28 years. Additionally, in fiscal year 1969, one AGSS and one LPSS were inactivated after 27 years of service life. Their condition was such that it appears reasonable to utilize a value of 28–30 years service life for force level planning purposes. If this assumption is borne out, reduction of attack submarine force levels considerably below authorized force levels will be unavoidable.

4. In addition to the purely quantitative aspect of numbers of attack submarines, it is even more important to consider the quality and capability of the force. Transition of the total attack submarine force to nuclear power is a basic and vital goal, which lies well into the future. At five SSN's per year, a force of 100 SSN's could not be achieved until 1982. The following cases, constrained by the currently authorized force level of 105 as a base and employing an SSN procurement rate of five, show the impact on attack submarine force levels of retirement of SS's through 28 and 30 years of service life, respectively.

MAXIMUM ATTAINABLE FORCE LEVELS

	Fiscal year—							
	1973	1974	1975	1976	1977	1978	1979	1980
Case I (retaining SS through 28 years service life)	105	97	87	88	92	95	99	103
Case II (retaining SS through 30 years service life)	105	105	105	102	95	98	102	105

In the above cases clearly show the severity of the submarine aging problem created by past SSN procurement decisions. A serious reduction in the force level after fiscal year 1973 could occur if, in fact, 28–30 years does prove the maximum age for SS operations, and the submarines must be retired.

ATTACK SUBMARINE PROGRAM

Mr. SIKES. Prior to fiscal 1967 when was the time that you were funded for five submarines?

Admiral COLWELL. We had six submarines in 1966 and then five in 1967.

Mr. SIKES. Do I recall that was the result of congressional action or was that a budget request for those 2 years?

Admiral COLWELL. I would have to check that to be certain, sir.

Mr. SIKES. Check that, please, and provide the answer for the record. I think you will find it was congressional action.

Admiral COLWELL. I have a vague recollection of this but I would want to be certain.

(The information follows:)

In the fiscal year 1966 program, Navy requested six nuclear attack submarines (SSN); four were included in the President's Budget; six were authorized and funded by Congress.

RUSSIAN CAPACITY TO CONSTRUCT SUBMARINES

Mr. SIKES. What information do you have about the number of modern Russian submarines being built? The type that we would hope to build someday.

Admiral COLWELL. The maximum estimated annual capacities—and this is assuming that other shipbuilding programs are also continued—on a one shift basis is about ——— of the nuclear ships.

Mr. SIKES. You are talking about capacity, what do you actually know of what they are doing?

Admiral COLWELL. The agreed intelligence construction rates—let us take the year 1970–71—estimates a total nuclear production of ———. That includes not only attack submarines but also their new class of ballistic missile submarines, the Yankee class.

Mr. SIKES. When you speak of two plus lead money of future submarines, you are speaking of our entire program, are you not?

Admiral COLWELL. I am talking of attack submarines, because we do not have any new ballistic missile submarines.

Mr. SIKES. You are not funding any other submarines?

Admiral COLWELL. That is correct.

Mr. SIKES. So this is your entire program at this time?

Admiral COLWELL. Yes, sir.

Mr. SIKES. The five submarines that you have listed as desirable, would that continue to be attack submarines or would there be a mix in future years?

Admiral COLWELL. Those are attack submarines, sir.

Mr. SIKES. Do you not feel that there is a requirement for other submarines than attack?

Admiral COLWELL. We feel in the Navy that there will shortly be a requirement for a replacement type of Poseidon submarine.

Mr. SIKES. What do you mean by shortly?

Admiral COLWELL. I would think by ——— or perhaps sooner. This, however, is not an approved program, as you know, sir.

Mr. SIKES. You gave the figure 1970–71 for Russian production. Can you state with reasonable certainty the number that they are building now? In other words, the number of keels they are laying down each year?

Admiral COLWELL. I have here a table which records the agreed intelligence estimates. ———

The projections after that are ———

Mr. SIKES. From what we think we know of Russian submarine construction—I am not talking about capability—at what time period will they surpass us in completely modern submarines, as good as or better than our modern submarines.

Admiral COLWELL. The last modifying phrase makes it difficult for me, sir.

Mr. SIKES. Let us say completely modern submarines. Are they abreast of us now?

Admiral COLWELL. They are not abreast of us now either in numbers or, we think, in overall quality, although they have ships at sea which have a higher top speed than some of ours?

If I could, Mr. Chairman, I would like to check my answer to that question with the intelligence people and supply it for the record.

Mr. SIKES. Very well.

Admiral COLWELL. I think I can give you a better answer that way.

(The information provided the committee is classified.)

RUSSIAN SUBMARINE FORCE

Mr. SIKES. In a Richard Wilson article of the Star, May 2, entitled "The Soviets greatly increase their military strength," it quotes Admiral Rickover as saying that the Russians have a net advantage of about 230 submarines. He also quotes Admiral Rickover as saying that the Soviet Union now has a new submarine force of about 375. This would appear to be a considerably larger number of new submarines than we have been giving them credit for; is that right?

Admiral COLWELL. That number of 375 includes all of their diesel submarines, which have in fact been built since World War II.

Mr. SIKES. Do you know how many nuclear submarines they have in operation, and how many diesel submarines they have in operation?

Admiral COLWELL. I think I can add that up for you, yes, sir. In mid-1969 the estimated Soviet submarine strength, nuclear submarines, is estimated to be ——— ships. That includes their SSBN's.

Mr. SIKES. That is more than we have, is it not?

Admiral COLWELL. When you include our SSBN's we have a larger number.

Mr. SIKES. How many?

Admiral COLWELL. According to my numbers, I have 80 here.

Mr. ANDREWS. That is 41 Polaris and 39 SSBN's.

Admiral COLWELL. Yes, sir.

Mr. LIPSCOMB. Is that figure of 39 up to date? Does it delete our losses and the retirement of the Triton?

Admiral COLWELL. The Triton is probably included, so it would be 38.

Mr. ANDREWS. How many conventional types do we have in the fleet?

Mr. SIKES. In comparison with theirs?

Admiral COLWELL. The number I have here is 68, conventional.

Mr. SIKES. This article says we have 61 diesels. You can correct it for the record.

Admiral COLWELL. Yes, sir.

(The information follows:)

The fiscal year 1969 force level of diesel attack submarines is 62.

Mr. SIKES. Presumably they have a much larger diesel fleet than we have to support this statement that the Russians have a net advantage of about 230 submarines. Although we would seem to have a slight edge in nuclear-powered submarines, they would have an extremely large advantage in diesel type submarines, and that advantage could not be discounted, could it?

Admiral COLWELL. That is correct. Those diesel submarines in war would be very useful to the Russians.

Mr. SIKES. Is there anything more on the submarine fleet before we move on?

U.S. VERSUS RUSSIAN FLEET

Mr. ANDREWS. They used to tell us that they had the snorkel type that could cross the Atlantic submerged and come up and lob missiles on our coastal cities.

Admiral COLWELL. Yes, sir.

Mr. ANDREWS. I am sure they have that capability.

Admiral COLWELL. Some of them are missiles ships; that is correct.

Mr. ANDREWS. We have a carrier force that they do not have. Overall, how would you say we stack up with the Russians, Navy-wise?

Admiral COLWELL. Overall I would say we are superior because of our better balance. Our Navy is geared to a deep ocean Navy designed to project power at great distances over the oceans.

Mr. SIKES. Isn't that the real difference between the two fleets? Their fleet is not so geared?

Admiral COLWELL. I would say that is a fundamental difference; yes, sir.

Mr. SIKES. Their fleet apparently is built and programed for operation in waters that are reasonably close to the Soviet land mass, the Mediterranean, et cetera.

Admiral COLWELL. I think their fleet was so designed in past years. I am not certain they have not changed. Some of the new ships they are building appear to be more of the transoceanic type.

Mr. SIKES. What is their capability to operate in the Indian Ocean at this time?

Admiral COLWELL. They have a substantial capability to operate a small task force in the Indian Ocean, which would require really a minimum of support from any of the surrounding countries. They have in fact done so.

Mr. SIKES. What would be their capability to operate in the far Pacific?

Admiral COLWELL. They would be able to operate a larger force in the far Pacific because of their own bases on the Pacific Ocean. Vladivostok is one of their principal Pacific bases.

Mr. ANDREWS. I have gotten the impression through the years that they have always had a defensive Navy and we had an offensive Navy. Is that a correct assumption?

Admiral COLWELL. I think that was true in the past. I think perhaps they may be changing their views because of the types they are building today.

Mr. ANDREWS. Do they have any battleships?

Admiral COLWELL. No, sir.

Mr. SIKES. Don't they have the equivalent of a small battleship of the order the Germans were building?

Admiral COLWELL. They have several cruisers, what we call missile cruisers.

Mr. SIKES. Aren't they in reality small battleships with the modernization they have built into them.

Admiral COLWELL. Perhaps they could be so described. I would class them as missile cruisers.

Mr. SIKES. They have one carrier type which presumably is primarily for helicopters.

Admiral COLWELL. They have two helicopter ships which are named the *Moscow* and the *Leningrad*. These have half-length flight decks. They are designed for use by helicopters. We have seen *Moscow* in ASW operations. I see no reason why they could not also be used in amphibious operations.

ATTACK SUBMARINE PROGRAM

Mr. SIKES. One more question on our submarine program. Has the Navy attempted in each fiscal year since the target figure of five was adopted to get budget approval of five submarines?

Admiral COLWELL. Yes, sir; we have in our initial attempts at generating a budget.

Mr. SIKES. Does that mean you dropped it readily or did you push it as far as you were allowed to?

Admiral COLWELL. As I recall in some instances we made some voluntary reductions when we were faced with fiscal realities and in other instances the reductions were made in OSD.

(CLERK'S NOTE: The following additional information was subsequently provided for the record.)

The following tabulates the Navy request, the President's budget and the congressional approved program for nuclear attack submarines (SSN).

	Navy request	President's budget	Congress approved
Fiscal year 1969	3	2	2
Fiscal year 1968	5	3	3
Fiscal year 1967	5	5	5
Fiscal year 1966	6	4	6
Fiscal year 1965	9	6	6
Fiscal year 1964	8	6	6

While Navy requested only three SSN's in fiscal year 1969, five were included in our program objectives and in the CNO request to Secnav.

DXGN GUIDED MISSILE FRIGATE

CHANGES IN SHIP DESIGN

Mr. SIKES. For fiscal year 1970 how much are you requesting for the guided missile frigate program?

Admiral COLWELL. The request for fiscal 1970 is for one nuclear frigate which would cost $222 million.

Mr. SIKES. In fiscal 1968 you were funded one nuclear-powered guided missile frigate. In fiscal 1969, $52 million was provided for advanced procurement. It was disclosed during our discussions last year it was smaller than the ones funded for fiscal 1968 and carry only one surface-to-air missile instead of the two carried on the DLGN.

Why did you turn to a smaller frigate?

Admiral COLWELL. When we were conducting our examination of what we ought to have in total numbers of destroyers in the fleet, both general purpose and guided missile types, our studies showed that if we had in hand the optimum number of escorts for fast carrier forces, single-ended ships would be more effective than double-ended ships because of the way you could position them in the formation and your ability to take a larger number of separate targets under fire.

However, that is solely dependent on the assumption you have the optimum number. I think it is now quite apparent that we are not going to be able to build that optimum number. We, therefore, have changed our views in the past year in the process of our in-house contract definition, and we now propose to build these ships with two launchers which are dual-purpose launchers, so they can launch not only surface-to-air missiles but they can also launch the ASROC ASW weapon. By the use of the two launchers and two magazines, we can split both types of weapons.

Mr. SIKES. Is that what you propose to build into the DXGN?

Admiral COLWELL. Yes.

Mr. SIKES. In its report on the fiscal year 1969 DOD appropriation bill, the committee requested the Navy, the JCS, and the Secretary of Defense to thoroughly review and analyze operational requirements of the Navy in light of the challenge which lies ahead, with a view of possibly going to the larger DLGN which should provide greater operational and tactical advantage over the proposed DXGN. What are the results of those studies?

If there are any facets of this situation that have not been brought out, provide them for the record.

Admiral COLWELL. Yes, sir.

(The information follows:)

Studies as to numbers of ships required to meet the threat of the 1970's presently are going on at all levels of the Department of Defense as well as the Administration. The results are not yet available. However, the Navy has completed a comprehensive review specifically addressed to the question of DXGN versus DLGN capability and has reported the results of this review in a letter dated January 24, 1968, addressed to Chairman Mahon. It should be noted that the present designs of the two ships have many common characteristics, including size. The study concluded that looking to the threat of the late 1970's and beyond and taking into account the development and construction time required for modern guided missile ships, it is clear that new authorizations for nuclear frigates should include the latest improvements in combat systems we can now design into these ships. The DXGN's improved capability to react rapidly to a cruise missile, its inherent potential for rapid modernization, and the improved reliability and casualty mode operation of its combat system make it a superior overall ship for employment with our high value striking forces and for independent missions.

STATUS OF PLANNED PROGRAM

Mr. SIKES. What are the comparative costs of the DLGN and the DXGN as now forecast?

Admiral COLWELL. The DLGN, 36 and 37, which are the two newest we are about to build, are projected to cost $200 million for the first one, and $180 million for the second one. The DXGN, which I just quoted to was $222 million for the first. The later ones of the same design will be about $15 million less.

Mr. SIKES. How many DLGN's do we have in operation?

Admiral COLWELL. We have two in the fleet now, U.S.S. *Bainbridge* (DLGN 25) and U.S. *Truxtun* (DLGN 35).

Mr. SIKES. And under construction in addition to the one funded in fiscal 1968?

Admiral COLWELL. The DLGN 36 funded in fiscal year 1967 and DLGN 37 funded in fiscal 1968 make two more for a total of four. In addition we have the cruiser *Long Beach*, which we also class in the same category.

Mr. SIKES. What is the proposed total of the DXGN program?

Admiral COLWELL. The Navy's total program for DXGN's is ———. This is not an approved program. This covers several years. It is our estimate that the building program of ——— would give us a total of ——— with the five already built or funded, and this we conceive to be a proper number to go along with the nuclear carriers. If the Navy's DXGN program is approved, about ——— of the destroyer type ships in the fleet of 1980 will be nuclear powered.

Mr. SIKES. The committee has been advised that the DLGN will have a greater weapon capacity and it is predicted to have a greater antiaircraft warfare kill ratio than the DXGN. Both ships are now planned to be the same size and their costs are comparable. This is a repeat of the question I have just asked of the advantage of moving to the DXGN design. You might check your answer and be sure we have all of the facts in the case for the record.

Admiral COLWELL. Yes, sir.

Mr. SIKES. You have indicated that half of the $52 million in advance procurement funds provided last year will be applied toward the first ship in the fiscal year 1970 program and a balance toward a second ship in fiscal year 1971. Does this mean that your cost estimate for this ship has increased over that proposed in fiscal year 1969?

Admiral COLWELL. I do not have the figure.

That can be supplied, if you wish it.

(The information follows:)

The Department of Defense plan presented to the Congress last year called for two DXGN's in fiscal year 1970 and two in fiscal year 1971. The $52 million of advance procurement funds in fiscal year 1969 was for two ship sets of long lead nuclear components for the two DXGN's originally planned in fiscal year 1970. There has been no increase in advance procurement funding requirements for nuclear components for the first two DXGNs.

In preparing the fiscal year 1970 budget request, the Department of Defense decided to stretch out the procurement of the four DXGN's from the program of two in fiscal year 1970 and two in fiscal year 1971 upon which the presidential determination of last year was based, to one ship per year in fiscal year 1970–1973. Therefore, the fiscal year 1970 Department of Defense budget request includes only one DXGN. It also includes $9.9 million for procurement of long-lead-time items for the fire control systems for the second and third DXGN's and $58 million for procurement of long-lead nuclear propulsion plant components for the third and fourth DXGN's.

USE OF ADVANCED DXGN PROCUREMENT FUNDS

Mr. SIKES. How many ships will be supported by the $67.9 million in advanced procurement funds being requested in fiscal 1970?

Admiral COLWELL. The additional $67.9 million advanced procurement that we are requesting will provide sufficient funds to maintain

the production schedule for the total four-ship DXGN program which is currently approved by OSD.

Mr. SIKES. What is the status of the contract definition of the DXG class, which is the conventionally powered version of the DXGN?

Admiral COLWELL. We are not pursuing that at this time.

Mr. SIKES. Navy Ships System Command recently awarded a $1,117,774 contract to George Sharpe, Inc., New York, N.Y., to perform all functions and service necessary for the preparation of a basic ship system design for the nuclear guided missile frigate *DXGN*. What do you mean in your statement by the term "modified contract definition" being conducted in-house by the Navy for the *DXGN*?

Admiral COLWELL. The normal technique of contract definition, as you know, is performed by contractors in competition, and we pay them for that effort.

In the past we have had three, for example. By modified contract definition in-house we mean that we perform within our own resources with perhaps some contract assistance; the trade-off studies which under the other conditions would be performed by companies during competitive contract definition.

We prefer to do this when we are dealing with a ship which we feel to be rather well defined in terms of equipments and one which is going to carry a great deal of Government-furnished equipment. Then there is very little latitude for a contract or to exert any ingenuity.

Mr. SIKES. What service is being performed by George Sharpe in his contract?

Admiral COLWELL. Could I ask Admiral Adair to answer that?

Admiral ADAIR. He is performing the equivalent of a contract design. He is defining the ship in sufficient detail so that we can take the results and contract with a shipbuilder for its construction. This effort is really an extension of our in-house design capability.

Mr. SIKES. You do not have the capability to do this work.

Admiral FAHY. We do not have the manpower to do this completely in-house.

Mr. SIKES. This is an add-on to the work you can do in-house, is that right?

Admiral FAHY. Yes, sir.

Mr. SIKES. What is the total estimated cost of the George Sharpe contract?

Admiral ADAIR. May we supply that for the record?

Mr. SIKES. Yes.

(The information follows:)

The total cost in the contract to date is $1,117,774. The total estimate to complete is about $1,700,000.

CAPABILITY TO CONSTRUCT DXGN

Mr. SIKES. Do you later plan to award contract definition contracts to industry?

Admiral COLWELL. For the DXGN?

Mr. SIKES. Yes.

Admiral COLWELL. We do not, sir.

Mr. SIKES. Do you anticipate any slippage in the DXGN program?

Admiral ADAIR. No, sir.

Admiral COLWELL. Not at the present time, no, sir.

Mr. SIKES. Do you believe the shipbuilding industry will be able to support your proposed DXGN program, or will you have to develop additional shipyard capability? How do you propose to do this?

Admiral COLWELL. If we were to be successful in gaining approval for the entire Navy long-range program, it would be necessary to bring in one or perhaps two additional producers, is that correct?

Admiral ADAIR. That is correct.

Admiral COLWELL. Probably two.

Mr. SIKES. I am afraid that is not a very strong likelihood, but if it should come to pass how would you propose to develop additional shipyard capability?

Admiral FAHY. We have had these ships built in two other yards that are presently not building DLGN's. One of the yards has gone out of business.

Mr. SIKES. You are speaking of private yards.

Admiral FAHY. Private shipyards, yes, sir.

Mr. SIKES. You would go to private yards if additional capacity were needed?

Admiral FAHY. We would go to private yards at first. We have a fall back position that we could always put Puget Sound or Mare Island into the business.

ABILITY TO DEVELOP SHIP COMPONENTS

Mr. SIKES. How confident are you in your ability to successfully develop in a timely manner the computer, the MK26 combined launcher, and the new "shortstop" electronic warfare system currently planned for DXGN installation?

Admiral COLWELL. I would say that our confidence is high insofar as the computer is concerned and certainly insofar as the combined launcher is concerned. The shortstop program which, as you know, is an electronic warfare countermeasure total system is now under development, and we have not even built the first one yet.

My personal opinion is ———.

Mr. SIKES. What would you fall back on if this one does not appear to be working out?

Admiral COLWELL. We have what we call ———.

———.

Mr. SIKES. When do you propose to determine in what direction you must go?

Admiral COLWELL. I would think that we would have a very good idea on this in calendar ———.

STATUS OF NUCLEAR-POWERED AND MISSILE SHIPS PROGRAM

Mr. SIKES. I would like to have the table updated which was provided during last year's hearings beginning on page 232, showing the status of our nuclear-powered ships and other guided missile ships.

(The information follows:)

MISSILE SHIPS BY FISCAL YEAR PROGRAM

Hull No.	Name	Actual or estimated completion date
Fiscal year 1952:		
CAG 1	Boston	Oct. 14, 1955.
CAG 2	Canberra	June 1, 1956.
SSG 282 [1]	Tunny	May 2, 1953.
Fiscal year 1953:		
SSG 574.	Grayback	Sept. 4, 1958.
Fiscal year 1955:		
SSG 577 [2]	Growler	Dec. 15, 1958.
SSG 317 [3]	Barbero	Oct. 28, 1955.
Fiscal year 1956:		
CLG 3	Galveston	Nov. 28, 1958.
CVA 63	Kitty Hawk	July 14, 1961.
DDG 1	Gyatt	Nov. 1, 1956.
DLG 6	Farragut	Feb. 17, 1961.
DLG 7	Luce	July 18, 1961.
DLG 8	MacDonaugh	Jan. 20, 1962.
DLG 9	Coontz	Sept. 16, 1960.
DLG 10	King	Jan. 6, 1961.
DLG 11	Mahan	Dec. 31, 1960.
SSG(N) 587	Halibut	Jan. 4, 1960.
Fiscal year 1957:		
CG(N) 9	Long Beach	Sept. 1, 1961.
CLG 4	Little Rock	July 22, 1960.
CLG 5	Oklahoma City	Nov. 19, 1960.
CLG 6	Providence	Dec. 21, 1959.
CLG 7	Springfield	Aug. 7, 1960.
CLG 8 [4]	Topeka	June 10, 1960.
CVA 64	Constellation	Jan. 9, 1962.
DDG 2	C. F. Adams	Oct. 25, 1960.
DDG 3	J. King	Mar. 21, 1961.
DDG 4	Lawrence	Feb. 10, 1962.
DDG 5	C. V. Ricketts	June 18, 1962.
DDG 6	Barney	Sept. 25, 1962.
DDG 7	H. B. Wilson	Feb. 24, 1961.
DDG 8	L. McCormick	Aug. 21, 1961.
DDG 9	Towers	July 20, 1961.
DLG 12	Dahlgren	July 15, 1961.
DLG 13	Wm. V. Pratt	Dec. 30, 1961.
DLG 14	Dewey	Feb. 8, 1960.
DLG 15	Preble	June 30, 1960.
Fiscal year 1958:		
CG 10	Albany	Jan. 18, 1963.
DDG 10	Sampson	Aug. 30, 1961.
DDG 11	Sellers	Jan. 18, 1962.
DDG 12	Robinson	Jan. 29, 1962.
DDG 13	Hoel	July 31, 1962.
DDG 14	Buchanan	Mar. 23, 1962.
DLG 16	Leahy	Nov. 5, 1962.
DLG 17	H. E. Yarnell	Apr. 19, 1963.
DLG 18	Worden	Oct. 12, 1963.
Fiscal year 1958 supplemental:		
SSB(N) 598	G. Washington	Dec. 31, 1959.
SSB(N) 599	P. Henry	Apr. 13, 1960.
SSB(N) 600	T. Roosevelt	Feb. 13, 1961.
Fiscal year 1959:		
CG 11	Chicago	Sept. 1, 1964.
CG 12	Columbus	Mar. 1, 1963.
DDG 15	Berkeley	Jan. 30, 1963.
DDG 16	J. Strauss	June 4, 1963.
DDG 17	Conyngham	Aug. 27, 1963
DDG 18	Semmes	Feb. 18, 1963.
DDG 19	Tattnall	June 26, 1963.
DLG 19	Dale	Jan. 11, 1964.
DLG 20	R. K. Turner	Aug. 7, 1964.
DLG 21	Gridley	Aug. 2, 1963.
DLG 22	England	Feb. 28, 1964.
DLG 23	Halsey	Nov. 8, 1963.
DLG 24	Reeves	Aug. 28, 1964
DLG(N) 25	Bainbridge	Sept. 28, 1962.
SSB(N) 601	R. E. Lee	Sept. 16, 1960.
SSB(N) 602	A. Lincoln	Mar. 11, 1961.
SSB(N) 608	E. Allen	Aug. 8, 1961.
SSB(N) 609	S. Houston	Mar. 6, 1962.
SSB(N) 610	T. A. Edison	Mar. 10, 1962.
SSB(N) 611	J. Marshall	May 21, 1962.

See footnotes at end of table.

Hull No.	Name	Actual or estimated completion date
Fiscal year 1960:		
DDG 20	Goldsborough	Dec. 24, 1963.
DDG 21	Cochrane	May 19, 1964.
DDG 22	B. Stoddert	Nov. 9, 1964.
Fiscal year 1961:		
CVA 66	America	Mar. 15, 1965.
DDG 23	R. E. Byrd	Apr. 21, 1964.
DDG 24	Waddell	Oct. 12, 1964.
DLG 26	Belknap	Feb. 5, 1965.
DLG 27	J. Daniels	Sept. 23, 1965.
DLG 28	Wainright	May 20, 1966.
SSB(N) 616	Lafayette	Apr. 23, 1963.
SSB(N) 617	A. Hamilton	June 23, 1963.
SSB(N) 618	T. Jefferson	Jan. 4, 1963.
SSB(N) 619	A. Jackson	July 3, 1963.
SSB(N) 620	J. Adams	May 12, 1964.
SSB(N) 622	J. Monroe	Dec. 7, 1963.
SSB(N) 623	N. Hale	Nov. 23, 1963.
SSB(N) 624	W. Wilson	Dec. 27, 1963.
SSB(N) 625	H. Clay	Feb. 20, 1964.
SSB(N) 626	D. Webster	Apr. 9, 1964.
Fiscal year 1962:		
SSB(N) 627	J. Madison	July 28, 1964.
SSB(N) 628	Tecumseh	May 29, 1964.
SSB(N) 629	D. Boone	Apr. 23, 1964.
SSB(N) 630	J. C. Calhoun	Sept. 8, 1964.
SSB(N) 631	U. S. Grant	July 17, 1964.
SSB(N) 632	Von Steuben	Sept. 30, 1964.
SSB(N) 633	C. Pulaski	Aug. 14, 1964
SSB(N) 634	S. Jackson	Aug. 26, 1964.
SSB(N) 635	S. Rayburn	Dec. 2, 1964.
SSB(N) 636	N. Green	Dec. 23, 1964.
DLG 29	Jouett	Feb. 17, 1967.
DLG 30	Horne	July 7, 1967.
DLG 31	Sterett	June 16, 1967.
DLG 32	W. H. Standley	Oct. 28, 1966.
DLG 33	Fox	Sept 24, 1966.
DLG 34	Biddle	Feb. 25, 1967.
DLG(N) 35	Truxtun	May 26, 1967.
DEG 1	Brooke	Apr. 20, 1966.
DEG 2	Ramsey	Aug. 18, 1967.
DEG 3	Schofield	April 1968.
Fiscal year 1963:		
SSB(N) 642	Kamehameha	Dec. 10, 1965.
SSB(N) 640	B. Franklin	Oct 19, 1965.
SSB(N) 641	S. Bolivar	Oct. 29, 1965.
SSB(N) 643	G. Bancroft	Jan. 21, 1966.
SSB(N) 644	Lewis & Clark	Dec. 22, 1965.
SSB(N) 645	J. K. Polk	Apr. 16, 1966.
DEG 4	Talbot	June 26, 1967.
DEG 5	Richard L. Page	Oct. 5, 1967.
DEG 6	Barney	Nov. 9, 1968.
Fiscal year 1964:		
SSB(N) 654	G. C. Marshall	Apr. 29, 1966.
SSB(N) 655	H. L. Stimson	Aug. 15, 1966.
SSB(N) 656	G. W. Carver	June 15, 1966.
SSB(N) 657	F. S. Key	Nov. 26, 1966.
SSB(N) 658	M. G. Vallejo	Dec. 19, 1966.
SSB(N) 659	W. Rogers	Apr. 1, 1967.
DDG 31(Conv.)	Decatur	Aug. 21, 1967.
DDG 32(Conv.)	J. P. Jones	Dec. 13, 1967.
DDG 33(Conv.)	Parsons	Feb. 16, 1968.
DDG 34(Conv.)	Somers	May 16, 1968.
DDG 35(Conv.)	Mitscher	January 1969.
DDG 36(Conv.)	J. S. McCain	Aug. 29, 1969.
Fiscal year 1966:		
CG 10(Conv.)	Albany	Aug. 1, 1969.
DLG 6(Conv.)	Farragut	Oct. 30, 1969.
DLG 16(Conv.)	Leahy	November 1968.
Fiscal year 1967:		
DLG 17(Conv.)	H. E. Yarnell	May 12, 1969.
DLG 18(Conv.)	Worden	Nov. 12, 1970.
DLG 21(Conv.)	Gridley	Nov. 12, 1969.
DLG 22	England	May 12, 1971.
DLG 24	Reeves	May 12, 1970.
DLGN 36	Not available	May 31, 1972.

Hull No.	Name	Actual or estimated completion date
Fiscal year 1968:		
SSBN 627 (Conv.)	J. Madison	——.
SSBN 629 (Conv.)	D. Boone	——.
DLG 15 (Conv.)	Preble	Apr. 30, 1970.
DLGN 37	Not available	NA.
Fiscal year 1969:		
DLG 14 (Conv.)	Dewey	Oct. 30, 1970.
SSBN 630 (Conv.)	John Calhoun	——.
SSBN 628 (Conv.)	Tecumseh	——.

NUCLEAR POWERED SHIPS BY FISCAL YEAR PROGRAMS

Fiscal year 1952: SSN 571	Nautilus	Apr. 22, 1955.
Fiscal year 1953: SSN 575	Seawolf	Mar. 30, 1957.
Fiscal year 1955:		
SSN 578	Skate	Dec. 31, 1967.
SSN 579	Swordfish	Sept. 15, 1958.
Fiscal year 1956:		
SSN 583	Sargo	Oct. 1, 1958.
SSN 584	Seadragon	Dec. 1, 1959.
SSN 585	Skipjack	Apr. 15, 1959.
SSRN 586[4]	Triton	Nov. 10, 1959.
SSGN 587	Halibut	Jan. 4, 1960.
Fiscal year 1957:		
SSN 588	Scamp	June 3, 1961.
SSN 589[5]	Scorpion	Aug. 6, 1960.
SSN 590	Sculpin	June 1, 1961.
SSN[1]591	Shark	Feb. 9, 1961.
SSN[1]592	Snook	Nov. 4, 1961.
SSN[1]593[6]	Thresher	Aug. 1, 1961.
CGN 9	Long Beach	Sept. 1, 1961.
Fiscal year 1958:		
SSN 594	Permit	June 6, 1962.
SSN 595	Plunger	Nov. 21, 1962.
SSN 596	Barb	Sept. 26, 1963.
SSN 597	Tullibee	Nov. 11, 1960.
CVAN 65	Enterprise	Dec. 20, 1961.
Fiscal year 1958 supplemental:		
SSBN 598	G. Washington	Dec. 31, 1959.
SSBN 599	P. Henry	Apr. 13, 1960.
SSBN 600	T. Roosevelt	Feb. 13, 1961.
Fiscal year 1959:		
SSN 603	Pollack	May 22, 1964.
SSN 604	Haddo	Dec. 11, 1964.
SSN 605	Jack	Apr. 21, 1967.
SSN 606	Tinosa	Nov. 25, 1964.
SSN 607	Dace	Apr. 15, 1964.
SSBN 601	R. E. Lee	Sept. 16 1960.
SSBN 602	A. Lincoln	Mar. 11, 1961.
SSBN 608	E. Allen	Aug. 8, 1961.
SSBN 609	Sam Houston	Mar. 6, 1962.
SSBN 610	T. A. Edison	Mar. 10, 1962.
SSBN 611	J. Marshall	May 21, 1962.
DLGN 25	Bainbridge	Sept. 28, 1962.
SSN 575[7]	Seawolf	Oct. 18, 1960.
Fiscal year 1960:		
SSN 612	Guardfish	Feb. 10, 1967.
SSN 613	Flasher	July 22, 1966.
SSN 614	Greenling	Nov. 16, 1967.
SSN 615	Gato	Jan. 29, 1968.
Fiscal year 1961:		
SSN 621	Haddock	Dec. 20, 1967.
SSBN 616	Lafayette	Apr. 23, 1963.
SSBN 617	A. Hamilton	June 23, 1963.
SSBN 618	T. Jefferson	Jan. 4, 1963.
SSBN 619	A. Jackson	July 3, 1963.
SSBN 620	J. Adams	May 12, 1964.
SSBN 622	J. Monroe	Dec. 7, 1963.
SSBN 623	N. Hale	Nov. 23, 1963.
SSBN 624	W. Wilson	Dec. 27, 1963.
SSBN 625	H. Clay	Feb. 20, 1964.
SSBN 626	D. Webster	Apr. 9, 1964.
Fiscal year 1962:		
SSN 637	Sturgeon	Mar. 3, 1967.
SSN 638	Whale	May 4, 1968.
SSN 639	Tautog	June 1968.
SSBN 627	J. Madison	July 28, 1964.
SSBN 628	Tecumseh	May 29, 1964.
SSBN 629	D. Boone	Apr. 23, 1964.
SSBN 630	J. C. Calhoun	Sept. 8, 1964.
SSBN 631	U. S. Grant	July 17, 1964.
SSBN 632	Von Steuben	Sept. 30, 1964.
SSBN 633	C. Pulaski	Aug. 14, 1964.
SSBN 634	S. W. Jackson	Aug. 26, 1964.
SSBN 635	S. Rayburn	Dec. 2, 1964.
SSBN 636	N. Green	Dec. 23, 1964.
DLGN 35	Truxtun	May 26, 1967.
Fiscal year 1963:		
SSN 646	Grayling	May 31, 1969.
SSN 647	Pogy	December 1907.
SSN 648	Aspro	February 1969.
SSN 649	Sunfish	Mar. 8, 1969.
SSN 650	Pargo	December 1967.
SSN 651	Queenfish	Dec. 6, 1966.
SSN 652	Puffer	May 1969.
SSN 653	Ray	Apr. 19, 1967.
SSBN 640	B. Franklin	Oct. 19, 1965.
SSBN 641	S. Bolivar	Oct. 29, 1965.
SSBN 642	Kamehameha	Dec. 10, 1965.
SSBN 643	G. Bancroft	Jan. 21, 1966.
SSBN 644	Lewis & Clark	Dec. 22, 1965.
SSBN 645	J. K. Polk	Apr. 16, 1966.
Fiscal year 1964:		
SSN 660	Sand Lance	August 1969.
SSN 661	Lapon	Dec. 14, 1967.
SSN 662	Gurnard	Dec. 6, 1968.
SSN 663	Hammerhead	July 8, 1968.
SSN 664	Sea Devil	Jan. 30, 1969.
SSN 671	Narwhal	June 14, 1969.
SSBN 654	G. C. Marshall	Apr. 29, 1966.
SSBN 655	H. L. Stimson	Aug. 15, 1966.
SSBN 656	G. W. Carver	June 15, 1966.
SSBN 657	F. S. Key	Nov. 26, 1966.
SSBN 658	M. G. Vallejo	Dec. 19, 1966.
SSBN 659	W. Rogers	Apr. 1, 1967.
Fiscal year 1965:		
SSN 665	Guitarro	Nov. 17, 1969.
SSN 666	Hawkbill	Mar. 16, 1970.
SSN 667	Bergall	May 31, 1969.
SSN 668	Spadefish	July 31, 1969.
SSN 669	Seahorse	Aug. 30, 1969.
SSN 670	Finback	Dec. 9, 1969.
Fiscal year 1966:		
SSN 672	Pintago	July 20, 1970.
SSN 673	Flying Fish	May 1970.
SSN 674	Trepang	August 1970.
SSN 675	Bluefish	January 1971.
SSN 676	Billfish	May 1971.
SSN 677	Drum	April 1971.
Fiscal year 1967:		
CVAN	Nimitz	June 1972.
SSN 678	Not available	Sept. 15, 1971.
SSN 679	do	Apr. 1, 1972.
SSN 680	do	Aug. 1, 1972.

See footnotes at end of table.

Hull No.	Name	Actual or estimated completion date
SSN 681	do	Dec. 1, 1972.
SSN 681	do	Mar. 1, 1973.
DLGN 36	do	May 31, 1972.
Fiscal year 1968:		
SSBN 627 (Conv.)	J. Madison	——.
SSBN 629 (Conv.)	D. Boone	——.
SSN 683	Not available	Sept. 1, 1973.
SSN 684	do	Apr. 1, 1973.
SSN 685	do	NA.
DLGN 37	do	NA.
Fiscal year 1969:		
SSN 686	do	Nov. 30, 1973.
SSN 687	do	Do.
SSBN 630 (Conv.)	John Calhoun	——.
SSBN 628 (Conv.)	Tecumseh	——.

[1] Stricken, fiscal year 1969.
[2] Inactivated, fiscal year 1968.
[3] Stricken, fiscal year 1965.
[4] Inactivated, fiscal year 1969.
[5] Lost at sea May 10, 1968.
[6] Lost at sea Apr. 10, 1963.
[7] Conversion.

Mr. SIKES. Are there question on the DXGN?
Mr. LIPSCOMB. No, sir.

DX DESTROYER

ANNUAL FUNDING PROGRAM

Mr. SIKES. On the DX Destroyer, you were provided $30 million in fiscal 1968 for contract definition of a new destroyer, the DD-963 class formerly designated the DX. Will the $30 million be enough to complete the contract definition phase?

Admiral COLWELL. My understanding is that it is.

Admiral FAHY. It has been sufficient and we think it will be adequate.

(*Clerk's note:* The following additional information was subsequently provided for the record.)

Bath, General Dynamics and Litton submitted proposals for production of DD-963 on time on April 3. Detailed evaluation of the proposals is now in progress. Of the $30 million, $28.5 million has been provided to three contractors. The remaining $1.5 million is for contractor cadre costs. To fund all three contractors at the present rate until the projected November contract date, would require an additional $900,000. This funding would be required after September 3, 1969, if it is required at all. Our present intent is to fund this extended effort out of current assets.

Mr. SIKES. You were provided $25 million last year in advance procurement funds, which is being applied to the five ship construction program in fiscal year 1970. Will the $25 million fully support all five ships?

Admiral GADDIS. Yes, sir.

Mr. SIKES. What is your expenditure estimate by fiscal year, and this can be provided for the record, of the $342.7 million in your five ship fiscal 1970 program?

Admiral COLWELL. We will so provide.
(The information follows:)

EXPENDITURE ESTIMATE BY FISCAL YEAR OF THE 5-SHIP FISCAL YEAR 1970 PROGRAM

[In thousands of dollars]

	Annual expenditure	Cumulative expenditure
Fiscal year:		
1970	21,500	21,500
1971	36,100	57,600
1972	55,600	113,200
1973	102,600	215,800
1974	100,900	316,700
1975	26,000	342,700

These estimates are subject to revision depending upon the results of contract definition and the negotiated price and fabrication schedules of the development and production contract.

These figures represent our current estimate of billings from the development and production contractor and do not reflect obligation requirements which permit the contractor to order material to meet his production plan.

TOTAL PROGRAM

Mr. SIKES. Do you anticipate any slippage in this program?

Admiral COLWELL. Not at this time.

May I qualify that, sir?

Mr. SIKES. Yes.

Admiral COLWELL. My comparison with last year—I believe that we testified last year that we hoped to go to contract in August of this year. Our estimate now is November. I do not think that we would translate that into a delay in delivery because we do not know enough about it.

Mr. SIKES. How many of the DD-963-class ships do you propose to build in total?

Admiral COLWELL. We propose to build somewhere between ———. The currently approved program by OSD is for ———. Our estimate of total requirements run closer to ———. It will take enough years to build this many so this total number is not a matter of real concern as of this year.

Mr. SIKES. How many ships will the $17.6 million in fiscal year 1970 advance procurement funds support?

ADMIRAL COLWELL. Eight ships.

INCREASED COST OF PROGRAM

Mr. SIKES. Have your cost estimates for this ship increased over those proposed last year?

Admiral COLWELL. Yes, sir; they have.

Mr. SIKES. How much? Provide that for the record.

(The information follows:)

In fiscal year 1968, $246 million was requested in the budget for the first five DD-963; in fiscal year 1970, our estimate increased to $342.7 million. The reasons for this increase are as follows:

Labor, overhead, and profit rates plus increased unit material costs have increased by about 20 percent over the figures used in the preparation of the fiscal year 1969 budget. These updated rates have been derived from recent contract experience in other shipbuilding programs.

The increasing complexity of our modern ships has been reflected in increases in the estimating factors. These factors predict the amount of labor required in the production of the ships.

Recent contract experience in dealing with large shipbuilding programs has also revealed that the estimated learning curves which we assumed in preparing the fiscal year 1969 estimates were overoptimistic. More realistic estimates of learning benefits have been applied in the fiscal year 1970 budget.

The total increase in estimates between fiscal years 1969 and 1970 are essentially accounted for by these factors. Requirements and characteristics of the notional ships used in the preparation of these estimates have remained essentially unchanged.

TYPE OF PROPULSION SYSTEM

Mr. SIKES. Are there questions on the DX destroyers?

Mr. ANDREWS. Will these five destroyers be conventionally powered?

Admiral COLWELL. They will be conventionally powered. All three of the contractors who are competing have proposed gas-turbine propulsion.

Mr. SIKES. What is your answer to the people who say the Navy is not moving fast enough to get away from conventional power and to get into an all-nuclear fleet?

Admiral COLWELL. My answer to that is that I think we have not moved fast enough in the past. I think we should have built more nuclear-powered frigates. At the same time I would say to them that it is not feasible to go to an all-nuclear-powered Navy because there are some ships that actually do not require nuclear power in order to perform their missions very effectively.

Mr. ANDREWS. I was going to ask you about that. Two or three years there was quite a bit of discussion about nuclear-powered destroyers. I have not heard any talk about that last year or this year. Have you given up the idea of trying to come up with a nuclear-powered destroyer?

Admiral COLWELL. It is our view that we should build nuclear-powered frigates, which are the larger ships and carry the guided-missile launchers.

We do not feel that this is necessary in our general purpose destroyers. For one thing, I do not think we can afford to put it in a large number of ships. Secondly, we expect that these ships will be somewhat smaller than is a suitable size for nuclear power.

COST OF NUCLEAR VERSUS CONVENTIONAL POWER SYSTEMS

Mr. ANDREWS. How much will the new ship cost?

Admiral COLWELL. The 963 destroyer.

Admiral GADDIS, Approximately $68 million average over the total program.

Mr. ANDREWS. What would a nuclear powered destroyer cost, if you could get one?

Admiral COLWELL. About $128 million, or so, which would include about 13 years of fuel.

Mr. ANDREWS. You do not think they are worth twice the cost?

Admiral COLWELL. I think that nuclear power is worth a great deal indeed. But I think that we have to temper our desires with what may be feasible for us.

Mr. ANDREWS. Does the Navy still have hopes of getting nuclear-powered destroyers in the fleet?

Admiral COLWELL. Nuclear-powered frigates.

Mr. ANDREWS. I am talking about destroyers. I can understand the frigate is a bigger ship and you have more room and so forth and so on.

Admiral COLWELL. At the present time we are not programing nuclear-powered destroyers.

Mr. ANDREWS. At any time in the future?

Admiral COLWELL. Not at the present time; no, sir.

Admiral GADDIS. I think there is another point involved here. We do not have a nuclear powerplant that will fit in a ship of less than 6,000 tons and still produce the shaft horsepower that is needed for a maneuvering destroyer.

Mr. ANDREWS. I understand that on the destroyers there is not enough room to have a small dance. I assume on the new destroyers the space is still as scarce as it was on the old. This brings up the question in my mind, of whether you would have space available on a destroyer for nuclear reactors?

Admiral COLWELL. The answer to that is "No," not in the tonnage we are talking about.

Mr. ANDREWS. Then as long as the destroyer remains the present size nuclear powerplants are out of the question.

Admiral COLWELL. For that particular class of ship I would say that is correct.

Mr. ANDREWS. What is the next step above the destroyer?

Admiral COLWELL. The frigate.

Mr. ANDREWS. Is the frigate you are asking for in the budget to be nuclear powered?

Admiral COLWELL. Yes, sir.

Mr. ANDREWS. Do you hope in the future to have all the frigates nuclear powered?

Admiral COLWELL. We do, sir.

Mr. ANDREWS. From frigates on up you are thinking of nuclear power. From destroyers on down it is impractical.

Admiral COLWELL. Generally speaking that is true, except for submarines.

Mr. ANDREWS. I hope you are not planning at any time to build additional conventional-type submarines.

Admiral COLWELL. They are not included in any of our plans; no, sir.

Mr. ANDREWS. They are just about as obsolete as the Model T if I understand correctly.

Admiral COLWELL. Unless somebody invents a new kind of powerplant.

Mr. ANDREWS. That is all for me, Mr. Chairman.

GUIDED MISSILE FRIGATE (DLG)

REASON FOR COST OVERRUNS

Mr. SIKES. Between the period fiscal year 1966 and the first half of fiscal year 1969, the Navy had net cost overruns totaling $48.4 million in the conversion of a number of DLG guided missile frigates. How many ships were involved in these cost overruns?

Admiral FAHY. There are nine ships from 1966–69.

Mr. SIKES. For the record, describe the conversion work being done and the reasons for these cost overruns, pointing out those attributable to the Navy.

(The information follows:)

The conversion work being done provides for a standardized AAW weapon system (configuration which includes AN/SPS-48 radar, NTDS/WDS-11, the fire control system MK 76 (AN/SPG-55B radar, computer MK 119)). In addition to weapons changes, the conversion encompasses the concurrent accomplishment of increased electrical generating capacity, ECM, communications, and sonar improvements. Overhaul and refurbishment of the ship is also accomplished. The original estimated cost of $252.8 million versus current estimate of $295.6 million produces a cost increase of $42.8 million. Reasons are given below:

1. $9 million was caused by changing the fiscal year 1968 ship from a DLG-9 class ship to the DLG-15, one of the four BT-HT conversions. The BT-HT conversions have been consistently budgeted at $40 million (DLG-7, 14 and 15). This decision was made by OSD during the review of the fiscal year 1968 shipbuilding program.

2. The increase from $37.9 million to $46 million for DLG-6 and from $22.4 million to $36.1 million for DLG-16 in the fiscal year 1966 program reflect costs which are incurred by ordance turnaround program. The turnaround program concept was required to reduce offline time and to overhaul and modernize the equipments on an assembly line basis in a controlled environment to bring all to the same configuration and to reduce future maintenance. This was the basic reason for the increase in price of weapons equipment by $7.165 million on DLG-6, by $10.474 million on DLG-16. This program of having a prior ships equipment modified and ready for follow ship on arrival in yard was required to meet schedule requirements.

3. Rehabilitation costs are about $1 million ship higher than planned due to material condition of ships; some essential improvements in sonar and increased air conditioning to support electronics equipments were also required.

ORIGINAL VERSUS REVISED COST ESTIMATE

Mr. SIKES. What was the original estimated cost for conversion of each of these DLG's, and what is the current estimated cost to complete the conversion of each ship?

Admiral COLWELL. Do you wish that now or for the record?

Mr. SIKES. If you have it, you can give it now.

Admiral FAHY. The original cost for all nine was $252.8 million.

Mr. SIKES. What is the current estimated cost?

Admiral FAHY. The current estimate is $295.6 million.

Mr. SIKES. What is the estimate for post delivery work and outfitting costs?

Provide that for the record.

(The information follows:)

In the $295.6 million end cost of these ships, $3.2 million is for outfitting and $0.9 million is for post delivery.

The estimate for post delivery work and outfitting costs which will be funded from the annual line items for these ships is $7.945 million for outfitting and $7.55 million for post delivery work. DLG-16 is the only ship which will not require funding from the annual line items. DLG-6, 17, 21 will receive partial funding from the annual line items.

ADEQUACY OF 1970 ESTIMATE

Mr. SIKES. There is an item of $5.2 million in advanced procurement funding for the fiscal 1969 conversion. I believe it was carried on page 9 of the P-1, line item 22. What is the source of these funds?

Admiral ADAIR. The source of that $5.2, sir, was $3.8 in fiscal 1967 and $1.4 in fiscal 1968.

Mr. SIKES. You are programing $39 million in fiscal 1970 for the last conversion of the DLG–6 class frigates. How confident are you concerning the estimate for this work in view of your experience on the others?

Admiral ADAIR. We are confident of that estimate, sir. These overruns that we spoke of a few moments ago have occurred in the past. We were able to cover those growths and those particular cost increases do not contribute to our current problem.

Mr. SIKES. For the record provide the estimate for post delivery and outfitting for these ships.

(The information follows:)

For the BT–HT conversion ships, the last of which is programed in fiscal year 1970 the estimate for post delivery is $0.85 million per ship and for outfitting is $1.1 million per ship.

Mr. SIKES. You are planning to install a modern homing Terrier missile system on this ship. I thought the standard extended range (ER) missile, which is in its third-year buy, was a replacement for the Terrier. Why don't we arm this ship with the standard ER missile?

Admiral COLWELL. It will handle the standard missile.

Mr. SIKES. It will handle both?

Admiral COLWELL. It will handle either.

Mr. SIKES. You are requesting $19 million in the fiscal year 1970 budget for advance procurement funding of other DLG conversions in fiscal year 1971. How many such conversions do you contemplate in fiscal year 1971?

Admiral COLWELL. We plan on four.

Mr. SIKES. How many will the $20 million received in fiscal 1969 partially fund?

Admiral GADDIS. The $20 million in 1969 and the $19 million in 1970 together will fund the advance procurement for the four in 1971.

Mr. SIKES. What kind of conversion will be made to this class of DLG?

Admiral COLWELL. It will be quite similar to the one which is being performed on the DLG–6, except these are different class frigates. The improvements are quite similar.

Mr. SIKES. How many DLG's do we have in the fleet including those undergoing conversion?

Admiral COLWELL. The number is 28, sir.

Mr. SIKES. Are there questions on the DLG's?

AMPHIBIOUS SHIPS

STATUS OF GENERAL PURPOSE AMPHIBIOUS ASSAULT SHIP—LHA

Mr. SIKE. Last year the Congress funded the first general purpose amphibious assault ship—LHA—at $153 million, plus $63 million for advance procurement to support three other LHA's to be requested in fiscal year 1970. This is in addition to the $23 million provided the Navy in fiscal year 1968 for contract definition. The committee notes that the Navy has already experienced an increase in the estimate for this ship of $31.9 million in fiscal 1969. You testified last year that you

intended to restrict any changes in these ships to those which become absolutely necessary during construction, and that you do not propose to flood the contractor with a series of changes.

Apparently something was wrong with planning or designing or contract definition to cause this cost increase. Will you discuss it for us?

Admiral FAHY. I would like to have Captain Fitzpatrick talk to that.

Captain FITZPATRICK. Last year at the time this was discussed before the committee that contract definition was still in process. We expected to complete the contract definition and the evaluation of the contract definition process and award a contract originally early this fiscal year. That has been somewhat delayed because upon the receipt of the proposals from the three contractors, we found it was necessary to transfuse some of the very good ideas by the unsuccessful contractors which the Navy now owned into the specifications for the final ship. This process of transfusing the better features which had been proposed into a specification which has now become part of the contract took some period of time to negotiate with the contractor. This also gave some rise to a price which had been determined on the basis of a preliminary estimate of what the contractors might propose.

Now we actually have a negotiated price with the contractor.

CHANGES IN DESIGN FEATURES

Mr. LIPSCOMB. Captain, according to a reprograming action which is before the committee, it is said the amended price reflects technical infusion. That is just what you explained.

Captain FITZPATRICK. Partially; yes, sir.

Mr. LIPSCOMB. And scope refinements incorporated since the January 1968 proposal. What are scope refinements?

Captain FITZPATRICK. Just basically that, sir.

Admiral ADAIR. If I may, the proposal from the contractor was not sufficiently definitive for us to understand what he was going to produce. So it was necessary for us to go back and get him to clarify the proposal. In clarifying the proposal the price for the proposal increased somewhat.

Captain FITZPATRICK. I think it is fair to say, sir, in this contract that because the specifications on which the contract is now based are his specifications, and they are specifications which he has agreed to and we have agreed to, we really feel there will be a very minimum of changes in this ship as it is constructed.

Mr. LIPSCOMB. Could you give us a few examples of technical infusion?

Admiral ADAIR. Yes, sir. In our judgment the hull structure had insufficient strength.

Mr. LIPSCOMB. This is the original proposal?

Admiral ADAIR. Yes, sir. We required him to increase the hull structural strength, which increased the displacement of the ship. In addition, in the hangar space immediately below the flight deck there were some centerline stanchions—pillars, if you will—which would interfere with the movement of helicopters. We required him to modify that structure. I cannot recall the details but there was something low down in the stern where in our judgment the structure was inadequate. We required him to modify that.

In addition in our judgment there was inadequate space for shops. We believed that there was also inadequate facilities for the crew. We required him to modify all of these features. It increased the size of the ship and concomitantly, its cost.

Mr. LIPSCOMB. You are not getting over to the emotional end? gold plating, do they?

Admiral ADAIR. No, sir.

Mr. SIKES. How about silver plating?

Admiral FAHY. They are not silver plating, either. Some of the other things that were modified were the way in which the wounded could be brought down to sickbay. We change the locations.

Mr. LIPSCOMB. You are not getting over to the emotional end?

Admiral FAHY. Not a bit. They had sickbay in the wrong place and trying to get a wounded man down through the winding stairwells, was improper. We shifted this. We put evacuation accesses on both sides of the ship so that the people could come out and go along there and get up in the helos, instead of just along one side. There were a lot of things like that.

USE OF CONTRACTORS' DESIGN FEATURES

Mr. LIPSCOMB. After your presentation last year we came to the conclusion that the best estimate for these ships was $153 million. Do you know where that figure came from?

Admiral FAHY. The $153 million was an estimate for the LHA first ship cost.

Admiral GADDIS. That was $125 million estimated for the national ship plus $28 million of design on the first ship of the class.

Mr. LIPSCOMB. That was the program base reflecting congressional action, $153 million.

Admiral GADDIS. Yes, sir.

Mr. LIPSCOMB. Where did that come from? You didn't have a definite price from any contractor.

Admiral GADDIS. That is correct. That is what we call a notional ship, a one page set of characteristics which competing contractors can base a competitive design.

Mr. LIPSCOMB. Then the contractors worked out their proposal and sent the proposal in.

You infused a contractor's proposal with another contractor proposal to get a better ship.

Admiral FAHY. On some items, yes.

Mr. LIPSCOMB. Why didn't you infuse Litton's proposal into the other ship? How did you decide who was going to get the contract?

Admiral ADAIR. Sir, if I may distinguish between two terms, infusion and transfusion. Infusion is where the Government puts something in, to fulfill our requirements. Transfusion is where you take an idea from one man's proposal and put it in another.

There was very little transfusion. Most of it was infusion. Government ideas put into the contractor's proposal to make them completely satisfactory.

Mr. LIPSCOMB. How do you decide that you take one contractor's and put them into another? Do you give him a chance to rebid on it? He gives you a price on a ship. Then you do some transfusion.

Admiral ADAIR. We did very little transfusion; mostly infusion.

Admiral FAHY. If there is transfusion, the contractors then come back again with a new estimate or new cost of what they think the ship will cost.

Mr. LIPSCOMB. Did you do that in this case?

Admiral FAHY. Yes, sir.

Mr. LIPSCOMB. You went back to all contractors?

Admiral FAHY. We went back to all of them until it turned out that one was so far over the others that we were going to waste money going further into this.

DELAY IN CONTRACT AWARD CAUSES INCREASED COST

Mr. LIPSCOMB. Another item that increased the cost was pre-award escalation due to delay in contract award. What do you estimate this as and tell us how you arrived at it.

Admiral FAHY. We have estimated that about 25 percent of the first ship price increase is attributable to the escalation. I would like to provide for the record that information, if I may.

Mr LIPSCOMB. Very well.

(The information follows:)

The $153 million LHA first ship estimate was developed in August 1967, approximately 6 months prior to submission of the development and production contract proposals The reprogramed $184.9 million was proposed in late October 1968, based on a proposal revision received from the prospective D & P contractor that same month. Of the increase in pre-award escalation of approximately $8 million, about $2.5 million is attributable to moving the base line for escalation reserves from July 1967, to July 1968. Approximately $4 million of the precontract escalation is for increased escalation reserves due to the proposed contract revised price and an additional $1.5 million was allowed to cover expected Government-furnished material growth.

QUESTIONABLE VALIDITY OF COST ESTIMATES PRESENTED TO CONGRESS

Mr. LIPSCOMB. Is there any way that this committee could be better informed on ship construction costs? For instance, here is a ship for which we have appropriated money, thinking that it would cost that amount. Now we find the estimates were way low. Would you still go ahead with construction if the Congress did not give you the money for the increased cost?

Admiral FAHY. We couldn't or wouldn't go ahead.

Mr. LIPSCOMB. Supposing we said $153 million is a good price but we can't go ahead with it at $190 million. What would happen?

Admiral FAHY. Then we would just have to stop the program and pay off the contractors for what they did.

Mr. LIPSCOMB. You think that the Congress ought to wait until we get something more definitive on price before we appropriate funds?

Admiral COLWELL. I think one of our difficulties was the technique of procurement of ships by contract definition. It is precisely this: In order to preclude a year's delay in the program, we find ourselves talking to the Congress in terms of ships that are not well defined, or our price estimates are not well defined. I am in complete agreement we are going to have to do better in this area and we are going to have to annotate our estimates in the form of telling you how good we think they are.

Mr. LIPSCOMB. With the great cost overrun we are confronted with now and with the other problems that confront us, it is apparent that the Navy has been less than realistic in their estimates of proposals before the Congress.

Admiral COLWELL. I think we would have to plead guilty to that in some instances, yes, sir.

Admiral GADDIS. Mr. Lipscomb, we might have something developing that could be of interest to you in this regard.

We have a study group revising procedures for ship construction cost control and cost estimating, and they have recommended a procedure to categorize ship cost of estimates, according to their budget quality. The system will indicate the amount of planning that has been done and design information that is available for the estimate.

The quality of the estimate is significant to its reliability and the Congress and all review levels deserve it. This study is just in the process of completing now. Unfortunately, we don't have our estimates graded at this time, but they should be by next year.

ABILITY TO ESTIMATE ACCURATELY

Mr. LIPSCOMB. I had always gone on the assumption that we had the finest in-house capability, comparable to any outside private industry shipbuilding company in estimating costs and arriving at solutions.

Admiral FAHY. We do, sir, and I think what hasn't been said is that we estimate on the basis of the ship at the time we know it, as to what we think it will consist of and what the economic factors are at the time we make the estimate. From the time that the estimate goes in until the time we get around to even talking of the budget here, or even trying to let contracts for the ship, a lot of factors can change and these are the things that modify the estimates.

Actually—and I think this study group bears it out—the estimates are within 3 percent to 4 percent, in those areas where you don't have a big disruption due to uncertainities of what you are trying to build or what you are estimating.

If we know what we are estimating on, we can give you the best estimate there is to be had.

Mr. LIPSCOMB. The Navy should know what they are going to estimate on.

Admiral ADAIR. In further amplification, late yesterday I started to answer a question that Mr. Andrews asked near the closing hour and he asked me to supply the additional information for the record. We are doing this. I think this will give you a feel for what has happened in the marketplace. You will recall he kept asking me, "Well, how much of this potential deficit is due to market conditions" and we agreed to supply this for the record and we will, sir.

Mr. LIPSCOMB. I am going to get into that more later too.

Another thought is, why not wait until contract definition is complete before asking for funds for new ship construction?

Admiral GADDIS. This is certainly one possibility. However, when you look at the time it takes now to budget for a ship, there is room to ask whether estimates could be improved at some expense other than delay in budgeting. As it is now, contract definition, when conducted in a competitive atmosphere, takes anywhere from 12 months to 18

months. It is of sufficient dollar magnitude that it has to be budgeted. This means that from the time of the demonstrated need for a ship, it is 2 to 3 years before the ship can be budgeted. And if funds for the ship construction were not budgeted until contract definition were complete, at least another year would elapse before a contract was awarded.

This is a question of how fast do you proceed with a procurement as compared to a development. The length of the budget process and the length of the study process prior to achieving introduction of a weapons system is long already and this wait extends it still further.

MISINFORMATION HURTS SHIPBUILDING PROGRAM

Mr. LIPSCOMB. Do you have any ships in the fiscal year 1970 budget upon which you are awaiting completion of contract definition?

Admiral GADDIS. The DD–963 will be completed in June or July and we will not be ready to let a contract until about November.

Admiral FAHY. The evaluation will be complete in about July. Then the usual infusion-transfusion process will go on for a month or so and we will re-examine the contractor's revised proposals to select the final one.

Admiral GADDIS. That is the only contract definition in process on the present shipbuilding program.

Mr. LIPSCOMB. Then how do we know how good the costing is in the fiscal year 1970 budget, or would you like to take another look at it?

Admiral GADDIS. In the case of the DD–963, I think it is good. We had the benefit of many of the preliminary reviews in the contract definition process. We don't have the benefit of the final decision. But we have a much more sound estimate than that provided last year on the basis of notional DX characteristics.

This is different from the fiscal year 1969 LHA price of $125 million for the notional ship, plus $28 million for the first ship.

Mr. LIPSCOMB. I am talking not only to a ship such as the amphibious ship, the LHA, but I am talking to the entire request now before us.

Admiral FAHY. I would grade the quality of the estimates from medium to high. The medium estimates are dependent on things like the SSBN conversions particularly in the repair area. This is where, in conversions everywhere, we have the greatest trouble, determining a good fixed price for this. I would estimate that as being medium quality. I would say in our two new construction SSN's, our confidence is high.

Our confidence in the LHA estimate is high.

Mr. LIPSCOMB. Take another look at it, if you have any doubts or additional thoughts. We would like to have them. But when you are forced into reprogramming, you are really taking a good hunk out of your overall shipbuilding program for the years ahead.

Admiral FAHY. We realize that.

Mr. LIPSCOMB. All through this you have knocked out ships that this committee has appropriated money for.

Admiral FAHY. Yes, sir.

Mr. LIPSCOMB. Your shipbuilding program today doesn't look anything like the program for which this committee appropriated funds. Why? Because of such miscalculations on the cost of the ships. Now, we are in the position where we may have a hard time justifying even the ships you have in the program, much less add back the ones that you really need, and so, instead of going from bad to better in the ship inventory problem, we are going from bad to worse in my view.

I think something has got to be done about costing these out and giving the committee the facts so that we can do the kind of a job that is necessary.

Mr. SIKES. I think you will want to respond to that, Admiral. You may want to take some time and try to come up with a sound and a strong answer. The committee would like to have the benefit of your analysis of this problem, how it came about and what is being done to prevent a repetition.

Admiral COLWELL. Mr. Chairman, the ship systems command—and I think Admiral Adair in particular—has conducted such an analysis. The report consist of a number of pages. It is detailed. It takes careful reading.

Mr. SIKES. May we have it for the record?

Admiral COLWELL. I would like to supply that entire thing for the record.

Mr. SIKES. I would like to have it for the record.

(The detailed report referred to by the witness follows:)

REASONS FOR INADEQUATE ESTIMATING

A study was initiated on August 8, 1968 by the Chief of Naval Material as a result of evidence that the "Shipbuilding and conversion, Navy" (SCN) appropriation would incur a deficiency if it were to continue with its plans to build and convert all the ships in its then currently authorized program. As a result of this situation, ships in the program had to be canceled and plans made to resolve the remaining deficiency.

The current SCN deficit of $600 million to $700 million had many causes. The study was able to identify several contributing items which by themselves would fully account for this deficiency. These are: (1) by fiscal year 1967, the Navy had optimistically reprogramed $253 million of its assets which, in retrospect, it still needed to complete its earlier programs; (2) from fiscal year 1966 through 1969, OSD and Congress imposed recoupment objectives totaling $368 million (congressionaly imposed were $15 million) against prior year program surpluses which, in retrospect, no longer existed; and (3) from fiscal year 1966 through 1968, the economic forecasts included in the Navy's SCN budget, failed to anticipate the subsequent inflationary trends by approximately $205 million.

These three items, totaling $826 million, exceed the current deficiency. However, the study identified major weaknesses in the SCN management system which were obscured by SCN program surpluses of the early years, and whose existence contributed to the ineffectiveness of program control. These weaknesses in the SCN management system at all levels require correction if future deficits are to be avoided and SCN program control is to be assured.

The major causes for the current funding deficiency in the SCN program are traceable to the following weaknesses in the SCN management system, all of which contributed in varying degrees to the total deficiency:

1. Inadequate planning for the early, firm definition of ships.
2. Funding of developmental systems and experimental ships under SCN
3. Reducing budget prices of ships below those developed by professional ship cost estimators (including recoupments).
4. Inadequacy of: specifications, control of change orders, and early anticipation of claims.

5. Lack of adequate management information and cost control systems for ship acquisition project managers (Shapm).
6. Inadequate manpower priority of naval shipyard new construction and conversion work.
7. Failure always to balance program decisions with their cost impacts.
8. Shortage of manpower at Navships Headquarters and other SCN management support activities.
9. Inability to forecast accurately for 2 to 5 years, economic conditions in the shipbuilding industry.
10. Reprograming of apparent excess funds to offset new program requirements.

The study identified two major time-related groupings of events during which important decisions affecting SCN program control were made. These were:

1. The planning and pricing period. This identifies the time frame preceding the submssion of the SCN budget to Congress.
2. The cost control period. This identifies the time frame after the budget has been submitted.

A design for management system improvement was developed to effectively control actions and decisions during both these periods.

The study has submitted 83 recommendations. These when implemented would substantially improve the ability of the Navy to maintain fiscal control of the SCN program. In total, these recommendations fulfill the design objectives for management system improvements.

With regard to planning and pricing, the objectives are:

1. Ships to be built or converted should have all major decisions relating to their characteristics reached before final Navy budget estimates are made.
2. Characteristics to be either service evaluated or of low-risk concurrency with fallback provisions.
3. Estimates unconstrained by pressures to meet cost target budgets based on these estimates.
4. Detailed documentation to support budget estimates.

With regard to cost control, the objectives are:

1. Configuration management instituted immediately upon submission of budget estimates with the same baseline as used for budget estimates.
2. Development and use of a ship acquisition plan (including financial plan) for each procurement in sufficient detail to insure that all major activities are appropriately scheduled, that interfaces and critical paths are known, and that cost targets are identified.
3. A project management system which ensures that all decisions affecting a ship acquisition plan are coordinated by a single authority for approval and adjustment of the plan, with finances fully controlled by the project management organization.
4. Improved contract plans and specifications.
5. An information system that reports progress against ship acquisition plans and continues to assess the probability that future events will take place according to plan.
6. Ability to make tradeoffs within the plans to compensate for difficulties encountered.
7. Adequate manning to ensure that management functions to be performed can be carried out.
8. Establishment of adequate reserves or recognized budgeting procedures to meet those contingencies which can neither be controlled nor compensated for.

The Study is currently being staffed within Navy to review the recommendations, determine actions to be taken on them and to develop an implementation plan for the approved items.

The insert for the record on page 522 provides additional information on the analysis of the problem.

SUMMARY OF COST ESTIMATE STUDY FINDINGS

Mr. SIKES. If you want to make brief comments at this time, we will be glad to hear them.

Admiral COLWELL. Perhaps you could summarize a bit, Admiral Adair.

Admiral ADAIR. Mr. Chairman, in past years, since the inception of the end-cost budgeting which was initiated in 1961, we completed ships at a significant amount of dollars below the funds that were appropriated by the Congress. These assets were utilized to fund other requirements. Some of them were utilized, for instance, to fund the Subsafe program. Some were utilized to partially fund the 3T improvement program, the surface-to-air guided missile improvement program.

Certain of the assets were utilized to offset recoupment objectives that were imposed upon the appropriation.

As this was going on, market conditions were changing very gradually at first. We find that shipbuilders were—those with fixed price contracts taken in the 1963–64 era—finding their costs growing beyond those for which they could expect reimbursement through our escalation provisions and therefore they were seeking means to recover their costs when the overhead economy resulted in severe upswing of prices.

Concurrent with this, we continued to do business at the old stand, making changes, establishing recoupment objectives, and before we knew it we were in a fairly large deficit situation.

I believe we need to revitalize the management of the program through all levels of defense, and I think we need to shift away from the old firm fixed-price contract to some sort of an "incentive-ized" contract. We are doing this later thereby we expect the shipbuilder to seek not to find flaws in the specifications, but to turn their talents to and find ways to reduce cost and by virture of doing this, increase his profit position.

EFFECT OF SHIPYARD MODERNIZATION IN COST ESTIMATES

Mr. SIKES. What would be the effect of shipyard modernization? Isn't that one of your real problems?

Admiral ADAIR. Are you speaking in private or the public sector?

Mr. SIKES. Both.

Admiral ADAIR. May I speak in the private sector and then I will ask Admiral Fahy to pick up in the public sector.

We believe that through the multiyear contract where a shipbuilder obtains a sufficient backlog of work he is encouraged to invest capital in laborsaving equipment. A number of shipyards have used this technique. One is National Steel and Shipbuilding Co. in San Diego with their large LST program. A second is Avondale Shipyards Inc., the one near New Orleans. Both have invested significant amounts in laborsaving equipment. Newport News Shipbuilding and Drydock Co. is another case in point and so is General Dynamics in the old Bethlehem-Quincy Yard.

These are some encouraging signs of shipyard modernization in the private sector based on a sufficient backlog where they can see it is to their economic advantage to do so.

Mr. SIKES. You say "encouraging signs." I take it it hasn't progressed very far?

Admiral ADAIR. I believe I would modify my words. "Significant progress" has been made and I think perhaps there are signs of even further progress.

Admiral FAHY. Not only that, but the amount of capital invested in these improvements is considerable in all of these companies that have been enumerated. I think the only way we can encourage further improvements in this area is to have some recognition by the industry that there is going to be a somewhat level, sustained program. That is the key to this because in some areas where you have to train people for particular skills, you have virtually a 2-year leadtime, or else you are not competitive. To put these men on and keep them employed during the training period is something the industry is not going to do on its own unless there is some assurance that there is a payoff. This has worked out where we have multiyear contracts and where the people have had a backlog of work.

In the Government yards I feel that they can be as effective and as efficient in new construction as any of the private yards. This was proven when we were in the Polaris program. We turned out ships as cheaply and quickly and turned money back. But, you see, there was a difference. This difference between the way we operated in that program and the way we have operated since, with our conversion and now construction work, is that the Polaris program work had top priority. This meant you could lay it out, you could be effective and efficient, utilize the skills you needed, and then you left the people on the job.

Now we take a Midway or another conversion and we put it in the yard, but we pull the people off because we have an Oriskany that comes in or we stuff additional ships in the yard to take care of strikes and things of that nature. The people were pulled off, put on the higher priority effort and the conversion becomes a flywheel that builds up costs because of the inefficient way in which the people are utilized.

I feel that the modernization would be a considerable help but, more than that, the management—and this means management from the top—must go along with it. This means that you allow these people who are there to operate in the new construction and conversion field as they should be operating. There should be a fence around the new construction and conversion work so that you don't pull the people off and on like some kind of a reservoir. It is very inefficient. It runs the cost up.

Mr. ADDABBO. This seems like a playback of the record myself and several of my colleagues from New York gave when we were trying to save the old Brooklyn Navy Yard. We had the specialists there, we had efficiency, but some power that saw fit destroyed that great yard and said that, "We will use those men elsewhere." Those men did not go elsewhere and you are looking for those professionals today. They are not around. You cannot train men to replace those who have been in the business 20 and 25 years, furnishing dedicated service. You cannot find that caliber of men today. I think that is part of the reason we are lagging and finding these overruns and everything else, because we have destroyed the pride of workmanship that you had in the oldtime shipbuilders. These are the same items we gave when we closed the Brooklyn Navy Yard, and in Philadelphia and Massachusetts and so forth. Now you have to pay double prices to train men and produce the efficient men we had in the Brooklyn Navy Yard.

Admiral FAHY. Plus the fact once they get out of the shipbuilding business, it is difficult to get a lot of these people back, as England found out, and as we are finding out. This is true if you have an economy which can give them jobs in other industries. This is the case today.

AMPHIBIOUS SHIPS

SLIPPAGE IN LHA CONSTRUCTION PROGRAM

Mr. ADDABBO. Admiral, you propose to program $31.9 million of the fiscal year 1969 advance funding toward the cost of the fiscal 1969 ship, which will now cost $184.9. In addition, $17 million of fiscal year 1969 advance funding will be used to support the two ships in the fiscal year 1970 program. The remaining $14 million will be applied to reduce fiscal year 1970 TOA requirement.

What was deleted from your 1970 program?

Admiral GADDIS. In the budget amendment, the deletions in the 1970 program were $66 million for two DLG conversions; $7 million advance procurement for MSO conversion; $10 million of advance procurement for DLG; and two salvage tugs at $45.3 million.

In addition, we had the deletion of the third SSN with $105 million removed, leaving $47 million in advance procurement toward authorization of that ship in the 1971 program.

Mr. ADDABBO. How far has your construction schedule slipped for the first LHA?

Admiral FAHY. I would estimate by virtue of the delay in awarding a contract, about 5 months.

Mr. ADDABBO. When do you propose to start construction of the two LHA's for which funds are being requested in fiscal year 1970?

Admiral FAHY. May we supply that for the record, sir?

(The information follows:)

Hull No.	Fiscal year	Contract award	Start construction
LHA 2	1970	November 1969	June 1971.
LHA 3	1970	.....do	December 1971.

The LHA contract and method of construction does not require fabrication of steel for the LHA–2 until January 1971. In the interim period, the shipbuilder will complete the system design, the detailed design and the production drawings. He will also solidify his production techniques. He has to order all components required for construction under this process in order that they be available at start of construction. The time span between the first and second ships under this sequence meets his production capability and provides an orderly schedule.

REDUCTION IN ADVANCED PROCUREMENT FUNDS

Mr. ADDABBO. In fiscal year 1969 you requested $63 million for advance procurement to support three ships. This is $21 million per ship. You now propose only $17 million in fiscal year 1970 for advance procurement for two ships. Were your fiscal year 1969 advance procurement funds overestimated that much, or have you cut back in the number of advance procurement items?

Captain FITZPATRICK. When the final negotiations were completed for awarding the contract, it turned out that many of the things which

we expected to secure in advance, Government procurement furnished to the shipbuilder was more advantageous for the shipbuilder to furnish himself. The advance procurement was reduced.

The amount we now have programed for the ships in the next year's program is adequate.

Mr. ADDABBO. Is it cheaper and more economical for it to be done this way?

Captain FITZPATRICK. We feel it is, yes, sir. Obviously there are certain things we will have to provide in the nature of certain electronics equipment and ordnance, to the contractor which he could not be expected to produce. But many of the other things which we normally do provide in a normal ship contract will not be provided here.

Mr. ADDABBO. You will supply ordnance and electronics equipment?

Captain FITZPATRICK. Yes, sir.

TOTAL COST OF 1970 LHA PROGRAM

Mr. ADDABBO. Admiral, your statement indicates the 2 fiscal year 1970 LHA's will cost $287.7 million. What is the total estimate including such things as post delivery and outfitting?

Admiral COLWELL. I would estimate about $2.5 million per ship but I would like to refine that for the record

(The information follows:)

The total estimated cost of the fiscal year 1970 LHA ships is $295.2*M* including $5.0*M* and $2.5*M* for outfitting and post delivery costs respectively.

FIRE CONTROL SYSTEMS FOR LST'S

Mr. ADDABBO. You are building LST's out in California on which you are putting gunfire controls and other controls that you have in inventory. Information has been given to me that the MK–87 gun control systems were much superior equipment to the MK–63. Why is the MK–87 not being used?

Admiral COLWELL. When the characteristics of the LST's were established, we didn't have a MK–87. We therefore called out the MK–63 for these ships. It was the most suitable fire control system we had at the time, when the contracts were let and when construction started. The MK–87 is a new system and it is in fact still under evaluation. It has not yet been accepted for service use. We, therefore, have not procured any. We expect that it is going to be a very good system. For these particular ships at the stage of construction, because the contract already exists, we feel that we should go ahead and put on the MK–63's. We don't have any 87's.

Mr. ADDABBO. Isn't it a fact that the MK–87 itself has been tested and found worthy except that the vessel on which it has been tested has been questioned, as far as the vessel is concerned, and not the fire control system itself?

Admiral COLWELL. We have run part of the required test on it and it looks very good, that is true, but evaluation has not been completed.

Mr. ADDABBO. If the MK–87 is proven to be a better system, will that replace the 63's aboard the LST's?

Admiral COLWELL. It might at some future date. It would cost us at this time—we estimate that it would cost about $2 million per ship, or perhaps a little bit more, to make the change, if we had the MK–87.

Mr. ADDABBO. Isn't it a fact that the 63 utilizes 18 men to operate and the 87 will only utilize three men to operate?

Admiral COLWELL. It doesn't take 18 men to operate the 63 system.

Mr. ADDABBO. How many?

Admiral COLWELL. I will have to supply that for the record.

(The information follows:)

Manning Requirements For MK-63 and MK-87 Gunfire Control Systems

MANNING REQUIREMENTS FOR 1 MK-63 GFCS	
Topside	
Director officer	1
Director operator	1
Gun control talker	1
Range setter	1
Total	4
Below decks	
Radar consol operator	1
Computer operator	1
Total	2
Total manning requirement	6

MANNING REQUIREMENTS FOR 1 MK-87 GFCS	
Topside	
Optical sight operator	1
Total	1
Below Decks	
Main console operators	2
Total	2
Total manning requirement	3

Mr. ADDABBO. How soon will the 87 system be tested and found to be worth of purchase, or not?

Admiral COLWELL. I believe the estimated date for completion of the evaluation is this fall.

Mr. ADDABBO. When will the LST's that are new being constructed be ready for delivery?

Admiral COLWELL. They are starting to deliver now. The first one from National Steel, which is the San Diego builder, was supposed to deliver in September of this year.

Mr. ADDABBO. Which would be about the same time that the MK-87 would be tested out, is that correct?

Admiral COLWELL. That is probably true. Even if we had the funds to purchase the 87, it would take about 2 years to buy them and have them delivered.

Mr. ADDABBO. What is the delivery schedule on the LST's?

Admiral ADAIR. The last LST is scheduled to be delivered in October 1971, sir.

Mr. ADDABBO. You have your first LST being delivered in September 1969; is that correct?

Admiral ADAIR. From National Steel; yes, sir.

Mr. ADDABBO. When will the second one be delivered?

Admiral FAHY. About November.

Admiral COLWELL. November 1969.

Mr. ADDABBO. And the third one?

Admiral FAHY. It will be in about March 1970. Wait a minute, there are some before that.

September 1969, November 1969, December 1969, February 1970, April 1970—there are two sources, three being built at Philadelphia.

Mr. ADDABBO. The MK-63 gunfire control system is of World War II vintage; is that correct?

Admiral COLWELL. That is correct.

Mr. ADDABBO. It is over 20 years old at the present time?

Admiral COLWELL. Yes.

Mr. ADDABBO. Won't we be wasting money in dislocation between the differential of manpower by putting on an MK–63 which is ancient, where in modern warfare we are using a gunfire control of World War II vintage—wouldn't it be better to wait until we have the MK–87 to supply those ships coming off the line at a later time?

Admiral COLWELL. The last one will deliver in September of 1971 on the current schedules. It would be my estimate that it would not be possible to get delivery on even the first MK–87 by that time.

Mr. ADDABBO. Isn't it true that the reason you will not get the delivery of the MK–87 is because the contract has been stopped for 1 year?

Admiral COLWELL. We have no money to purchase any.

Mr. ADDABBO. You haven't put in any money request?

Admiral COLWELL. It is not a service-approved equipment.

Mr. ADDABBO. If you found in the fall that the MK–87 is a better gunfire control system, could you at that time ask for reprograming for the use of the MK–87 rather than again waste money on a system that is outmoded?

Admiral COLWELL. That is possible. It would mean either leaving the ships without a fire control system until the 87 could be produced, which is not a very desirable situation, or it would mean putting in the 63 and then taking it out again, which would be an expensive proposition. This is something we would have to examine very carefully and look into the economics of it.

Mr. ADDABBO. If you found an 87 to be a better system and more economical to operate—again my figures say 18 men to operate the 63 and only 3 men to operate the 87—and, as in the past, would you not replace an old system by a new system if you found it more economical and having greater accuracy?

Admiral COLWELL. We would probably replace it during one of the regular overhauls of the ships as an alteration at some future date. This would require very careful examination for the economics of it and the timing. I don't think anyone doubts but what the 87 will turn out to be a very good machine.

FAST DEPLOYMENT LOGISTICS SHIPS (FDL)

MODIFIED PROGRAM FOR 1970

Mr. SIKES. I am going to move over at this point to the FDL for some questions on that program. We have the U.S. Army represented here.

You are requesting $186.7 million in fiscal 1970 for three FDL's, which is the first increment of a 15-ship program. This program, which is essentially to fulfill an Army requirement stated by the JCS, failed congressional approval last year. Would you briefly review this FDL requirement and tell us how these ships will be deployed and used, how you were able to reduce the program from 30 ships to 15, and why you believe this adjusted program will be more palatable to Congress this year?

Admiral COLWELL. The FDL is a JCS requirement. The joint strategic objectives plan (JSOP), and related studies have assessed the strategic mobility forces necessary to meet our rapid deployment requirements during the critical early days of a contingency. It has been determined that a tailored force—a mix of airlift, sealift, and prepositioned material—which includes 30 FDL ships is required to meet this requirement. To expedite surface movement of land force equipment and supplies in combination with the airlift of personnel and selected equipment, the fast deployment logistic ship concept has been developed. These fast ships, fully loaded with equipment and deployed forward, or partially loaded and maintained in a ready status at U.S. ports, could provide the necessary deployment of the large volume of material required to support our rapid deployment strategy. These ships utilize unique design concepts including large controlled humidity storage holds, port and a nonassault over-the-beach unloading capability, by embarked helicopter and waterborne lighterage.

The original JCS requirements for 30 FDL's still remains; however, in view of the past opposition to the program, a more modest 15 ship program is being submitted this year. The three FDL's in the fiscal year 1970 program, at an estimated cost of $186.7 million, are the first increment of this program. This reduced program will permit us to review, as a possible method of meeting the remaining FDL requirement, any new design proposals, from industry, or other sources, such as the proposed new MSTS multipurpose cargo ship. While the ship utilization plan for the reduced fleet of 15 FDL ships is still undergoing study, present plans call for the ships to be fully committed, that is ships will be fully loaded and deployed in a readiness posture, partially loaded at U.S. ports, or engaged in training exercises or helicopter transport. In addition, the reduced number of FDL's will lessen the program's effect on the Navy's hard-pressed SCN combat ship replacement program.

Mr. SIKES. Your statement indicates contract definition has been completed and Litton Industries has been selected to contract for the construction of the ship. What was the total cost of the contract definition effort?

Admiral COLWELL. Seventeen point seven million.

CAPABILITY OF SHIPYARDS TO BUILD THE FDL

Mr. SIKES. The committee has been advised that only four private shipyards have facilities large enough to build a ship the size envisioned for the FDL. Where will Litton build the FDL?

Admiral COLWELL. It will be built at their new yard at Pascagoula, Miss.

Mr. LIPSCOMB. Is the yard in process of construction or ready to go?

Admiral COLWELL. It is in the process of construction right now.

Are you familiar with the Ingalls yard in Pascagoula, sir, the existing yard?

Mr. LIPSCOMB. No, sir. I am very familiar with yards that are about 2,000 miles away from there.

Admiral COLWELL. It is situated on a river and across from the old yard on an island, so the two yards will be facing each other.

Mr. LIPSCOMB. When will they have the capability to start building?

Admiral GADDIS. This fall, sir.

Admiral COLWELL. They expect to be able to lay keels this fall, as I understand it.

Mr. SIKES. Will that delay your program?

Admiral COLWELL. No, sir; it should not.

Mr. SIKES. Our investigative staff was advised in 1967 that, with one exception, no single shipyard presently has the facilities required for the construction of FDL ships in sufficient quantities to meet the originally proposed delivery schedule of one ship every 30 days. What is the current proposed delivery schedule?

Admiral COLWELL. The proposal for deliveries now is considerably relaxed over that one every 30 days. They are talking now about a delivery every 3 to 4 months.

ADEQUACY OF BUDGET ESTIMATES

Mr. SIKES. Have you made sufficient budget allowances to cover design changes during construction of the ships now programed? I am thinking about state-of-the-art advancements which occur during construction.

Admiral COLWELL. I would say the answer to that is yes, Mr. Chairman. These are not complicated ships. They are large but they are not what I call complex.

Mr. SIKES. What would be the delivery date on the first ship?

Admiral COLWELL. Fourth quarter of fiscal year 1973.

Mr. SIKES. How confident are you about your current estimated cost for the FDLs?

Admiral FAHY. I would think when we go out to negotiate or contract for these ships that we would probably find that the contractor would want to make some changes in terms of the current economic conditions. I would say the price would change.

Mr. SIKES. How recently have the estimates been updated?

Admiral FAHY. They were updated for the budget.

Mr. SIKES. What kind of a contract would this be, cost plus?

Admiral FAHY. It should be a fixed price with an incentive fee.

Mr. SIKES. What does that mean?

Admiral FAHY. That means that he has a price target. If he betters that, then there is a split in the difference between the Government and himself. In other words, a ratio of 80–20 or 70–30, the Government taking the larger portion.

Admiral GADDIS. He gets a reduced fee and the Government pays a little bit more.

Admiral ADAIR. But there is a ceiling beyond which any further incurred costs are all against the contractor, sir.

Mr. SIKES. Would it save money to convert existing ship designs to meet the requirement for the FDL?

Admiral COLWELL. I don't believe that that is a feasible solution, Mr. Chairman. The FDL is a specialized design which is not paralleled in industry, primarily because of the military requirements for: controlled environmental stowage of equipment for prolonged periods, in-place maintenance and fueling of equipment, facilities to support Army maintenance and off-loading detachments over-the-beach off-loading capability and provisions for carrying and operating helicopters.

POSSIBLE SUBSTITUTION OF COMMERCIAL TYPE SHIPS

Mr. SIKES. The committee has been advised of a convertible diesel-powered cargo ship, referred to in this country as a "Pacer" class ship. Reportedly it is a container-type ship which can be easily converted from a 14,000-ton ship to a 23,000-ton ship, and can be built for about $9 million. Has any consideration been given to the possibility of using a ship of this type to meet the FDL requirement?

Admiral COLWELL. We have thoroughly examined various commercial designs and they do not meet the stated requirement, and here again this is primarily because of their lack of special military features required in the FDL ships, particularly the absence of realistic helicopter capability.

Mr. SIKES. This has been a source of considerable controversy in prior years. The Pacer-type ship was urged as the replacement and I would like for your answer to be a complete one on the problem of utilizing a ship of this type.

(The information follows:)

The PACER (Productive All-purpose Cargo Emergency Replacement) is a design concept developed by the Office of Ship Construction (OSC), Maritime Administration (MarAd) as a follow-on for the WWII VICTORY type cargo ship. Principal characteristics of the PACER are:

Length overall	feet	565
Beam	do	78
Speed (steam)	knots	20
Bale cube	M cubic feet	.874
Containers (20 by 8 by 8) capacity		306
Cargo	long tons	10,160
Full ship disp	do	20,800
Estimate cost of 1 ship (steam)*	Million	[1] $17.1
Estimate cost of 15 ships (steam)	do	12.3
Estimate cost of 25 ships (steam)	do	11.7

[1] Computed in fiscal year 1969 dollars.

The PACER is a six hold conventional general purpose cargo ship with propulsion machinery and accommodations aft. It lacks the following specialized features of the FDL:

Helicopter operating and off-loading capability.
Provisions to carry own helicopter and waterborne lighterage.
Maintenance facilities, such as, shops to maintain embarked equipment.
Dehumidified stowage.
Vehicle fueling and defueling capability.
Bulk POL stowage.
Roll-on/Roll-off capability.
Accommodation for Army maintenance and off-loading detachments (350 pers).

On a volumetric comparison alone, it would take 4½ PACER's to equal the carrying capacity of a single FDL. Such an equivalent would cost $55.35M (4.5×$12.3M) as compared with the estimated fiscal year 1970 average cost of $60.48 million for 15 FDL's. Significantly, the $55.35 million cost is without the added features required to give the PACER the necessary characteristics for an FDL role. Personnel at OSC (MarAd) stated that they do not consider the PACER to be a substitute for or capable of fulfilling an FDL role. We concur.

POSSIBLE COMBINATION OF FDL AND COMMERCIAL TYPE SHIPS

Mr. SIKES. The committee has been told that seven member companies of the committee of American Steamship Lines submitted to the Navy a proposed mix of commercial ships and FDL ships which

might result in lower overall costs. What is the result of the Navy's evaluation of that proposal?

Admiral COLWELL. I am sorry, I am not familiar with that. I will have to supply that for the record, sir.

Mr. SIKES. Provide it for the record.

(The information follows:)

In July of 1966 the former Committee of American Steamship Lines (CASL) submitted a proposal for utilizing certain specific, new, commercial ship designs which it was claimed had, or could have, the capability to satisfy the requirement of the rapid deployment concept. These designs were the new: US Lines Ro/Ro Ship; Moore McCormack Ro/Ro Ship; Delta Line Container Ship; Lykes Brothers Sea Barge Clipper; and the Prudential, American Pioneer and Pacific Far East Lines "LASH" Ship. All of these designs have been thoroughly analyzed as a possible means of offsetting the FDL requirement. Generally speaking these ships possess the following disadvantages for meeting FDL operational requirements:

Not immediately responsive, ships still must be recalled, etc.

Cannot efficiently carry high volume, low density cargo of Army infantry division force.

Cannot maintain vehicles for long periods and test (operate) them in storage.

Do not provide adequate helo capabilities.

Cannot activate vehicles and helos in place.

Cannot efficiently satisfy other objectives and possible additional tasks of FDL ships, such as helo transport.

Cannot off-load themselves without additional facilities and outside assistance.

Do not possess an organic over-the-beach capability.

While the CASL designs do not meet the requirement for an FDL rapid deployment role, they all appear to be excellent additions to our Merchant Marine. As such, they would make a vital contribution toward meeting the extensive resupply sealift requirements that follow the rapid deployment phase of an operation.

EVALUATION OF THE USE OF OTHER SHIP CONCEPTS

Mr. SIKES. In 1965 the Military Sea Transportation Service entered into a charter/build contract for the construction and operation of a vessel with roll-on/roll-off capability, making over-the-beach loading or unloading possible. Has the Navy considered a ship of this nature to meet the FDL requirement?

Admiral COLWELL. We have evaluated the FDL concept against the so-called Lash ship, against the Delta container ship, against the roll-on/roll-off ship, against the Lykes Seabee. We have evaluated against all of those. All of the commercial designs have substantial disadvantages by comparison with the FDL when you match them against the stated requirements.

Mr. SIKES. Our investigative staff has been informed that a vessel of the size anticipated for the FDL ship could not be economically used in commercial operations. Should this factor not have been considered in designing the FDL so that they might be used for other purposes in the event the present requirement changes or diminishes?

Admiral COLWELL. I would say all the people who have worked with the FDL design would agree that it does not lend itself to commercial operation because of its specialized design, and the particular features which it incorporated in order to rapidly deploy, or store for protracted periods, in a ready to use condition, Army ma-

terial, such as, wheeled and tracted vehicles, lighterage, helicopters and all classes of supplies.

Mr. SIKES. Do you anticipate there might come a time when the present requirement for the FDL would change or diminish to the point that these ships would be available for other purposes? Do you think you will ever have them in that quantity?

Admiral COLWELL. I think that is unlikely.

Could I ask General Moore if he could care to comment on that?

General MOORE. Sir, it would appear that the requirements for FDL ships would still exist so long as the military is required to be responsive to U.S. national commitments which we have throughout the world.

Mr. SIKES. Are you saying also that the number of ships which are now anticipated, would eliminate the possibility that any of them would be available at a later time for other service than that for which they are designed?

General MOORE. I am afraid I didn't understand the thrust of your question, sir.

Mr. SIKES. You are not buying many of these ships. It is not proposed to buy many of these ships. My question is, will all of those to be acquired under the present program continue to be needed for the purpose for which they are constructed?

General MOORE. Yes, I would say so, sir.

COORDINATION WITH C–5A PROGRAM

Mr. SIKES. The committee understands that the C–5A, which will be able to carry 98 percent of the various types of Army divisional equipment, is primarily a cargo carrier and is inefficient as a personnel carrier. This means that troops and their weapons will be moved separately into combat or potential combat areas followed later by the FDL's. Where does our amphibious force fit into this type of an operation?

Admiral COLWELL. The amphibious force, Mr. Chairman, is designed, as you know, for amphibious assault. That is, the troops go ashore with their arms and equipment against resistance, and that is an entirely different kind of an operation from that which is envisioned for the C–5A and the FDL. The FDL is designed to store and deploy in a nonassault environment, the large volume of material required to support Army operations.

Mr. SIKES. General Moore, have you personally examined this ship concept to the extent that you feel it is—that it does fill, or would fill a presently unfilled Army requirement?

General MOORE. Yes, sir.

TEST OF FDL CONCEPT

Mr. SIKES. Operation "Quick Release" reportedly demonstrated that equipment can be stored at sea for long periods in good condition. How long was this test conducted?

General MOORE. Mr. Chairman, may I supply that answer for the record?

Mr. SIKES. Yes, you may.

(The information follows:)

The forward floating depot concept provided for the prepositioning of selected equipment and 15 days supplies for a battle group task force aboard three modified WWII Victory ships. Army material was maintained under controlled humidity conditions by an embarked Army maintenance detachment. These ships were loaded in May and June 1963. They became operational in June 1963. They were tested in exercise Quick Release 8 months later, in February of 1964. The ships were deployed from Subic Bay in the Philippines to Okinawa, where they were off-loaded and the equipment deprocessed. Personnel from an Hawaiian-based infantry division, were flown to Okinawa and utilized the off-loaded equipment in a 3-day maneuver. During this period, the equipment proved to be in excellent condition. The vehicles were driven over 200 miles, including off-the-road operations, without a major breakdown. A total of 12 days was required to off-load the ships and prepare and issue the equipment to the exercise units. While the test was a success, it pointed out the need for a ship that could deploy materiel in a ready-to-roll condition, off-load with self-contained equipment at a pier or over-the-beach, provide for the long term storage of POL, and operate and deploy helicopters. A total of 57 days elapsed from the arrival of the first ship to the departure of the last ship from Okinawa. Upon completion of the exercise the equipment was serviced, modified as required, and reloaded aboard the three FFD ships. Quick release was a slow slow release, and deliberately so. It was a walk-through, and no attempt was made to compress reaction time.

Approximately 2 years later, in February of 1966, the ships were off-loaded in Japan and the ships put in point-to-point service in support of Vietnam operations. The off-loaded material, both equiment and supplies, were again judged to be in excellent condition.

REPLACEMENT OF OBSOLETE EQUIPMENT

Mr. SIKES. What consideration has been given to the probability of equipment deployed in FDL's for extended periods becoming obsolete before it is used?

General MOORE. We would use this equipment in exercises periodically, testing the troops as well as using the ships. Insofar as certain equipment becoming obsolescent is concerned, all material aboard the ships would be inspected, serviced and modified or replaced as required at the end of each scheduled exercise.

Mr. SIKES. You can expand on that for the record if you wish.

(The information follows:)

Present plans call for an annual exercise of the FDL ships loaded and deployed forward with Army material. One third of the ships would be off loaded annually during exercises, thus providing for a complete check of all material once each 3 years. Annual maneuvers will provide training for Navy, MSTS, and Army personnel in off loading, marry-up, and loading procedures and facilitate the orderly repair, modification, and replacement of Army material with newly standardized material.

CONCEPT OF FDL PROGRAM

Mr. SIKES. Does the Army have any forward floating depots deployed at the present time?

General MOORE. No, sir.

Mr. SIKES. What is the concept of the forward floating depots?

General MOORE. Sir, we had three forward floating depot ships which were in existence from June 1963 to February 1966. The Army material on them was off-loaded and used in support of operations in Southeast Asia. I understand the ships are now being employed by MSTS in point to point service.

Mr. SIKES. Do you contemplate a return to this concept?

General MOORE. Yes, sir, but only as an interim measure until the FDL ships become available.

Mr. ADDABBO. Admiral, for what purposes is the FDL going to be used?

Admiral COLWELL. The FDL is designed to serve as an element of our forward-deployment concept by rapidly deploying Army material. With the FDL, Army material and supplies can be prepositioned forward and/or rapidly deployed from CONUS to an objective area.

Mr. ADDABBO. Will they be used to replace the bases we lost in France and Spain?

Admiral COLWELL. To some extent. It is a substitute for land based prepositioning which might be lost. It is one way to put it. These ships are designed to have a controlled environment and to be loaded with Army equipment, with a cadre of maintenance personnel. Trucks, tanks, whatever, would be kept in operative condition for extended periods. They could then be forward deployed, at our option, and when directed, unloaded at the place where the equipment would be required.

General MOORE. These ships could be stationed, either partially loaded or fully loaded, in U.S. ports or deployed forward.

Mr. ADDABBO. They could as easily be deployed out in the Middle East now?

General MOORE. Yes, sir, they could if so ordered. They could be deployed in times of crisis swiftly and be in position, ready to join with forces which could be flown there, for example.

Mr. ADDABBO. In other words, throughout the world we could deploy small armed camps ready to be used in any crisis, or placed where there might be a crisis at any time.

General MOORE. This decision would be made by appropriate national authorities.

Mr. ADDABBO. They could be stationed throughout the world and be put into direct combat at any time at the command of the White House, without any further legislation or any further review by the Congress or anything else, is that correct?

General MOORE. Their use would be as directed by appropriate national authorities.

Mr. ADDABBO. We would have no control over their deployment. Congress would have no control over the deployment. Once you have these ships in being, they can be deployed. We have control over bases, but we have no control over these FDL's, is that correct?

Admiral Colwell. I think it is a difference between deployment and employment, sir. The deployment would presumably be ordered by the Joint Chiefs of Staff as directed by appropriate national authorities. The employment, being after the deployment, would be a matter of national policy.

Mr. ADDABBO. The deployment would be by the Joint Chiefs of Staff. The Congress would have no review of where these ships should be or where we should have an armed camp.

Admiral COLWELL. This is no different from the deployment of any other kind of a ship, an aircraft carrier or whatever.

Mr. ADDABBO. Except that here you are carrying a whole unit ready to go into combat.

Admiral COLWELL. No, sir; because the personnel are not there; however, that is not the point—aircraft carriers, for example, have their

personnel and equipment aboard in a fully ready status when deployed, but they are not employed in hostile action without proper directive from appropriate national authorities.

Mr. ADDABBO. You just have all the equipment and all we need do is fly the personnel in. Couldn't we use the airlift as we have done in many maneuvers, with a combination of airlift and our maritime troops to cover the same purpose?

Admiral COLWELL. There is an essential difference. The FDL's would be singularly devoted to this purpose, and would always be available, either empty, partially loaded or fully loaded. The maritime fleet would have to be drawn off its regular routes, and put on berth and loaded and would take that much more time.

In addition the FDL is specially designed to carry all types of vehicles, lighterage and a large number of helicopters in a ready-to-operate condition. The ship can also transport all classes of supplies including breakable cargo, ammunitions, and POL. There is no such ship design in the maritime.

Mr. ADDABBO. If you carry the helicopter, where would the personnel be?

Admiral COLWELL. The personnel, except for the maintenance detachment and possibly the off-loading detail, would be flown to the objective area. This is on an operation.

Mr. ADDABBO. This is a crisis operation.

Admiral COLWELL. This is an operation in an area which is friendly enough so you can unload without being attacked or destroyed. So the personnel for the helicopters, trucks, and tanks and all other equipment would be flown to the area and be married to the equipment.

Mr. SIKES. General Moore, do you want to add something?

General MOORE. Yes, sir. In response to a previous question of yours concerning forward floating depots, it is conceivable that we would go back to the smaller, less effective World War II Victory ship FFD to the support of that concept as an interim measure pending the availability of the FDL's.

Concerning one more point, sir, forward basing of FDL ships would occur only after proper review by appropriate authorities of the Government. It is purely speculation as to what would occur in times of crisis. The capability which would be provided by the FDL ship would add a new dimension to strategy, a flexibility which does not now exist.

Mr. ADDABBO. In other words, you feel that the present airlift and the present maritime or naval force could not fill this gap?

General MOORE. Sir, we look on strategic mobility as being able to deploy and to sustain operationally ready forces anywhere in the world in the quantity and as rapidly as the operational requirement dictates. Of course, the requirement would be placed on the military by the appropriate national authorities.

Mr. ADDABBO. How long could one FDL maintain itself in case we had a crisis and it developed into a shooting crisis immediately after their deployment? How long could they actually operate on their own?

General MOORE. These ships, which normally operate in groups, can stay on station for up to ——— days with the embarked supplies on the ships. However, by use of underway replenishment at sea, the ships

could stay on station for a much more extended period of time. The ships, by virtue of their controlled humidity storage facilities and the embarked Army maintenance detachment, can maintain the stored Army material for an extremely long period.

Mr. ADDABBO. That is about the same as we have in most of our forward NATO stations, is that correct? About a 90-day backup.

General MOORE. Our present objective level, for logistic supplies required to support U.S. operations in Europe, varies from ——— days depending upon the class of supplies. ———.

Mr. SIKES. Mr. Lipscomb.

CHANGES IN FDL CONCEPT

Mr. LIPSCOMB. General, the FDL has been before Congress for some time. The concept of the need for the FDL has changed over a period. First it was for floating depot theory, then for stationing of certain areas, and last year it was conceived that they would stay in this country until needed and then proceed to the destination. Could you submit for the record just what the concept of the FDL program is as of now and why you are asking for 15 ships and where they will be stationed, and so forth, so we can see a clear picture?

General MOORE. Yes, sir.

(The information follows:)

The responsive high speed military sealift provided by the FDL ship is required to deploy the large volume of Army materiel necessary to support our rapid deployment/strategic mobility concept. The FDL ship will assist in the rapid deploymentof Army forces by—

(1) prepositioning afloat Army materiel in a ready-to-use condition,

(2) providing high speed transit of all classes of materiel including vehicles, lighterage, and helicopters, and

(3) providing rapid off load at ports or over-the-beach in non-assault operations.

Recommendations for specific stationing plans for the 15 FDL ships have not, as yet, been addressed by the Army. Preliminary indications are that the recommendations will conclude that the majority of the 15 ship FDL fleet would be stationed ———.

The JCS requirement remains for 30 FDL ships. However, in view of past opposition to the program, a more modest 15 ship request is being submitted in fiscal year 1970. The three ships in the fiscal year 1970 budget are the first increment of the 15 ship FDL fleet. This reduced program will permit a review of alternative methods of meeting the total FDL lift requirement.

30 SHIP PROGRAM STILL DESIRED

Mr. LIPSCOMB. Some of the answers that have been given today have been "It could be" or "to a certain extent," and it is very unclear what the concept is with the 15-ship program when we have been hearing about a 30-ship program.

Admiral, you said it is still a 30-ship program.

Admiral COLWELL. The JCS requirement is still 30 ships, that is correct.

Mr. LIPSCOMB. Last year, if you will remember, the testimony showed that the concept from the previous year had changed completely as to what we were going to do with the FDL.

Admiral COLWELL. That is correct. I remember the testimony 2 years ago spoke to retention of these ships in U.S. ports pending a congressional review of the forward basing of these ships.

Mr. LIPSCOMB. With the questioning of my colleague, I now have a very unclear idea of what you want the FDL's for.

Admiral COLWELL. Yes, sir. General Moore is going to supply this kind of an answer for you.

Mr. SIKES. Are there further questions on the FDL?

Mr. MINSHALL. General, how long have you been familiar with this program?

General MOORE. Sir, I have been familiar with the program as part of my overall duties on the Army staff since last August.

Mr. MINSHALL. What did you do before that?

General MOORE. Before last August?

Mr. MINSHALL. Yes.

General MOORE. I was assigned to the staff and faculty of the Army War College for most of the summer.

Mr. MINSHALL. Are you Military Academy?

General MOORE. Yes, sir.

Mr. MINSHALL You have been on this program since August?

General MOORE. Yes, sir.

Mr. MINSHALL. Who was your predecessor?

General MOORE. Brigadier General Desobry.

Mr. MINSHALL. Thank you very much.

Mr. SIKES. Are there further questions? If not, thank you.

The committee will resume its hearings at 2 o'clock tomorrow.

THURSDAY, MAY 15, 1969.

Mr. SIKES. The committee will come to order.

MINE WARFARE AND PATROL SHIPS

CONTRACTOR CLAIMS ON DESTROYER ESCORT CONSTRUCTION PROGRAM

Mr. SIKES. On mine warfare and patrol ships, the fiscal 1970 budget program is $43.7 million. It is $6.7 million less than last year's program.

I would like some discussion of contractor claims on the destroyer escort construction program.

Recent newspaper articles, based on statements by the Secretary of Defense, disclosed that the Navy has been faced with contractor claims for additional reimbursement due to costs resulting from Navy design changes and delays in providing Government-furnished equipment (GFE) in the construction of 26 DE–1052 and 20 DE–1078 class destroyer escorts. These claims have been filed by Todd, Lockheed, and Avondale Shipyards. Will you discuss the reason for these law suits or potential law suits, the changes and delays attributable to the Navy, and the estimated cost of settling these claims?

Obviously you will need to prepare a complete statement on each of these points, but at this point will you tell us briefly and generally what is happening.

Admiral COLWELL. May I ask Admiral Fahy and Admiral Adair to address that question?

Admiral FAHY. We have a full rundown available. I will have

Admiral Adair brief it and we will supply the full report for the record.

Mr. SIKES. Very good.

Admiral COLWELL. This complete discussion will be covered in other parts which we have already agreed to provide for the record, but if that is not complete, we will make certain that it is.

Mr. SIKES. Very well.

(The information follows:)

ANALYSIS OF CONTRACTOR CLAIMS

The invitation for bids for construction of 26 DE 1052 ships was opened on June 1, 1964 and awards to four contractors where made on July 22, 1964 as follows:

Contractor	Number of ships	Award price
Todd, Seattle	7	$75,147,093 FFP
Todd, Los Angeles	7	76,029,931 FFP
Avondale	7	81,109,546 FFP
Lockheed	5	60,285,000 FFP
Total	26	292,571,570

The IFB notified the bidders that in order to expedite the construction, the Navy had entered into a contract with Gibbs & Cox, Inc. for preparation of working plans and other data required for the construction of the ships.

The delivery of the first ship was scheduled 36 months after award of the contract. Because of the delay in the delivery of Government furnished sonars the delivery schedule early in the program was extented to start 41 months after award. In addition, Todd claimed that because of impossible dynamic analysis, shock and noise specifications together with other action of the Government, t he projected delivery of the ships is approximately 20 months later than the construction period specified in the IFB.

On July 6, 1967, Todd Shipyard Corp. submitted an initial claim against the Government in the amount of $27.2 million and on January 24, 1969, submitted a final revised claim in the amount of $114.3 million for excess costs incurred as a result of Government action and inaction. On June 17, 1968, NAVSHIPS established a special negotiating team in order to investigate and settle the claim in a manner that would be equitable to both the Government and the contractor.

Based upon the teams technical and legal analysis, it was considered that the contractor was entitled to adjustments because of the following:

1. *Dynamic analysis, shock, and noise specifications.*—These specifications were designed to advance the quality of surface ship design, but were drawn up in such a manner that ambiguities existed and the specifications were considered to be legally defective.

2. *Government acts with respect to the mockups.*—The Mockup was intended to provide Gibbs & Cox, Inc., proof of their design, but due to the inability of Todd to comply with the specifications for dynamic analysis, shock and noise, the component design was delayed and consequently construction of the mockup was delayed in excess of 1 year.

3. *Acts of Government with respect to sonar spaces.*—The Government failed to furnish design information and equipment in a timely manner in order to permit Todd to design the sonar spaces in customary construction sequence. This failure was due to the concurrent development of the sonar equipment.

4. *Late Government-furnished information.*—The Government failed to furnish the contractor with timely design data for many equipments such as the air search radar and ECM equipment, also under development.

5. *Unadjudicated change orders.*—These were the result of costs incurred by Government directed changes and the associated disruption and additional hardware costs.

6. *Defective specifications and other constructive changes.*—These resulted from several constructive changes, by the Government, such as higher standards

in radiography inspection and other quality assurance measures causing disruption in the contractor's normal construction sequence.

7. *Administrative failures of Government.*—The Government caused delays and disruption to the contractor by failing to administer the details of the contract in a timely manner (i.e., costruction plan approval, etc.).

8. *Out-of-sequence construtcion.*—This was caused by other acts of the Government which caused the contractor to deviate from normal construction sequence and techniques.

9. A detailed cost analysis resulted in the following proposed settlement:

CLAIMS NEGOTIATED

[Dollar amounts in millions]

	Face value of claims	Settlement
Unadjudicated change orders	$16.4	$11.2
Defective specifications and other Government actions	97.9	85.3
Total	114.3	96.5

SUMMARY OF CONTRACTOR CLAIMS

Admiral ADAIR. Briefly, in summary, there are three or four elements of these claims. First, these were fixed price contracts awarded in the time frame of 1964, 1965. The second point is that certain of the specifications called out to make these ships a viable unit in combat environment of the future pushed the state of the art to the point where it was difficult or impossible of achievement of these specifications within the time frame of the contract.

Next in order to have a more up to date ship on delivery craft, we called out equipments for installation that were concurrently under development under separate Government contracts. These equipments, as is often the case in development, changed their configurations and there were slippages in them. There was a necessity to modify the ship to meet the changed configuration of the equipment. Further as a result of the unfortunate *Thresher* tragedy we adopted a more stringent addition of our inspection not only of submarines but surface ships. The builders claimed that we in fact were changing the previously established ground rules. Because of the developmental nature of the equipment we were tardy in providing to the ship builder the needed information to install these equipments.

The one claim that has been settled is the claim of the lead shipbuilder, Todd, who has 7 ships under construction in Seattle and seven in Los Angeles. This claim ultimately rose to $114.3 million. We settled it for $96.5 million.

We are now evaluating the claims of Lockheed in Seattle who has five ships under construction, and the claim of Avondale, who has seven ships of this same class. Parenthetically, I should add that Avondale also has 20 additional ships follow-on of the DE–1078 class awarded from the fiscal year 1966 and 1967 authorizations.

I believe it would be premature for me to give you a precise number, because these claims have been settled.

(CLERK'S NOTE: Additional classified information was provided to the Committee.)

OVER 60 PERCENT INCREASE IN CONSTRUCTION COST OF DESTROYERS

Mr. SIKES. What was the total original contract in each instance? What is the amount settled for or claimed in each instance?

Admiral ADAIR. Todd in fact has two contracts, seven each in the Los Angeles and Seattle yards. The Seattle contract award price, sir, was $75.2 million, and I am rounding to the nearest of a tenth of a million.

Mr. SIKES. You propose to settle that one for what? Was that the claim or the original contract?

Admiral ADAIR. What is the original contract for seven ships in the Seattle yard.

Mr. SIKES. What was the claim?

Admiral ADAIR. May I go on, sir, and explain why I am not answering you immediately? The contract award price for the seven ships in the Los Angeles yard was $76.1 million for a total of approximately $151.2 million for the 14 ships. We settled those 14 ships as a single settlement for $96.5 million.

Mr. SIKES. Additional?

Admiral ADAIR. Yes, sir.

Mr. SIKES. That is a tremendous addition. What did it involve?

Admiral ADAIR. There was approximately 10 elements of the claim, sir. The first was the most important, which was a requirement for improved shock resistance of machinery, requiring the builder to use the newly developed dynamic analysis technique rather than shock test of equipment.

Mr. SIKES. I find it difficult to comprehend a situation where contracts would be awarded for $151 million and circumstances subsequent to this contract award would necessitate the payment for changes of $96,500,000. It is not very reassuring. It would appear that the original design specifications and requirements were either far below desirable standards, or that the additions involved new state of the art techniques which were considered extremely important. There is also the possibility that many of the requirements may have been unnecessary, in part at least.

Admiral ADAIR. I believe in this instance we were pushing ahead too fast to include developmental equipments and new techniques in the ships.

In large measure the high dollar value of this claim is caused by the fact that we, because of these features not only delayed one ship, but by the fact that he was building 14 of them in sequence we delayed and disrupted his production schedule for more than 1 year.

Mr. SIKES. You have given me the facts on one contractor. What are the facts on the other contractors?

Admiral ADAIR. The seven ship contract with Avondale is for a fixed price of $81.1 million. The fixed-price contract with Lockheed for five ships totals $60.3 million. As I mentioned earlier, these claims are in preliminary form and are under negotiation now.

Mr. SIKES. How much do they claim in each instance?

Admiral ADAIR. The preliminary claim from Avondale was for ——— million. We anticipate that this claim will ———, sir. The preliminary claim from Lockheed for their five ships was for ——— million. Perhaps one thing more might be helpful to you, Mr. Chairman. The 14 ships under contract to Todd, we originally received

appropriations from the Congress for those ships of approximately $399 million. It is our expection with the settlement of the claim and all of the other costs on these ships that they will in fact cost ——— million. This, I might add includes all of the costs for working plans and machinery space mock-up for the lead ship.

Many of the other ships, including claim settlements, will be at or below the funds that were appropriated by the Congress.

ADEQUACY OF SHIP CHARACTERISTICS AND REQUIREMENTS

Mr. SIKES. The committee notes that in the Todd case the Navy made a number of specification changes, approximately 125 construction changes, most of which were concerned with the operation, habitability, and other aspects of the ship, as well as changes in the design of GFE. The Avondale claim is primarily based on late and defective GFE, defective specifications, failure to furnish adequate design information, and delays in Navy inspection and approvals. Admiral Colwell, you will recall that during last year's hearings the committee expressed its concern as to whether the Navy really knows what it is doing as it moves forward in the design of new ships. You indicated then that in your opinion the Navy procedures for the determination of ship characteristics are, in general, adequate.

In view of the tremendous cost overruns we have been discussing, most of which is attributable to the Navy itself, do you still hold to that opinion?

Admiral COLWELL. Mr. Chairman, I think one cannot but admit that our procedures have not been adequate in the past. There are two elements of this. One is the determination of ship characteristics, which is the requirement phase which is performed in the Office of the Chief of Naval Operations. This has to do with military characteristics, performance and functions. The other element of it has to do with the actual construction of the ship during which there may be some characteristic changes, and there will certainly be some engineering changes. In any structure as complex as this, I think we must be prepared to accept the fact that the plans will not be perfect. The characteristics changes are budgeted for. We allow a percentage for characteristics changes.

In general, these sums are adequate. The engineering changes, I believe, constitute the area where we have required and improved administration. This improved administration is in fact being applied, and there are some more parts of it which are going to be applied.

Mr. SIKES. Will you provide for the record the listing of the corrective steps that have been taken and those which are in the process of being implemented?

Admiral COLWELL. Yes sir, I will.

(The information follows:)

In the summer of 1968, the CNO initiated a comprehensive study to examine our ship cost estimating and price control procedures to determine how they could be improved. This action followed the cancellation of five ocean minesweepers (MSO) and two ocean escorts (DE) through reprograming to provide funds to cover cost increases in the SSN and DLGN fiscal year 1967 and 1968 programs. The study was recently completed and is now under review. While

formal review has not been completed, some findings and recommendations of an urgent nature have been or are being implemented. Some of these are:

We are strengthening the status of the ship acquisition project manager by expanding his responsibility, authority and accountability and requiring improvement of accounting controls;

We have taken steps to minimize changes during construction through the exercise of positive change order control;

We are shifting from detail design specifications to performance specifications for ships, where practicable;

We are initiating the use of fixed price incentive contracts instead of fixed price contracts which our experience shows are less applicable to the complex ship construction process.

EFFECT OF INFLATION ON COST INCREASE

Mr. SIKES. Last year you used an escalation factor of 7.5 of new construction and 5 percent on conversion of smaller ships. What conversion factor are you using for fiscal year 1970?

Admiral FAHY. We are using the same factors for fiscal year 1970.

Mr. ANDREWS. Admiral, what is the percentage of inflation in the shipbuilding program? Have you told us? I am speaking now annually.

Admiral COLWELL. I am not sure that we have a very positive answer.

Mr. ANDREWS. Can you give us an estimate of how much is it going up each year?

Admiral FAHY. If we are talking inflation, I would say as a rough guess 20 percent.

Mr. ANDREWS. Twenty percent?

Admiral FAHY. Yes, sir.

Mr. MINSHALL. Over what period?

Admiral FAHY. A year or a year and a half.

Mr. ANDREWS. I remember last year you told us in one area on a particular type of ship the cost was 25 percent up over the year before.

Admiral COLWELL. An example of it, sir, can be found in the actual bid prices that we are getting for some of the ships.

Mr. ANDREWS. That is the best place to find it.

Admiral COLWELL. Which are far in excess of the budgeted sum. For example, the submarines. We had it yesterday.

Admiral ADAIR. They have gone up on the order of 15 to 20 percent in the period of 1 year. I cannot subscribe to the fact that it is all inflation but it is the sampling of cost I get in the marketplace. A combination of inflation, higher profitability, and other factors.

Mr. ANDREWS. Admiral, that is what I call inflation, where it goes up percentagewise 1 year to the next 15 or 20 percent, and last year you told us about a case that went up 25 percent.

I do not know of anything that has gone up more rapidly than ship construction except lumber.

Percentagewise interest has gone up, jumping from five and a half percent to seven and a half percent. That is roughly a 25-percent increase.

I guess you do not see any end in sight. Next year when you testify your projected cost will probably be 15 or 20 percent higher from what it is today. What is your opinion?

Admiral COLWELL. I'm afraid that is true.

Mr. LIPSCOMB. Admiral, what is the difference between your escalation factor and factors that come about because of inflation?

Admiral FAHY. We do not have any factors for inflation except as we can try to estimate them in advance. The only firm figure we have, and this is in the escalation area, is tied in to the Bureau of Labor Statistics index. We take the average of the last 10 years, and that is one reason we get trapped in having inadequate funds even for escalation, or an inadequate amount, because the BLS statistics for the last 3 years have taken a big jump up.

VALIDITY OF INFLATION ESIMATE

Mr. LIPSCOMB. What is the definition of escalation factor that you use?

Admiral ADAIR. The factor that the chairman spoke of earlier, the 7½ percent, is a reservation of funds for increases in labor and material costs from the date of contract award through its completion.

Mr. LIPSCOMB. Isn't that inflation?

Admiral COLWELL. It is one element of it.

Admiral ADAIR. It is one element of it, yes.

Mr. LIPSCOMB. If you say that your experience has determined a 20-percent inflation factor, how can you adequately estimate on the basis of an escalation factor of only 7.5 percent? What good are your estimates?

Admiral ADAIR. We were allowed, sir, to include a reservation of 7½ percent for escalation during the life of the contract.

Mr. LIPSCOMB. From your experience that is not valid if your 20-percent figure is actually what you have determined.

Admiral COLWELL. I think perhaps I could add one point to this, Mr. Lipscomb. In addition to this escalation factor which is an annual thing, which we are permitted to budget for, we also attempt to forecast what the bid price will be, which takes in your judgment of what the inflation factor will be.

Admiral ADAIR. Yes, sir.

May I amplify that?

Our estimate for a ship before you today includes our estimate of the prices which will be in existence when we make the contract award essentially a year from now. This escalation factor is the reservation for price growth during the life of the contract.

Since our shipbuilding contracts contain an escalation provision, that element, the escalation factor through the life of the contract of 7½ percent which in my judgment is not adequate.

Mr. SIKES. What do you think it should be.

Admiral GADDIS. We requested 10 percent in this year's budget. We are restricted to 7½ percent.

Mr. LIPSCOMB. In your escalation factor do you include poor estimates and changes in design?

Admiral GADDIS. No, sir.

Admiral ADAIR. No, sir. We have within each ship several reservations. We have a reservation for escalation during the life of the contract. We have a reservation for changes in characteristics for future characteristic changes. We also have a reservation for engineering changes that will be invoked during the life of the contract.

Mr. LIPSCOMB. I did understand from testimony during the past 2 days that you are looking at this whole picture.

Admiral COLWELL. That is correct.

Admiral FAHY. We are trying to determine how things got so far along in some of these areas that were unanticipated. One of our problems, of course, is that back at the time we let the contracts in 1964 for these DEs, we thought we had a good biddable package and a good estimate. It was not until we got the people working on this that we found that we had been over optimistic. As Admiral Adair has said, in our estimate of when we would get the Government-furnished equipment turned out to be more developmental than we had realized. This created a considerable measure of difficulty. A lot of the specifications that were included were difficult and strange for the surface shipbuilders, even though the submarine shipbuilders had been living with them for some time.

(Discussion off the record.)

ABNORMAL INCREASE IN SHIPBUILDING COST

Mr. MINSHALL. What is the reason, Admiral, that the shipbuilding costs have gone up approximately 100 percent in the last 10 years, when you compare it with the cost of living increase for hard goods and food and other things in this country having gone up much less than that?

Admiral FAHY. First of all, I would like to start out by saying that for the ordinary type of construction which is not complex—it is rather simple and straightforword—that costs have actually gone down. As an example, the cost of fabricating the hull, the cost per ton of steel into the hull is less now that it was 10 years ago. This is because the people are becoming more efficient and more effective in their utilization of machines and processes in the shipyard. But when you look at the ship as a whole, you find that the other areas, the machinery, the components, the various systems that are put into a ship have all grown quite considerably in cost. They are more complex. They are more difficult to assemble and to test out.

There is a lot of additional cost now to shipbuilding that was not there before in things such as software, which was almost an unknown term a decade ago. These have all added considerably to the cost of the ships.

I know before the Joint Economic Committee, Admiral Rickover testified to the fact that the costs for these military equipments had gone up some 30, 40, 50 percent in a year, and pointed out also, as we know from our own experience, in buying turbines and gears for the *Nimitz* that the cost now is virtually doubled, the same type of machinery as in the case of the *Enterprise*.

SHIPYARD MODERNIZATION PROGRAM

Mr. MINSHALL. Are our shipyards, both private and Navy, automated to the fullest extent that they can be?

Admiral FAHY. They are not automated to the fullest extent that they can be, but they have been automated to a very considerable extent, and this is mainly in the steel handling areas, and that is why

the cost of assembling a ton of steel is cheaper today that it was 10 years ago.

Mr. SIKES. Are they automated to the extent that the yards in Scandinavia and Japan are automated?

Admiral FAHY. Almost. The yards in Japan are not so much automated as they are engineered. In other words, before the construction actually takes place in Japan, a considerable amount of engineering goes into the layout, how the system will be put together and so on.

Mr. SIKES. What is the situation in the Scandinavian countries?

Admiral FAHY. In the Scandinavian yards, the two big ones that are used as big examples, there is an automation process for, in effect, extruding ships. I would like to caution all hands not to fall into the trap of looking at these types of ships which are basically bulk carriers, that are nothing but boxes with pointed ends, and a propulsion plant and comparing them to a complex warship. In fact, the president of Arundale himself admitted that their yard works fine for two reasons: They are confining themselves to simple ships, and they leave the more complex—and this is his own statement—passenger ships and warships to other yards. The second reason is that they have a quantity which enables them then to push them through on a multiple basis.

Mr. SIKES. What is the most modern yard in this country today?

Admiral FAHY. I would say that perhaps the West Bank of Ingles down at Pascagoula, when completed.

Mr. SIKES. It was intended to be the most modern. Wasn't that the conception?

Admiral FAHY. It was intended to be an assembly yard and it was laid out with that in mind, that the pieces would be put together more or less along the same lines as the Japanese and Swedes and ourselves. This is not a new concept. We did this in World War II. These people borrowed from our knowledge.

We were building in World War II essentially those 5,000 cargo ships which were basically the boxlike structures like tankers are today.

Mr. SIKES. Will the Pascagoula Yard concept give them a pricing advantage over other yards?

Admiral FAHY. It will definitely in commercial cargo ships and ships of that type where you are using simple structures.

Mr. SIKES. Are any of the new automated processes which can contribute to a reduction in cost of ship construction to be included in your modernization program of Government yards?

Admiral FAHY. Yes, sir. Some have already been installed. In Philadelphia we have new cranes, new steel handling facilities, and a wheelaplater for automatic sandblasting and painting of flat steel as it goes down into the structural shops, which is more or less a common way of automating in any year. Newport News has done this.

Mr. SIKES. What process has not been built in the Government yards?

Admiral FAHY. It is not planned that all of our yards would be new construction yards. We have not gone as far as we could in Puget Sound, for example, which is slated to be a new construction yard.

SHIPYARD MODERNIZATION SCHEDULE

Mr. SIKES. Why would not this be a matter of first order of priority if it is going to represent money saving?

Admiral FAHY. It is a part of our priority and is included in the shipyard modernization program, which is a 10-year program that Congress has approved.

Mr. SIKES. Why 10 years if it is a moneysaving program? Why not 5 years? Won't the Government make money out of the program it is is expedited?

Admiral FAHY. The size of the program is such that we felt it might be a little indigestible if it got too large in a year.

Mr. MINSHALL. We would have a net gain in the long haul.

Admiral FAHY. Yes, in the long haul we have a net gain.

Mr. SIKES. If you can provide any figures for the record to show what we are talking about in long-haul savings to be gained by expediting this modernization, would you do so?

(The information follows:)

In answer to this question, it is necessary to provide an overview as to the magnitude, nature and purpose of shipyard modernization. The Secretary of Defense stressed the desirability of developing a philosophy of naval shipyard modernization emphasizing repair work (as opposed to new construction). The Secretary of Defense endorsed the concept that approximately 80 percent of the conversions, alterations, and repair work in any fiscal year should be accomplished in naval shipyards for economic and military reasons and that up to 20 percent of new construction authorization in any fiscal year should continue to be assigned to naval shipyards. These new construction assignments have been assigned to three naval shipyards, Philadelphia, Mare Island, and Puget Sound.

Based upon this guidance, the Navy developed an optimum overall shipyard modernization plan (exhibits I through IV) which was reviewed and technically approved by the Secretary of Defense in November 1968, but the funding plan was extended from an 8 to a 10-year proposal. The program was structured from a determination of our facility and equipment deficiencies to meet projected workload. All program proposals were analyzed for optimum time sequencing of their accomplishment allowing for minimum and acceptable interference with continued performance of work at each naval shipyard and the optimum investment impact. Exhibit II is the full value analysis of the naval shipyard modernization program emphasizing the conservative "present value of future benefits technique" and shows the program to be clearly cost effective. Extending the program to a 10-year span does not deny the projected benefits but does extend the amortization period. An extension of the investment plan would hazard Navy's ability to actually overcome plant obsolescence while at the same time gaining and maintaining the new technical capabilities needed by our modern fleet. Decreasing the investment period below 8 years would hazard Navy's ability to maintain the required level of work performance due to the physical interference of construction and equipment installation activity.

The savings derived from the program show a reduction in customer cost (operating fleet) at the fiscal year 1972 project workload volume. Fiscal year 1972 projections present the clearest indication of the workload which must be accommodated and upon which rational savings may be forecast.

Commencing in fiscal year 1973, savings are expected to be achieved from the immediate implementation of shipyard modernization. Benefits of $11.2 million will accrue during fiscal year 1973 (attached exhibits III and IV illustrate this point). Allowing for a 3-year delay between the start of the individual investments and the gaining of a return of those investments, payback on the total program occurs in fiscal year 1983. (On a simple arithmetic "yield" basis, the program amortizes itself in 7.1 years.)

EXHIBIT I

TOTAL SHIPYARD MODERNIZATION INVESTMENT PLAN

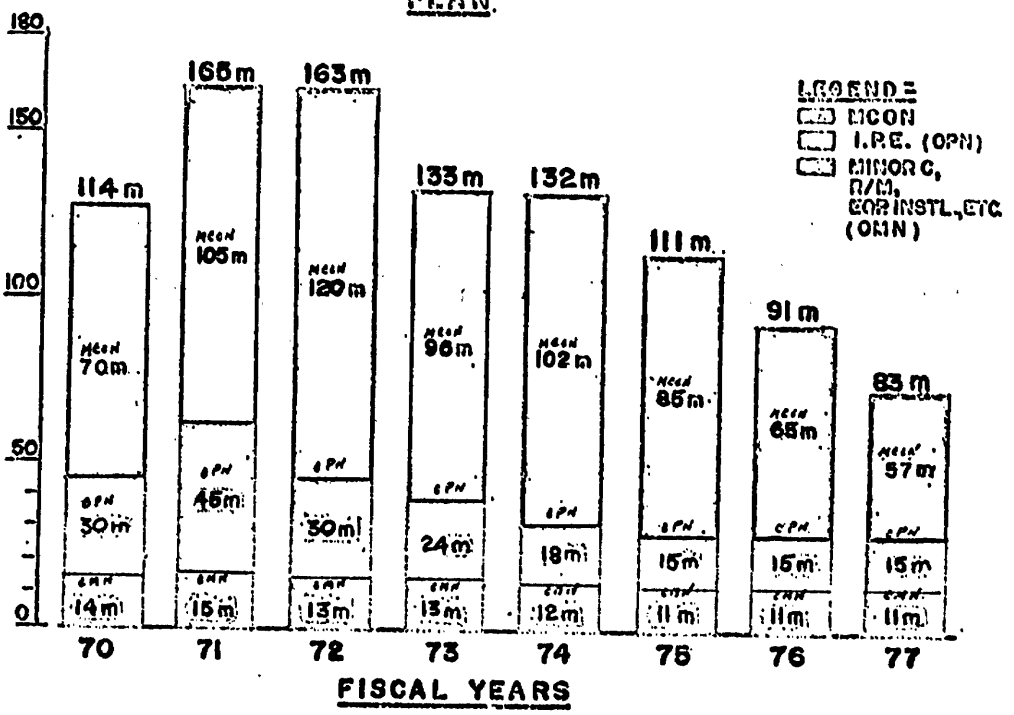


EXHIBIT II.—*Navship shipyard modernization program, summary of economic benefits*

	Millions
Shipyard modernization program investment	$992.0
Annual direct economic benefits, $992 million program fiscal year 1972 workload level	103.4
Annual additional value of decreased turnaround	40.0
	143.4
Present value of future benefits (aggregate economic life of new investment is 20 years):	
Direct benefits	879.9
Turnaround decrease	340.4
Total	1,220.3

EXHIBIT III

NAVAL SHIPYARD MODERNIZATION PROGRAM

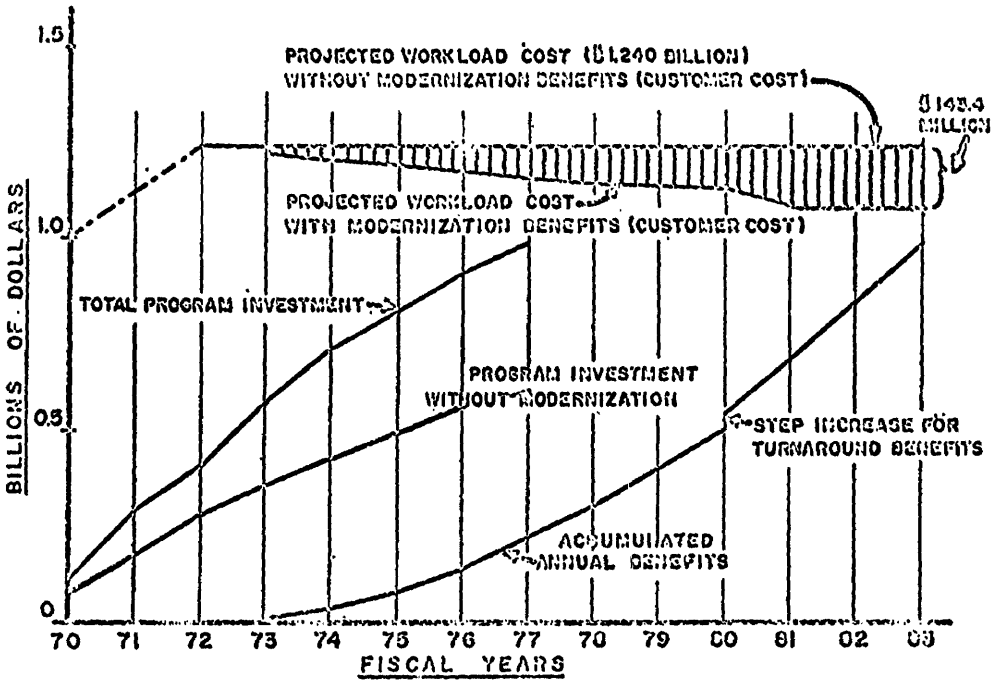


EXHIBIT IV.—NAVAL SHIPYARD MODERNIZATION PROGRAM

Fiscal year	In millions of dollars									In billions of dollars		
	Total investment increase	Total investment accumulation	Investment without modernization increase	Investment without modernization accumulation	Benefits increase[1]	Benefits rate	Total investment accumulation	Benefits accumulation	Cost above benefits	Workload Cust. cost without modernization	Benefits rate	Workload Cust. cost with modernization
1970	114.0	114.0	66.0	66.0			114.0		114.0	1.020		
1971	165.0	279.0	90.4	156.4			279.0		279.0			
1972	163.0	442.0	109.3	365.7			442.0		442.0	1.240		1.240
1973	133.0	575.0	66.0	331.7	11.2	11.2	575.0	11.2	563.8	1.240	0.0112	1.2288
1974	132.0	707.0	44.5	376.2	13.7	24.9	707.0	36.1	670.9	1.240	.0249	1.2151
1975	111.0	818.0	83.1	459.3	18.6	43.5	818.0	79.6	738.4	1.240	.0435	1.1965
1976	91.0	909.0	44.6	503.9	17.3	60.8	909.0	140.4	768.6	1.240	.0608	1.1792
1977	83.0	992.0	31.9	535.8	18.8	79.6	992.0	220.0	772.0	1.240	.0796	1.1604
1978					9.6	89.2	992.0	309.2	682.8	1.240	.0892	1.1508
1979					9.5	98.7	992.0	407.9	584.1	1.240	.0987	1.1413
1980					44.7	143.4	992.0	551.3	440.7	1.240	.1434	1.0966
1981						143.4	992.0	694.7	297.3	1.240	.1434	1.0966
1982						143.4	992.0	838.1	153.9	1.240	.1434	1.0966
1983						143.4	992.0	981.5	10.5	1.240	.1434	1.0966
1984						143.4				1.240	.1434	1.0966
1985						143.4				1.240	.1134	1.0966
1986						143.4				1.240	.1434	1.0966

[1] Assume benefits schedule delayed 3 years from investment.

CONSTRUCTION COST IN NAVY VERSUS COMMERCIAL YARD

Mr. ANDREWS. Admiral, is it cheaper to build the same type ship in a Navy yard or a commercial yard?

Admiral FAHY. I would say it is cheaper. You are talking now one of a kind.

Mr. ANDREWS. The same ship.

Admiral FAHY. On the basis of the difference in wages it would be cheaper to build in a commercial yard, because the wages would be in most cases less there than in a Government yard.

Mr. ADDREWS. So the commercial yards can construct cheaper than the Navy's own yards?

Admiral FAHY. They do in a lot of cases.

Mr. ANDREWS. One further question: When you say the costs have gone up a hundred percent in the last 10 years, you mean that a ship that cost $100 million 10 years ago now would cost $200 million?

Admiral ADAIR. Yes, sir, that is what I meant. But I meant to say also that ship for $200 million today would have considerable more capability than the ship for $100 million 10 years ago.

Mr. ANDREWS. That is the progress you have made.

Admiral ADAIR. Yes, sir. It is not just the doubling of price. You are buying more capability today than you were then.

I would like to add, if I might, in some of our smaller ships and in our smaller shipyards, that the people there, since these are less complex ships, seem to be able to turn out the ships in good style and time within the contract price and perhaps a little under it. So one should not get from this that all of our shipbuilding efforts are always over the mark.

(Discussion off the record.)

NEED FOR IMPROVEMENT IN NAVY—EDITORIAL

Mr. MINSHALL. Mr. Chairman, the Cleveland Plain Dealer, which carries under its masthead the largest newspaper in Ohio, recently published an editorial entitled "Navy Improvement Needed Now." I think it is an excellent editorial. I would like very much to have the distinguished members of the Navy which are appearing here comment on it at any length they might see fit.

Admiral FAHY. Yes, sir.

(The article follows:)

[From the Plain Dealer, Tuesday, May 6, 1969]

NAVY IMPROVEMENT NEEDED NOW

Insofar as the U.S. Navy is concerned, adjustment of priorities in Federal spending cannot wait the end of the Vietnam war.

The unshipshape condition of the Nation's military seapower right now demands more attention than it has received.

The deteriorated, dilapidated status of the fleet was detailed recently by the seapower subcommittee. The Armed Services Committee since then has secured some assurance from Secretary of Defense Melvin R. Laird that the Nixon administration will pay greater attention to the Navy's needs.

That is welcome news, as is word from Cleveland's Representative William E. Minshall, that the defense appropriations subcommittee of the House Appropriations Committee intends to keep the matter alive in hearings to come.

Here is what Members of Congress should keep in mind in continuing consider-

ation of the Navy's plight: The Navy truly is so crippled by neglect that it is ill-prepared to meet a challenge to freedom of the seas that could be presented by a great and growing Russian Navy.

That was established clearly in ship inspections and in hearings conducted by the House Armed Services Seapower Subcommittee. The subcommittee's general comparison of fleet ages is shocking enough: 58 percent of U.S. Navy combatant ships 20 years old or older; only 1 percent of the Soviet Navy ships that old. But even more shocking are some of the subcommittees specific findings. They are:

Corrosion and wornout equipment render many vessels inadequate for modern war.

Replacement parts too frequently are unavailable because original suppliers have halted production or gone out of business.

Modern equipment cannot be used efficiently and safely in old hulls. Inadequacies of space, electrical power, cooling, and refrigeration cannot be overcome.

The poor condition of ships and the additional maintenance burden imposed on their crews has seriously affected reenlistments. Manpower shortages in the Pacific and Atlantic Fleets total in the thousands.

The United States cannot afford further deterioration of its Navy. Already the adverse effects of neglect are piled too high.

Restoration of the Navy to conditions of strength and readiness adequate for the Nation's protection cannot wait. It must begin at once.

ADMIRAL FAHY'S COMMENTS

I am in general agreement with the article and specifically, that we need to improve our Navy and that the time to begin cannot be postponed. Improvements are sorely needed. However, our ships are meeting challenges to freedom today in all of the oceans of the world, and this primarily owing to the spirit and hard work of the men that man them and repair them.

The current fleet is composed of about 900 ships of which 58 percent are 20 or more years of age. While there is no definite age at which a ship ceases to be useful, age is a primary factor leading to increased maintenance costs and obsolescence. Some of our older ships are no longer economical to operate, repair and modernize, primarily because of their age. Others are approaching this state.

Rapid technological advances in naval warfare since World War II and comparable increases in threat have required extensive modernization of existing ships and incorporation of new design features in new construction ships. Families of new weapon systems, electronic warfare systems, command and control systems, propulsion systems have been developed. These systems have grown in complexity, sophistication, and cost as compared to earlier systems. Existing ships are modernized, as feasible and practicable through the shipbuilding conversion program and the ship alteration program. Minor changes are made by ship alterations during regularly scheduled overhauls of several months duration, normally at about 3- to 4-year intervals. Extensive changes are made through ship conversions lasting one or more years depending on the type ship and extent of the modernization.

There is a limit, however, to modernization which is possible under the alteration or conversion programs for existing ships. Some limitations in older ships are the lack of space or volume for further growth within the hull, lack of reserves for adding weight without loss of stability or righting moment, lack of electric power to accommodate new weapons and electronic systems, or prohibitive costs. Costs are prohibitive when the cost of removal of older weapons or electronic systems plus acquisition and installation costs of the new systems are excessive with respect to ship replacement cost or the useful life expectation of the ship after conversion. Considering these factors, ship replacement by new construction is often more economical than piecemeal modernization, particularly for older hulls.

Since further modernization is no longer practicable for our older ships, ship replacement will be required if we are to maintain a fleet capability which is responsive to the demands of U.S. national policy. We are building more capability into our new ships, therefore a one for one replacement will not be required but a large number of ship replacements will be required in each of the next several years. The shipbuilding program requested in fiscal year 1970 is the beginning of this long range replacement program. With the size of the fiscal year 1970 program and an expressed resolve to continue a sizeable long range program, the Navy hopes to encourage the shipbuilding industry to continue

improving their capability in both physical plant facilities and manpower to enable them to build future shipbuilding programs at least cost in time and dollars.

We are convinced that, with your support, we can build the ships that are needed and that your navy can continue as a champion of freedom throughout the world. We have the men. We need the ships.

Mr. SLACK. The committee will come to order. Mr. Minshall.

NAVY AIRCRAFT POTTING COMPOUND PROBLEMS

Mr. MINSHALL. Before lunch, Admiral, I asked you to submit to the committee any problems that the Navy version of the F–4 had with the potting compound about which there was recent publicity about the Air Force version. I would like very much to have you supply for the record now what you have found out.

Admiral GADDIS. I would be pleased to, sir.

Navy F–4 aircraft operating in the high temperature conditions of SEA have experienced the same reverting problem that the Air Force has found in its electrical connector potting compound. The Navy has chosen to replace the compound in each connector as it shows evidence of reverting while the AF has chosen to simultaneously replace the compound in all connectors in each aircraft. The Navy and Air Force have been in close cooperation in solving the problem. Both use the same replacement compound. Since January all new F–4s delivered to both services by McDonnell have the replacement compound.

PROCEDURES FOR REPLACING COMPOUND

Mr. LIPSCOMB. Why has the Navy chosen to replace the compound only on those aircraft, where evidence shows that it is reverting to a liquid state while, at the same time, the Air Force has chosen to replace the compound in each F–4.

Admiral GADDIS. I cannot speak for the Air Force. I certainly feel in my experience of watching the way we check the compound and any evidence of reversion that this is our normal operation.

We check the aircraft periodically and before every flight.

Admiral COLWELL. Mr. Lipscomb, could we take that question for the record and ask Admiral Connolly's people to provide the answer?

Mr. LIPSCOMB. Yes.

Then for the record I would also like to know what the Navy estimates the replacement cost to be.

I am really interested in which is the least expensive way to replace the compound, the Navy's or the Air Force's. Of course we also have to look at which of the procedures is the efficient way to replace the compound, taking into consideration the safety of the aircraft.

Admiral GADDIS. We will provide a comparison for cost and safety.

(The information follows:)

Mr. LIPSCOMB. As I remember the testimony, the Air Force take a number of aircraft out of active inventory and put it into the repair status and then put them back into service. The way you do it you take them one or two at a time whenever you discover the problem. Is that correct?

Admiral COLWELL. That is the way I understand it.

Mr. LIPSCOMB. I would like a good answer to my question.

(The information follows:)

COST AND PROCEDURE USED

Estimates for the simultaneous replacement of the potting compound in all connectors in the F–4 aircraft average approximately $65,000 per aircraft. This figure does not include replacement of the compound in spare equipment or equipment not installed in an aircraft.

Actual experience in the Navy indicates a cost ranging from $2,000 to $27,000 per aircraft for partial replacement of the compound. This wide spread of costs is due to the fact that only those connectors requiring replacement of the potting compound are reworked. Therefore, the actual cost will vary from aircraft to aircraft on an individual basis.

It is estimated that the two approaches will ultimately arrive at the same point for approximately the same price. That is, the Navy aircraft will get several partial replacements while the U.S. Air Force aircraft will get one total replacement.

The "as needed" approach was taken by the Navy in order to avoid an overload on our naval aircraft rework facilities, to minimize downtime and to avoid extending the pipeline.

We have no indications of any catastrophic failure or loss of aircraft associated with reversion of the potting compound. Our experience indicates that the breakdown of the compound is more likely to result in a loss of various subsystems which may somewhat impair the operational capability until repair is effected.

SPECIFICATIONS FOR POTTING COMPOUND

Mr. MINSHALL. I am also interested to find out with reference to the specifications for this potting compound, whether or not this potting compound did in fact live up to the specifications.

Admiral COLWELL. We will provide that for you.

Mr. MINSHALL. Thank you.

(The information follows:)

Two types of potting compound are used in the aircraft. In internal areas where the temperature exceeds 200° F., a compound more resistant to temperature is used. In internal areas where the temperature is less than 200° F., a compound less resistant to temperature, and therefore less expensive, is used. The compound in question was used in the lower temperature areas and met the specification for that use. However, operations in the high-temperature environment of Southeast Asia have raised the internal temperatures in all areas of the aircraft, necessitating wider usage of the more temperature resistant compound.

MINE WARFARE PATROL SHIPS

STATUS OF DESTROYER ESCORT PROGRAM

Mr. SLACK. Reprograming action fiscal year 1969–86. Remove all but $8 million from your fiscal year 1968 DE escort ship program. What do you propose to do with the remaining $8 million in this account?

Admiral FAHY. The $8 million is made up of several items which have already gone too far down the line to recover the money. We will get the equipment. These are propulsion systems—termination costs are estimated at $2,500,000.

The Mark 68 gunfire control system, the 5-inch, 54 model, 42 model gun mount; the 114 fire control system and hull machinery and electrical spare part items, which comes up to approximately $8 million.

Mr. SLACK. What do you propose to do with this equipment?

Admiral FAHY. It is all usable equipment at the moment. We don't have a hull for these particular items but we can keep them as spares and should the need arise for it we will have the system and the gun and so forth.

Admiral COLWELL. All of these items are standard items.

Mr. SLACK. What is the status of your future DE escort ship program?

Admiral COLWELL. We do not at the moment contemplate building any more DE's.

Mr. ANDREWS. Why not?

Admiral COLWELL. We think we have enough. We propose to build three destroyer types. The smallest type and the least capable is the DE, which we call an ocean escort, and which we expect to assign primarily to duties in ASW escort, hunter-killer groups, convoy escort and this sort of thing.

The second size will be general purpose destroyer which is exemplified by the new 963 class that we are requesting this year.

The third size will be the frigate which we hope to go nuclear and this will carry a full suit of surface-to-air missiles.

Mr. ANDREWS. So the DE is on the way out?

Admiral COLWELL. Not on the way out, but we think we have enough of them to serve our purpose.

Mr. ANDREWS. Do you or do you not plan to have any more in the fleet in years ahead?

Admiral COLWELL. We do not plan to build any more than are now under construction.

Mr. ANDREWS. In other words, when these have completed their useful life, that is the end of the line?

Admiral COLWELL. By that time I am sure we will have taken a whole new look at it, sir, because many of these won't even be commissioned until 1973.

Mr. ANDREWS. It has been a useful little ship through the years.

Admiral COLWELL. The ones we have now are useful and the ones we are currently building are more useful. They will be good ships for the purpose. They will be around in the 21st century.

Mr. SLACK. How many do you have under construction?

Admiral COLWELL. 45.

Mr. SLACK. Under construction?

Admiral ADAIR. Yes, sir. The first of the 46 that Admiral Colwell spoke of has recently been delivered.

Mr. SLACK. What will be the size of the complete fleet in numbers when these are constructed? The DE fleet?

Admiral COLWELL. The number is in the seventies. In order not to delay, may I supply you the exact number?

Mr. SLACK. Yes.

(The information follows:)

There will be a total of 77, sir. There are now in the fleet 32 of which six are equipped with guided missiles.

STATUS OF OCEAN MINESWEEPER CONVERSION PROGRAM

Mr. SLACK. In fiscal year 1968 you began the MSO, ocean minesweeper conversion program and you have been funded a total of 19 in the last 2 fiscal years. What is the status of this conversion program?

Admiral FAHY. We presently have nine of these ships under conversion and we plan to contract for the other 10 this summer.

Mr. SLACK. Last year we discussed the fact that you were to have awarded a contract in April 1968, for nine conversions in the fiscal year 1968 program. Was this done?

Admiral ADAIR. Nine MSO conversions were placed under contract.

Admiral FAHY. I am not sure it was done in April.

Mr. SLACK. When was it done?

Admiral COLWELL. May 1968.

Mr. SLACK. When are the 10 in the fiscal year 1969 program scheduled for conversion?

Admiral COLWELL. August 1969 is the contract date.

Mr. SLACK. Has there been any slippage in this program?

Admiral FAHY. There was slippage in awarding the contract for the second 10 because we found that we had some difficulties with some of the new equipment we were putting into the hull didn't quite fit and a rearrangement was necessary.

Mr. SLACK. You are requesting $40.7 million in new money for 10 more in the fiscal year 1970 conversion program. Do you anticipate any slippage in this program?

Admiral FAHY. No, sir. You know, this is a rather complex program, because virtually every one of these little minesweepers is an individual ship. We have run into the difficulty in contracting and layout for the conversions because they built during the Korean war at a great many widely separated areas so there are a lot of individuals variations. We virtually have 56 different types.

Mr. SLACK. When do you anticipate they might go under contract?

Admiral COLWELL. They are planned for the third quarter of fiscal year 1970.

CONSTRUCTION OF OCEANGOING MINESWEEPERS

Mr. SLACK. The Navy had postponed indefinitely its plans to build new oceangoing minesweepers. What is the status of this program at the present time?

Admiral COLWELL. The Navy plans are to reinstate this building program. Before we can proceed with this, we are going to have to gain acceptance by the Office of the Secretary of Defense.

Mr. LIPSCOMB. Admiral, could you explain further what you mean when you say "reinstate the program"? Is it included in your fiscal year 1970 program?

Admiral COLWELL. We had had, in our long-range building program, in past years, new construction, MSO's. These were not approved for construction and we are now going to go back; in fact, we are

going to go back next year and we have tentative approval from OSD now.

Mr. LIPSCOMB. You will have to come before this committee before you can go ahead.

Admiral COLWELL. Yes, sir. We have none authorized at the time.

Mr. LIPSCOMB. Are these conversions being done all around the country?

Admiral FAHY. They are split between the east and west coast. At the present time, four are being done at Bethlehem Steel in Baltimore and five at Kapalama Shipyard in Honolulu.

Mr. LIPSCOMB. Are those the only two locations?

Admiral FAHY. That is where the first nine are presently contracted. We have two other real live contenders. One of them is Harbor Boat in Long Beach, and the other is Detyens down in Charleston who have experience in this type of work.

Mr. LIPSCOMB. How large is the MSO ocean minesweeper fleet?

Admiral COLWELL. There are 63.

Mr. LIPSCOMB. How large a fleet are you programing, or planning?

Admiral COLWELL. Navy long-range programs call for ——— odd. This is designed to be in support of a capability to make an amphibious assault of division wing size in each ocean. The OSD approved MSO fourth level; I believe the approved force level is ———. Our current plans are to conduct this modernization on a substantial number of the existing MSO's. The total number is still somewhat indefinite because it will depend on the rate at which we are able to accomplish it, matched off against the advancing age of the hull. We will get to the point where modernization probably will not be economical.

CONSTRUCTION OF MOTOR GUNBOATS

Mr. SLACK. You are requesting $1.1 million in fiscal year 1970 for two motor gunboats for ——— Navy. This is in addition to five in the fiscal year 1968 and 1969 programs. At this time I would like to briefly discuss prior approval reprograming action, fiscal years 1969–72. This programing action will provide $610,000 for the procurement of a 100-foot motor gunboat to be provided ———. How many gunboats have we provided ——— up to this point?

Admiral GADDIS. This will be the 21st gunboat provided. They have 20 already.

Mr. SLACK. Will these funds provide the armament, spare parts, and equipment required to support this gunboat?

Admiral GADDIS. Yes, sir.

Mr. SLACK. How many more of these motor gunboats do we plan to furnish to ——— in addition to the two in the fiscal year 1970 program?

Admiral COLWELL. At this time I am not familiar with plans to supply any more.

Admiral GADDIS. We have no commitment beyond the 1970 program.

Mr. SLACK. How many gunboats does the U.S. Navy have in South Vietnam?

Admiral COLWELL. Do you mean U.S.-flag?

Mr. SLACK. Yes. You may supply that for the record.

(The information follows:)

The U.S. Navy has three U.S.-flag gunboats in South Vietnam.

URGENCY OF CONSTRUCTION OF MOTOR GUNBOATS

Mr. SLACK. Why was this one motor gunboat previously referred to such an urgent requirement it could not wait to be funded in fiscal year 1970?

Admiral GADDIS. This was a requirement that developed from a conference with the ——— Government. We were passed the requirement as a fiscal 1969 requirement. We had reprograming assets and accepted it as such. We did not question it beyond that point.

Mr. SLACK. Can you tell the committee what losses of these craft the ——— have experienced?

Admiral COLWELL. I would have to supply that for the record. I am not personally familiar with any. They do have an obsolescence and aging problem, however, just as we have.

(The information follows:)

The ——— Navy has not lost any motor gunboats (PGM's) to date.

DIFFERENCE IN COST TO CONSTRUCT BOATS

Mr. SLACK. Why will this craft cost $610,000 when your statement indicates the two in the fiscal year 1970 program will cost only $550,000 each?

Admiral GADDIS. I am sure it is a matter of contracting arrangements. We would like to provide that for the record.

Admiral FAHY. The unit cost is $555,000.

Mr. LIPSCOMB. Where is this one gunboat being built?

Captain FITZPATRICK. They are all being being built at Peterson Builders?

Mr. LIPSCOMB. They have a contract for all three?

Mr. ANDREWS. Where is that located?

Captain FITZPATRICK. In Sturgeon Bay, Wis.

Mr. ANDREWS. How will they get it out?

Captain FITZPATRICK. Through the Mississippi River.

Admiral GADDIS. It would probably then be carried overseas on another ship. It would not go over under its own power. It is too small.

Mr. LIPSCOMB. The question with regard to the difference in cost is valid.

Admiral GADDIS. We would like to provide it for the record. It is my recollection that this is a matter of the contract specifications for the outfitting of the boats. In other words, you have certain spares, such as spare engine parts and so forth, beyond that which is physically carried in the ship. I think this is the reason.

Mr. LIPSCOMB. It should apply to all three, shouldn't it?

Admiral ADAIR. Not necessarily, sir. Normally, if you need a spare engine, you need a spare engine if you have one ship, two ships, or three ships, and it is normal to apply those charges usually to the first ship, and that is why we have this lead-follow price differential normally.

Mr. LIPSCOMB. It was just pointed out, regarding your answer, that there are already two under construction and this one being reprogramed is the third one.

Admiral GADDIS. Yes, sir.

Mr. LIPSCOMB. Then it shouldn't be a lead ship?

Admiral GADDIS. No, this is not the lead ship of the class.

Mr. LIPSCOMB. All right.

Admiral COLWELL. I think that was my comment about the lead ship. It was poorly taken, sir.

(The information follows:)

SAME COST TO CONSTRUCT ALL THREE BOATS

The estimate for this third motor gunboat in the fiscal year 1969 program, was prepared quickly during preparation of the fiscal year 1970 budget, without opportunity for adequate review. It is now estimated that the three motor gunboats in fiscal year 1969 as well as the two in fiscal year 1970 can be constructed for $555,000 each.

COST OF PC SUBMARINE CHASER

Mr. SLACK. What is the reason for our cost-sharing $1.9 million of the fiscal year 1970 funds, for the construction of a PC submarine chaser in ———.

Admiral COLWELL. This again is a requirement which was laid on the Navy, as part of the military assistance program, and the plan is to build this ship in ——— on a 50–50 cost-sharing basis.

Mr. SLACK. How many of these ships have we shared in the cost of construction and what is the future program?

Admiral GADDIS. There is no prior program for the cost sharing of PCS for ———, sir, and ———. This essentially is a government-to-government agreement on a test basis.

Mr. ANDREWS. This is the one you told us the other day would be built in ———.

Admiral GADDIS. In ———, yes, sir.

Mr. SLACK. You have identified two motor gunboats and two LCM landing craft as going to the ———. Is this in connection with the modernization and improvement program for the ——— forces?

Admiral GADDIS. Yes, sir, phase I.

Mr. SLACK. How much do we have in the SCN budget for fiscal year 1969, and for fiscal year 1970, in support of this program by item and cost? You may provide that for the record if you will.

(The information follows:)

IMPROVEMENT AND MODERNIZATION PROGRAM OF —— NAVY

[Dollars in millions]

Item	Fiscal year 1969	Fiscal year 1970
Motor gunboat (PGM)	(1) $0.650	
LCM minesweepers	(6) 1.280	
LCM MK8	(6) 1.020	(2) $0.340
Repair, berthing and messing barge (non-self-propelled) (YRBM)	(1) 2.500	
	5.450	.340

Mr. SLACK. The P–1 indicates there is a $3.5 million cost-sharing on a patrol frigate (PF). Is this also in ———. This is in the 1968 program.

You may supply that for the record.

Admiral COLWELL. I believe it is in the United States, but I would like to make certain, sir.

(The information follows:)

The fiscal year 1968 SCN budget includes $3.5 million for a patrol frigate (PF) for the ———. This ship is to be built in the United States on an equal share basis between the United States and ———.

DETERMINATION OF WHERE PATROL CRAFT SHOULD BE BUILT

Mr. LIPSCOMB. Admiral, did you say this was a requirement that was laid on to the Navy by military assistance?

Admiral COLWELL. As a part of the military assistance program. As you will recall, sir, these used to be funded separately but now parts of the military assistance program are included in the Navy budget.

Mr. LIPSCOMB. Isn't all of the Southeast Asia effort funded in the Department of Defense budget now?

Admiral COLWELL. Yes, sir; I think so.

Mr. LIPSCOMB. Who makes the decision that the ship should be built in ———. Was this a Navy decision or were you just told to do this?

Admiral COLWELL. It is not a Navy decision.

Admiral GADDIS. It comes to us from the International Security Affairs Branch of OSD.

Admiral COLWELL. It comes to us from the Office of the Secretary of Defense, but I was trying to think of a specific answer to whose decision it is. I don't know. I will have to find out.

(CLERK'S NOTE.—The following additional information was subsequently provided for the record.)

The decision to build the patrol frigate (PF) which is included in the fiscal year 1968 SCN budget was first developed by the U.S. naval advisers in ——— and reviewed and approved in turn by:

(1) Commander, U.S. Military Assistance Command/Joint U.S. Military Advisory Group, ———;

(2) Commander in Chief, Pacific; and

(3) The Secretary of Defense.

This patrol frigate is to be built in the United States with the United States and the ——— governments sharing the ship's costs equally.

Mr. LIPSCOMB. Do you have regular contracting procedures? Does an American firm get to bid on this or is it just decided it would be built in ——— and turned over to somebody to do?

Admiral COLWELL. It is my understanding a decision was made to build it in ——— on this 50–50, cost-sharing basis. Whose decision that was I do not know and I will have to try to find out.

Mr. LIPSCOMB. Well, do we follow any contracting procedures or do we just give it to a firm over there? Does the Navy follow it? Is it in the channel? How is it handled?

Admiral COLWELL. Admiral Fahy was just explaining to me that major items of equipment will be sent out from here.

They will be U.S. equipment and, of course, have had U.S. inspection. We would also expect to send a shipbuilding inspector down from the office in SUBIC.

May I get a more complete answer for you, sir?

Mr. LIPSCOMB. Surely.

(The information provided the committee was classified.)

SELECTION OF CONTRACTOR

Mr. LIPSCOMB. Who picks the contractor?

Admiral FAHY. The ——— are the ones building the ship so it will be done in the ——— shipyard out there so I assume they do it as a function of their Navy Department building.

Admiral COLWELL. We are not building this ship. We are simply paying for half of it.

Admiral FAHY. We will furnish major parts of the Government procurement.

Mr. ANDREWS. You were just required by the Secretary of Defense or some higher office to fund half of the ship?

Admiral COLWELL. We were directed to include this in our SCN budget for this year, that is correct, sir.

Mr. LIPSCOMB. And we are being asked to appropriate $1.9 million?

Admiral COLWELL. Yes.

Mr. LIPSCOMB. You say it is being built by ———. Do you mean ——— has a shipyard that is going to build this?

Admiral COLWELL. Yes, sir.

Mr. LIPSCOMB. It is a government shipyard?

Admiral FAHY. Yes, sir, run by the ———.

Mr. LIPSCOMB. Did they design the ship?

Admiral FAHY. I think we will use plans that we have available, subchaser plans.

Mr. LIPSCOMB. You don't know anything about the ——— shipyard capabilities?

Admiral FAHY. No, sir, except I was talking to a senior ——— captain last night and he says when they start building this ship, or if they start building this ship, it is going to mean they will not be able to do any repairs for a good year in their big shipyard. They have another little shipyard which will have to take all the repair work.

Mr. LIPSCOMB. And this is a necessary item for the modernization of the ——— forces?

Admiral GADDIS. Of the ——— force.

Mr. LIPSCOMB. Do we build submarine chasers, PCs, in U.S. yards?

Admiral COLWELL. We could. We do not have any in our program.

Mr. LIPSCOMB. Do you have any idea how much we used to build them for or what it would cost now to build them?

Admiral COLWELL. It has been a long time since we have built one. I don't believe the comparison would be very meaningful.

Mr. ANDREWS. I imagine it would be cheaper over there.

Admiral COLWELL. Yes.

Mr. LIPSCOMB. Providing it works.

Admiral COLWELL. Providing it works, yes, sir.

As I said earlier, Mr. Lipscomb, I will provide for the record additional information on what the administrative processes are. I am not familiar with them. I did not expect this line of questioning. I am sorry.

COST OF AUXILIARIES AND CRAFT

Mr. SLACK. Your fiscal year 1970 program for "auxiliaries and craft" totals $449.3 million. In fiscal year 1969 it was only $46.6 million. Most of the $402.7 million increase this year is due to the account for claims and other cost increases and to the fast deployment logistic ship. We have already discussed the FDL.

You were funded one ASR submarine rescue ship in fiscal year 1967 and one in 1968 at a total cost of $32.9 million.

As of last year, the cost of these two ships increased by a total of $24.3 million. Have you experienced further cost increases in the construction of these two ships?

Admiral ADAIR. May I supply that for the record, sir?

Mr. SLACK. Please do.

(The information follows:)

An additional increase of $4.5 million has been experienced on these two ships. This increase was primarily associated with the Deep Dive System for these ships.

NEW LINE ITEMS IN BUDGET

Mr. SLACK. Admiral, your statement indicates the Navy has established four new line items in the SCN budget this year, namely, CVAN spares, outfitting spares, post-delivery charges and SCN claims and other cost increases. Would you briefly discuss each new line item and the reasons therefor? Do that for the record, if you will.

(The information follows:)

DESCRIPTION OF NEW LINE ITEMS

Enumerated below are the reasons for the establishment of the four new line items referred to above:

1. *CVAN spares.*—The Navy's propulsion plant component production plan for the three planned *Nimitz* class carriers was established to provide a total of three ship-sets of nuclear reactor plants plus spares of major reactor plant components. The advanced technology used in the *Nimitz* class nuclear propulsion plant involves the largest nuclear components ever manufactured for naval vessels. The time required to manufacture these components requires placing orders a year ahead of the next most limiting components for the ship. To manufacture these components, specialized production lines had to be established. Capacity was established for specific deliveries at regular intervals in order to—

(*a*) meet schedules for construction of three CVAN's;
(*b*) have spares available to support CVAN's at fleet delivery;
(*c*) provide production backup during CVAN construction;
(*d*) achieve maximum economies through series fabrication and level plant loadings.

The initial funding of nuclear propulsion plant spare components was provided in fiscal year 1969, since this was the first time in the nuclear component production schedule where capacity was available to start work on the spares which are critically needed as production backup for all three *Nimitz* class carriers.

The Navy's recommended production plan provides for advanced procurement of nuclear components for the CVAN–70 in fiscal year 1970 along with a second increment of $48 million for nuclear reactor plant spares.

The Department of Defense budget decisions for fiscal year 1970 approved the $48 million for nuclear spares but eliminated the advanced procurement funding for CVAN–70 with the exception that the CVAN–70 would be fully funded in fiscal year 1971 as has been discussed in answers to earlier questions. If the $48 million programed in fiscal year 1970 for nuclear component spares were not provided, this would disrupt the production lines established specifically for major *Nimitz* class carrier nuclear components, increase the cost and delay the schedule of CVAN–70, and jeopardize the schedule of the *Nimitz*

and the CVAN-69 due to eliminating production backup for the components being manufactured for these two ships. The production lines were specifically established by the Navy for the sole purpose of producing these special components which are unique to the *Nimitz* class carrier nuclear propulsion plants; thus delaying order placement will disrupt these production lines. If production lines were disrupted, they would be most difficult and costly to reestablish. The vendor's capacity could be expected to be diverted to fill orders for the current $3 billion backlog of civilian nuclear powerplant component orders.

When funds become available at a later date, the Navy will have almost no leverage to get back immediate production. The Navy has no leverage to require contractors to maintain, or reestablish in a short time, groups of qualified, experienced, technical, and production personnel. These groups have taken a long time to assemble; but because of their skill and experience, they will be quickly reassigned to commercial work when orders for Navy components are not available.

The civilian work to which this capacity would be diverted will also consist of large complex components requiring 2 to 4 years for fabrication. This means that this capacity will not be available for reassignment to Navy work when the funds are provided at a later date.

Failure to provide the CVAN spares funds will result in increased costs. These increases are attributable to two factors; normal inflation associated with the schedule delay, and less efficient production resulting from the production gaps and duplicate startup costs. Since the CVAN spares will eventually have to be procured in order to support the *Nimitz* class carriers, it is desirable that they be procured now rather than later in order to avoid significant cost increases.

2. *Outfitting spares.*—Outfitting material includes all Government-furnished on-board repair parts, other secondary items, equipage, and general use consumables as defined in the ship's initial allowance.

With the establishment of a new line item for outfitting, budgeting for outfitting on an annual basis under a leadtime away criterion will permit an improvement in estimates for outfitting requirements since budgeting will take place at a period in time considerably closer to the actual time of requirement. Under the present system, estimating outfitting requirements has become most difficult because of the need to project these estimates considerably in advance of the time outfitting actually takes place.

3. *Post delivery.*—Post delivery includes all work, including related design, planning, and Government furnished material required for the correction of defects and deficiencies indicated during the acceptance or underway trials or during the shakedown period.

The same rationale to budget on an annual basis has been applied for post delivery funds, since such funds are not required until after the ships construction period is completed.

4. *SCN claims and other cost increases.*—The $167 million requested under this line item is a request for new obligational authority which will be used to help offset the SCN program deficit. The Navy with the concurrence of the Office of the Secretary of Defense plans to offset this increase in new obligation authority by reducing the SCN program and programs in other Navy appropriations.

BREAKDOWN OF CVAN SPARES

Mr. SLACK. Would you breakdown for the record the $48 million for CVAN spares, the $51.7 million for outfitting materiel, the $23.1 million for post-delivery, and the $167 million for claims and other cost increases, line items, showing the construction and conversion programs to which they apply?

Admiral COLWELL. We have this available and we will supply it. (The information follows:)

The following is a breakdown of the information requested:

1. *CVAN spares.*—The $48 million for Nimitz class nuclear propulsion plant component spares will be used to complete one set of core containment components and procure additional reactivity system and reactor coolant system components and nuclear fuel.

2. *Outfitting material.*—The $51.7 million for outfitting material will be applied to the program years indicated:

Fiscal year:	*Dollars in millions*
1962	0.090
1963	1.264
1964	7.640
1965	12.475
1966	17.015
1967	9.167
1968	4.049
Total	51.700

In addition to the separate line item established for outfitting material under budget activity 5, a separate line item in the amount of $3.7 million has also been established under budget activity 1.

3. *Post delivery.*—The $23.1 million for post delivery will be applied to the program years indicated:

Fiscal year:	*Dollars in millions*
1964	5.407
1965	11.449
1966	4.648
1967	1.074
1968	.524
Total	23.102

4. *Claims and other cost increases.*—The $167 million will be applied to the program years indicated:

Fiscal year:	*Dollars in millions*
1958	0.2
1961	.6
1962	6.7
1963	15.4
1964	35.2
1965	47.8
1966	49.0
1967	4.1
1968	8.0
Total	167.0

ABSORPTION OF COST OVERRUNS

Mr. SLACK. With respect to the $167 million for claims and other increases, what is the total additional cost overruns you have absorbed? These are mentioned on page 13 of your statement. How has this affected your SCN program?

Admiral COLWELL. Do you want that for the record?

Mr. SLACK. Supply that for the record too.

(The information follows:)

Cancellation of the fiscal year 1968 ocean escort (DE), fiscal year 1969 destroyer tender (AD) and fiscal year 1969 submarine tender (AS) will provide $183 million required during fiscal year 1969. Selective reductions in our fiscal year 1970 budget request in several appropriations will allow inclusion of the $167 million required during the first half of fiscal year 1970 without increasing the overall Navy budget in fiscal year 1970. The SCN items were deferral of two guided missile frigates (DLG) conversions and a reduction of advance funding for DLG and ocean minesweepers (MSO). We have deferred awarding the contract for the fiscal year 1968 fast combat support ship (AOE), miscellaneous

craft and support to provide $104 million if our estimate of requirements during the latter half of fiscal year 1970 proves true.

With the exception of the DE, the requirement for these ships still exists, accordingly they will be requested in a future year program. The effect will be later delivery of these ships to the fleet with a concurrent stretchout in the life of ships to be retired.

RECOVERIES FROM CHANGES IN BUDGET PROCEDURES

Mr. SLACK. Your statement indicates that the outfitting material and postdelivery changes in the budgeting procedure will allow a one-time recovery of prior year funds to apply to the fiscal year 1970 program and to fund price increases in prior year programs. How much were you able to recover and how was it applied?

Admiral GADDIS. The total is $237.4 million; $127.2 million is achieved from outfitting material and $110.2 million achieved from reductions in postdelivery charges in fiscal year 1969 and prior years. The detail I would add for the record at this point, sir.

Mr. SLACK. On how it was applied?

Admiral GADDIS. Yes, sir.

(The information follows:)

Application of assets generated by outfitting material and post delivery funding policy change

[Dollars in millions]

1. Offset fiscal year 1970 new obligational authority requirements	$122.4
2. Offset to fiscal year 1968 recoupment objective of $115 million	102.2
3. Source of funds for reprograming action SCN 69-61	12.8
Total asset	237.4

FUNDING OF OVERRUN DEFICIT

Mr. SLACK. According to your statement, several actions were or will be taken to accommodate the actual and potential cost overruns estimated to be in the range of $600 to $700 million. These actions will still leave you far short of the $600 to $700 million goal, will they not?

Admiral COLWELL. Yes, sir.

Mr. SLACK. What plans do you have to recover the remaining deficit?

Admiral COLWELL. We have three proposed actions. The first is to defer the award of a contract for a new replenishment ship, an AOE. In other words, to put that in escrow for claims which may become due before the end of the fiscal year 1970. There are some other additional smaller items to add to that.

The second action which we propose—

Mr. SLACK. Excuse me. Is that out of your 1968 program?

Admiral COLWELL. Yes, sir.

The second action which we propose is to introduce into the 1971 budget request a sum for SCN cost increases which parallels the one that we have in this year's request, and then finally, we estimate there will be in the neighborhood of $100 million still to be accounted for if we are required to attain the outstanding recoupment objective. If that occurs, then we would propose to put a line item in the 1972 budget for SCN cost increases to cover that final increment.

Mr. LIPSCOMB. Admiral, in the original budget submission in January this line item of claims and other cost increases of $167 million was not in?

Admiral COLWELL. That is correct.

Mr. LIPSCOMB. It came as a result of the new administration revision, is that correct?

Admiral GADDIS. Yes, sir.

Admiral COLWELL. Well, we were in the process of making a complete review of the entire SCN account because we realized we were, if not in serious trouble, we were certainly on the edge of it.

Mr. LIPSCOMB. But this $167 million showed up in the budget as revised by the Nixon administration.

Admiral COLWELL. In the revised budget, that is correct, sir.

Mr. LIPSCOMB. When did you become aware of this serious deficiency?

Admiral COLWELL. Our awareness of serious trouble goes back at least several months. We had been attempting to cure our own troubles by changes in the program, as you are aware, sir, with reprogramings and cancellations of ships in order to try and get well.

In our January ship cost audit, at that time it became apparent to us we were not going to be able to solve our own problem, even by the very drastic changes in program which we have detailed for you in these hearings. We have a rather extensive analysis of this entire matter, which is one I was referring to yesterday when I contracted to supply it for the record. It is a matter of several pages and goes into this in depth.

Admiral ADAIR. Mr. Lipscomb, in further amplification, in response to a question Mr. Andrews asked Tuesday afternoon, I started to respond and I said the first indication of difficulty was found essentially a year ago. The insert in Tuesday's testimony, I believe, will give you amplifying information on this point.

Mr. LIPSCOMB. The picture then is that you did not try to get a line item in the original 1970 fiscal year budget, but you were doing work then between January and when this revised budget came up here.

When did you submit to the Office, Secretary of Defense, the report of what you found?

Admiral GADDIS. That was reported to the Secretary of Defense on March 5.

Mr. LIPSCOMB. The new Secretary of Defense was able to begin taking some sort of action or giving some kind of direction to this soon after he took office?

Admiral GADDIS. As you can well image, there were a number of conferences after the disclosure as to the detail, documentation, and alternative ways of handling the overruns.

The result of that series of conferences is incorporated in the President's amended budget and essentially consists of solving $183 million of the problem in fiscal 1969 through cancellation of ships, $271,000,000 of the problem in fiscal year 1970 by a $167 million budget line item in the fiscal year 1970 budget and cancellation of $104 million of prior year program. Additionally, a requirement of $115 million exists in fiscal year 1971 and $100 million in fiscal year 1972.

EFFECT OF COST OVERRUNS ON SHIPBUILDING PROGRAM

Mr. LIPSCOMB. One of the unfortunate things about this is that it is showing up in your budget now at a time when we already have serious budget difficulties and this item does not buy any additional defense for the Nation.

Admiral GADDIS. Frankly, sir, we did everything we could, in all candor and honesty, to try to keep it from showing up at all. We wanted to solve our own problems in our own house. Mr. Laird said, "If you have problems, tell me," and we told him and have made a clean breast of the whole problem.

Mr. LIPSCOMB. I would rather see it come through this way, too, rather than have you pull your shipbuilding program to pieces by taking it out in chunks of some other programs. It might as well lie bare on the table.

Admiral GADDIS. This was particularly difficult, sir, because during the Vietnam period of the past 3 years we have had a very stringent shipbuilding program. We are cancelling large pieces of it when we have an obvious need for an expanded shipbuilding program to replace the overage fleet.

Mr. LIPSCOMB. When this unsound situation from the past is cleaned up, we can probably go ahead with vigor.

Admiral GADDIS. We will supply all the vigor that you could ask for, sir.

RECOVERED FUNDS TO BE USED IN REDUCING COST OVERRUNS

Mr. SLACK. The committee has not seen a reprograming document reflecting the cancellation of the AD destroyer tender. How much would you recover with this action?

Admiral GADDIS. $72.5 million, sir, and the reprograming action will be forthcoming before the end of this fiscal year.

Mr. SLACK. Will you provide for the record a breakdown showing how you propose to recover all the funds discussed, including the programs affected and the amounts of each?

Admiral COLWELL. Yes, sir.

(The information follows:)

ASSET RECOVERIES TO BE USED IN FUNDING SCN COST OVERRUNS

[In millions of dollars]

	Year programed	Year in which recovery made and amount recovered	
		Fiscal year 1969	Fiscal year 1970
DE escort ship	1968	41.6	.....
AS submarine tender	1969	68.7	.....
AD destroyer tender	1969	72.5	.....
AOE fast combat support ship	1968	.....	84.3
Craft	1969	.....	10.0
Various minor characteristics changes		.....	10.0
Total recoveries		182.8	104.3

FUNDS FOR ADVANCED CONTRACT SHIP DESIGN

Mr. SLACK. You are not requesting funds in fiscal year 1970 for advanced contract design. Does this mean this line item is being phased out in favor of a contract-definition concept?

Admiral COLWELL. No, sir; it does not. I am informed by Admiral Fahy that we have no requirement in 1970 for this particular line item.

Mr. SLACK. For what purposes were these funds used?

Admiral FAHY. They were used for various contract designs and for studies, most of which are now funded under other programs such as R. & D., since the concept formulation system was inaugurated. This is now largely paid for by the R. & D. funds. There may be a requirement for it again in future years.

Captain FITZPATRICK. Last year $3 million was appropriated for this purpose; $2.3 million of that is being used for the contract design of the high-speed submarine in preparation for bidding this ship. The remainder of it is not required; it is budgeted as a matter of fact as an offset against the obligational authority requested for 1970.

Mr. SLACK. How will you finance this effort in fiscal year 1970 if it becomes necessary to do so?

Admiral FAHY. It would be necessary to reprogram if we didn't have sufficient funds under the R. & D. concept formulation.

SERVICE AND LANDING CRAFT

Mr. SLACK. Would you provide a list for the record showing the service and landing craft in the fiscal year 1970 program, including the type, number, and the cost of each?

Admiral COLWELL. We will, sir.

(The information follows:)

TYPES AND COST OF SERVICE CRAFT

[Dollar amounts in millions]

Type	Number	Unit cost	Total
Large harbor tug (YTB)	5	$1.025	$5.12
Repair, berthing, and messing barge (large) (YRBM(L))	4	1.22	4.88
Medium harbor tug (YTM)	3	1.217 (L)	3.23
Total		1.007 (F)	13.23
Landing craft:			
Landing craft, mechanized, Mk 6 (LCM-6)	40	.0665	2.66
Landing craft, mechanized, Mk 8 (LCM-8)	2	.17	.34
Landing craft, utility (LCU)	2	1.495 (L) 1.364 (F)	2.85
Landing craft, personnel (large) LCPL	31	.0555	1.72
Total			7.57

HYDROFOIL CRAFT

Mr. SLACK. Last year we discussed certain hydrofoil craft such as the 115-ton PCH–1 and the 260-ton AGEH craft with which you were still experiencing problems. What is the current status of this program? Provide that for the record, if you will please.

(The information follows:)

The AGEH–1 was delivered to the Navy on March 1 of this year. It is presently undergoing a 2-month restricted availability (RAV) at Puget Sound Naval Shipyard to install an extensive instrumentation package. Upon completion of RAV she will become a part of the hydrofoil special trial unit at Bremerton where it will undergo extensive tests and trials. Although this craft has not completely come up to our expectations, it must be remembered that as the world's largest hydrofoil it represents the state of the art today. Quite a few of the acceptance trial deficiencies are items that we had to determine feasible with this one of a kind craft before considering any production procurement of similar craft. We expect that at the end of about 2 years of trials and tests with this craft we will have accumulated sufficient engineering data to be able to design a much more satisfactory craft.

A similar situation was experienced with PCH–1 which has been developed from a very unreliable craft on delivery into a very reliable test vehicle on which we based the specifications for the two operational 60-ton hydrofoil *Flagstaff* (PGH–1) and *Tucumcari* (PGH–2). These two craft are currently undergoing an operational evaluation and so far they have proven to be extremely reliable craft under the most adverse environmental conditions.

MSTS CHARTER-BUILD CONTRACTS

Mr. SLACK. The Military Sea Transportation Service, MSTS, in recent months has entered into charter-build contracts. Will this be a trend in future MSTS ship requirements?

Admiral GADDIS. We hope so, yes, sir.

Admiral COLWELL. We expect at least a part of their requirements will be met by this process. It may be deemed proper to build through the SCVN account for them but we haven't anything in this year's program.

Mr. SLACK. Have there been any cost studies to indicate it is more economical to acquire MSTS ships in this manner as opposed to construction by the Navy?

Admiral COLWELL. There have been cost studies. The overall outlay of cash is greater over say a 10-year period to operate by the charter and build system. Some of this difference in cost is offset by discounting because we don't have our capital invested. I have seen some estimates that when this is taken into account that over 10 years the costs are quite comparable. I think that one would have to run this out and get the figures for 10 years to be absolutely certain.

Mr. SLACK. You may elaborate for the record if you will, please.

(The information follows:)

A recent military sea transportation service (MSTS) study, developed a cost comparison between obtaining nine tankers under bareboat charter hire agreement, and construction with direct appropriations. This study indicated that the cost to MSTS for construction of nine diesel tankers under bareboat charter hire agreement, is estimated at $218,402,179 based on level debt service over 20 years. This cost consists of the bareboat charter contractor's investment in the tankers, after reducing the ship construction costs by the equity sold to other investors, plus interest on the funds required to finance the owner's investment, plus a fixed fee to the owner to cover overhead and profit. The details of these costs to MSTS are:

Construction cost to contractor (estimated):	*9 tankers*
Shipyard cost	$118, 143, 700
Legal fees	252, 210
Supervision	450, 000
Financing costs	1, 250, 000
Interest during construction	3, 536, 000
Commitment fees, late delivery	1, 468, 000
Total construction cost	125, 100, 000
Less equity to be sold to other investors	22, 140, 000
Bareboat charter contractor's investment	102, 960, 000
Interest at 8½ percent level debt service	113, 206, 579
Overhead and profit	2, 235, 600
Cost to MSTS before discounting	218, 402, 179
Discounted costs	92, 973, 807

The costs of construction by the Navy with direct appropriations, would be the shipyard costs of $118,143,700. Although the costs to MSTS under charter agreement would amount to $218,402,179, the costs should be discounted over the period of payment, in order to arrive at a fair comparison with costs of having the ships constructed by the Navy with direct appropriations. The cost to MSTS discounted at 10 percent over 20 years would amount to $92,973,807, which would be less than the costs of construction by direct appropriations. The foregoing estimate contemplates a bareboat charter agreement extending 20 years, with 8.75 percent interest during the construction period and 8.5 percent interest on the $102,960,000 funds borrowed by the contractor to finance his investment. The interest of $113,206,579 is calculated on the basis that repayment of the $102,960,000 would be in equal monthly installments sufficient to pay the principal and interest in 20 years.

Commendations Paid Admiral Colwell

Mr. Slack. Is there any further questions?

Mr. Andrews. Mr. Chairman, before we adjourn, Admiral Colwell, I guess this will be your last appearance before this committee.

Admiral Colwell. Yes, sir, it will.

Mr. Andrews. Does it leave you with a happy note or an indefinite note?

Admiral Colwell. I will retire after about 38 years of commissioned service. I guess it is about time to go.

Mr. Andrews How many years have you appeared before this committee?

Admiral Colwell. Four years.

Mr. Andrews. I have sat on this committee for 24 years; this committee and the predecessor committee. I can truthfully say you have been one of the most forthright and knowledgeable witnesses we have had appear before this committee. You have brought with you a distinguished service record. I read in your biography where you were a gunner officer for one of the all-time great Admirals, Bull Halsey. It has been a pleasure to work with you. I speak for all committee members in telling you how much we appreciate the help you have given this committee. We all wish for you the best of everything when the Navy plays "Anchors Aweigh" for you.

Admiral Colwell. Thank you, sir. That is very kind of you.

Mr. Slack. Mr. Andrews, I concur in your remarks about Admiral

Colwell. He has had a distinguished Naval career and I understand that in the last 4 years has helped the committee immeasurably.

If there are no further questions the committee will stand adjourned.

MONDAY, MAY 19, 1969.

OTHER PROCUREMENT, NAVY

WITNESSES

VICE ADM. R. L. SHIFLEY, U.S. NAVY, DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
REAR ADM. L. SMITH, U.S. NAVY, DIRECTOR, STRATEGIC SYSTEMS PROJECT OFFICE
REAR ADM. B. H. BIERI, U.S. NAVY, COMMANDER, NAVAL SUPPLY SYSTEMS COMMAND
REAR ADM. F. J. HARLFINGER, U.S. NAVY, ASSISTANT CHIEF OF NAVAL OPERATIONS (INTELLIGENCE)
REAR ADM. J. E. RICE, U.S. NAVY, COMMANDER, NAVAL ELECTRONIC SYSTEMS COMMAND
REAR ADM. W. C. ABHAU, U.S. NAVY, MANAGER, ASW SYSTEMS PROJECT OFFICE
REAR ADM. W. D. GADDIS, U.S. NAVY, DIRECTOR OF BUDGET AND REPORTS, OFFICE OF NAVY COMPTROLLER
REAR ADM. M. W. WOODS, U.S. NAVY, VICE COMMANDER, NAVAL ORDNANCE SYSTEMS COMMAND
REAR ADM. T. R. McCLELLAN, U.S. NAVY, DEPUTY FOR PLANS, NAVAL AIR SYSTEMS COMMAND
REAR ADM. H. S. ETTER, MC, U.S. NAVY, ASSISTANT CHIEF FOR PLANNING AND LOGISTICS, BUREAU OF MEDICINE AND SURGERY
CAPT. W. N. FITZPATRICK, U.S. NAVY, COMPTROLLER, NAVAL SHIPS SYSTEM COMMAND
CAPT. W. McHENRY, U.S. NAVY, DEPUTY COMMANDER, PROGRAMING AND FINANCIAL MANAGEMENT
CAPT. C. F. KRICKENBERGER, JR., U.S. NAVY, COMPTROLLER, NAVAL FACILITIES ENGINEERING COMMAND
CAPT. A. LOTTERHOS, JR., U.S. NAVY, COMPTROLLER, BUREAU OF NAVAL PERSONNEL
CAPT. W. M. NICHOLSON, U.S. NAVY, PROJECT MANAGER, DEEP SUBMERGENCE SYSTEMS
CAPT. P. B. CROUCH, U.S. NAVY, DIRECTOR, COMPTROLLER DIVISION, NAVAL ELECTRONICS SYSTEMS COMMAND
CAPT. W. O. MYERS, U.S. NAVAL RESERVE, ASSISTANT FOR RESOURCE MANAGEMENT, NAVAL INTELLIGENCE COMMAND
CAPT. J. E. AYRES, U.S. NAVY, DIRECTOR, PROGRAM DIVISION, OFFICE OF OCEANOGRAPHER
CAPT. H. S. MORGAN, JR., U.S. NAVY, OVERHAUL SCHEDULE BRANCH, OPNAV
CAPT. D. W. ABERCROMBIE III, U.S. NAVY, DIRECTOR, ACTIVITY SUPPORT DIVISION, OPNAV
CAPT. E. P. TRAVERS, U.S. NAVY, ASSISTANT TO DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS) FOR PROGRAMS AND BUDGETS

CAPT. J. P. VAN SICKLE, U.S. NAVY, OFFICE OF NAVAL COMMUNICATIONS
G. MARSHALL, FINANCIAL PLANNING AND PROGRAMING, NAVAL ORDNANCE SYSTEMS COMMAND
G. C. BLOOMINGBURG, ASSISTANT DIRECTOR, FINANCIAL MANAGEMENT, NAVAL AIR SYSTEMS COMMAND
P. H. WARD, BUDGET OFFICER, NAVAL FACILITIES ENGINEERING COMMAND
J. CUBLEY, COMPTROLLER, ASW SYSTEMS PROJECT OFFICE
A. P. KENYON, ASSISTANCE FOR EDUCATION AND TRAINING, PLANS AND POLICY, BUREAU OF NAVAL PERSONNEL
T. J. HICKEY, COMPTROLLER, BUREAU OF MEDICINE AND SURGERY
R. H. WATKINS, BUDGET ANALYST, CNO BUDGET OFFICE
G. J. OATES, PROGRAMS AND BUDGET ASSISTANT, NAVAL COMMUNICATIONS COMMAND
R. G. GARANT, OTHER PROCUREMENT ANALYST, OFFICE OF NAVY COMPTROLLER
R. J. MALONEY, OFFICE OF THE DEPUTY CHIEF OF NAVAL OPERATIONS (FLEET OPERATIONS AND READINESS)
W. N. HAGGERTY, MANPOWER AND BUDGET BRANCH, OPNAV
DR. K. A. STRAND, SCIENTIFIC ASSISTANT TO DIRECTOR, NAVAL OBSERVATORY

PROGRAM AND FINANCING (IN THOUSANDS OF DOLLARS)

	Budget plan (amounts for procurement actions programed)			Obligations		
	1968 actual	1969 estimate	1970 estimate	1968 actual	1969 estimate	1970 estimate
Program by activities:						
Direct:						
1. Ships support equipment	287,361	550,531	540,460	254,656	555,000	534,100
2. Communications and electronic equipment	314,552	384,545	316,700	376,902	370,000	303,600
3. Aviation support equipment	832,596	820,000	713,027	870,054	782,000	621,000
4. Ordnance support equipment	649,774	798,443	620,811	597,262	790,000	606,000
5. Civil engineering support equipment	157,286	162,727	121,301	185,352	160,000	114,400
6. Supply support equipment	22,800	14,642	12,919	20,565	20,000	13,500
7. Personnel and command support equipment	36,780	40,499	31,175	36,249	60,000	33,400
Total direct	2,301,149	2,771,387	2,356,393	2,341,040	2,737,000	2,235,000
Reimbursable:						
1. Ships support equipment	18,270	9,600	7,000	7,082	8,800	8,300
2. Communications and electronic equipment	12,281	6,300	4,800	9,019	10,200	9,700
3. Aviation support equipment	324,825	351,000	337,000	267,036	350,000	340,000
4. Ordnance support equipment	47,696	63,000	43,500	16,150	60,000	50,000
5. Civil engineering support equipment	35,934	35,000	35,000	24,051	43,000	41,000
6. Supply support equipment	819	44	11	777	130	14
7. Personnel and command support equipment	215	2,168	115	346	100	2,100
Total reimbursable	440,040	467,112	427,426	324,461	472,230	451,114
Total	2,741,189	3,238,499	2,783,819	2,665,501	3,209,230	2,686,114
Financing:						
Receipts and reimbursement from:						
Federal funds	−438,105	−471,262	−426,076	−434,969	−415,657	−418,676
Trust funds	−6,914	−10,120	−8,120	−4,683	−10,120	−8,120
Non-Federal sources [1]	−3,672	−730	−3,230	−3,692	−730	−3,230
Unobligated balance available, start of year:						
For completion of prior year budget plans				−915,124	−878,263	−643,927
Available to finance new budget plans		−154,200	−123,693		−154,200	−123,693
Reprograming from prior year budget plans	−110,698	−208,000	−200,000			
Unobligated balance transferred from other accounts		−12,280		−3,496	−12,280	
Unobligated balance available, end of year:						
For completion of prior year budget plans				878,263	643,927	534,232
Available to finance subsequent year budget plans	154,200	123,693		154,200	123,693	
Budget authority (appropriation)	2,336,000	2,505,600	2,022,700	2,336,000	2,505,600	2,022,700
Relation of obligations to outlays:						
Obligations incurred, net				2,222,156	2,782,723	2,256,088
Obligated balance, start of year				2,129,863	2,146,013	2,403,736
Obligated balance, end of year				−2,146,013	−2,403,736	−2,161,024
Outlays				2,206,006	2,525,000	2,498,800

[1] Reimbursements from non-Federal sources are derived principally from cash sales to foreign governments (10 U.S. 2210).

Object classification (in thousands of dollars)

	1968 actual	1969 estimate	1970 estimate
Direct obligations:			
Personnel compensation:			
Permanent positions	$10,681	.....	.....
Other personnel compensation	321	.....	.....
Total personnel compensation	11,002	.....	.....
Personnel benefits: Civilian	853	.....	.....
Transportation of things	37,811	$31,300	$33,600
Printing and reproduction	325	340	330
Other services	437,259	569,097	521,814
Supplies and materials	1,232,728	1,342,278	980,540
Equipment	621,062	793,985	698,716
Total direct obligations	2,341,040	2,737,000	2,235,000
Reimbursable obligations:			
Transportation of things	2,172	2,290	2,230
Other services	4,968	5,430	5,360
Supplies and materials	184,046	312,992	298,147
Equipment	133,275	151,518	145,377
Total reimbursable obligations	324,461	472,230	451,114
Total obligations	2,665,501	3,209,230	2,686,114

PERSONNEL SUMMARY

Total number of permanent positions	1,094	.....	.....
Average number of all employees	1,019	.....	.....
Average GS grade	10.3	.....	.....
Average GS salary	$12,227	.....	.....
Average salary of ungraded positions	$8,596	.....	.....

Mr. MAHON. We will resume the hearing on the Navy "Other procurement" program.

SINKING OF U.S.S. "GUITTARO"

This is the beginning of a new workweek. May 17 was Armed Services Day. It was a day to focus attention upon the accomplishments of our fighting men through the years and achievements otherwise of the military. I have before me the front page of one of the papers dated May 17, Armed Services Day. There is a big picture and story entitled "$50 Million A-Sub Sinks at Her Dock."

I realize the hearing this morning is not convened for the purpose of discussing the Navy shipbuilding program, but I thought it might not be inappropriate to mention this matter at this time.

Admiral Shifley, was this in a Navy shipyard?

Admiral SHIFLEY. Yes, sir. This was in the naval shipyard at Vallejo, Calif., the Mare Island Yard, sir.

Mr. MAHON. Therefore, the Navy inevitably has to take the responsibility for this monumental goof as I see it, is that correct?

Admiral SHIFLEY. Yes, sir.

Mr. MAHON. How in the world could a thing of this kind happen? What is the story?

Admiral SHIFLEY. The information I have is very sketchy at this time, Mr. Chairman, but I would be happy to give you as much information as I have. It is subject to being inaccurate to some degree, but I think generally it is about correct.

This ship was about 94 percent complete. She was to be completed this fall. She did not yet have her fissionable material in her nuclear reactor. The possibility of nuclear contamination out there——

Mr. MAHON. We are not for the moment and for the purpose of this discussion so worried about nuclear contamination, although this could have been a matter of concern; we are worried about a shoddy operation which may have contributed to this tragedy.

Admiral SHIFLEY. Yes, sir.

A workman was adjusting the trim of the boat and was putting water in a ballast tank. For some reason unknown at this time the workman put too much water in the ballast tank and she got down too far in the bow. This placed one of the forward hatches, which was open, below the level of the water and the ship flooded very rapidly and went down. She sank in about 40 feet of water.

She has now been raised and although I do not have the latest information, I believe she is in a drydock at this time. This is going to cause about a 9- to 12-month delay in the completion of the ship and possibly about a $25 to $30 million additional cost to fix the machinery and other things that have been damaged by the water. These estimates as to time of delay for completion and additional costs for refurbishing are extremely tenuous. The Navy is not prepared to quote any concrete figures at the present time.

Mr. MAHON. Does this new submarine have the defect which you might describe as a list to port?

Admiral SHIFLEY. I have heard of no such defect.

Mr. MAHON. Was there something in the news media to that effect?

I think we all recognize that this is a time for a searching reexamination of our institutions and of our leadership, and it's a time when the capabilities of the Congress and the executive branch—and this applies very specifically to the military—are being seriously questioned. The Supreme Court has come into very serious question, as I see it, and properly so.

This was a most inauspicious time for the managerial and technical ability and the commonsense qualities of the Navy to be called into question. We will explore this further. I would like for the representative of the office of Secretary of Defense, Mr. Douglas Sinclair, to give this transcript to the Secretary of the Navy with the request that we be given a full and complete explanation of this wasteful and indefensible occurrence.

Admiral, what was your estimate as to what this might cost us as a result of this accident?

Admiral SHIFLEY. A very rough estimate, Mr. Chairman, is between $25 and $30 million.

Mr. MAHON. If this information is correct, that is half the cost of the submarine. The submarine cost approximately $50 million, I assume?

Admiral SHIFLEY. I don't have the cost of that submarine.

COST OF U.S.S. "GUITARRO"

Mr. MAHON. Will you put the estimated cost in the record at this point?

Admiral SHIFLEY. Yes, sir.

(The information follows:)

The current estimate for the U.S.S. *Guitarro* (SNN-665) is $105.7 million which includes $20.8 million for development of an improved submarine sonar. This

is a detecting ranging set Sonar and has been developed for use in fiscal year 1965 and subsequent submarine programs. It has been charged to this hull as a lead ship charge rather than spread proportionately over a number of ships because this submarine was the lead submarine at the point in time funding was required. Had another hull been selected for this charge, the current estimate for SSN-665 would have been $84.9 million.

INDIVIDUAL RESPONSIBILITY AND ACCOUNTABILITY

Mr. MAHON. I don't know what the situation may be with respect to this incident, but in my opinion one of the major defects of the Armed Forces—the Army, Navy, Air Force, and Marine Corps—is that when there is a big goof, or a wasteful or indefensible action that takes place, nobody in a responsible position seems to be held accountable. There is just a little flurry in the press and then the commanding officer later in some instances gets a promotion and moves on to some other post.

This is very disquieting. This is one reason why many of the people are losing confidence in our Military Establishment—and they are losing confidence in our Military Establishment, make sure of that—and many people are calling into question, those who deal in legislation and in funds for the military. It is just almost unheard of that a military officer is called into question for his failure to perform successfully. There are some exceptions but it is just almost unheard of. It looks like to me somebody who is responsible for this loss of at least $25 million ought to be held accountable.

To blame it on some little workman who hasn't much at stake anyway, from the standpoint of prestige or position loss, and to free everybody else is, in my opinion, bad.

We were talking last week about the shortcomings of the military services and of other portions of our Government and someone very properly said, "Let's don't talk just about shortcomings, let's talk of our accomplishments."

Reference was made to the great job that Admiral Raburn did as head of the Polaris program. He was given full credit, but if an officer is going to be given full credit for the good, why shouldn't he take the responsibility for the bad? That is something I don't like and I think it is something the people don't like. In fact, I think they are sick and tired of it.

We have observed, through the years, incidents of this kind. We talked about General Schriever and his great job in heading up much of the work on the perfection of the intercontinental ballistic missile. But those who take credit for the good must take responsibility, as I see it, for failure. In public life, officials are called into question at the ballot box, but there is no way for John Q. Public to get at the military by way of punitive action as they can with people in political life, including administrations of our executive branch.

I think there must be a reawakening of the sense of responsibility. Too often we start a program; the man who starts it with a great fanfare, stays there a couple of years maybe and then out he goes, and when the flop comes, the man who really headed up the program is off some place else and is not held accountable.

I am directing these statements not so much to you gentlemen as I am to the whole Defense Establishment. I wish you would make this portion of the record available to the Secretary of Defense as I want

to alert him to a discussion on this subject which we need to have with him.

Admiral GADDIS. We will do that, sir.

Mr. MAHON. We have got to try to do something to maintain and to restore confidence in our entire Government, including the Supreme Court and the legislative and the executive branches.

Admiral SHIFLEY. I will make sure your remarks are brought to the attention of the Chief of Naval Operations and the Secretary of the Navy, sir.

Mr. SIKES. Mr. Chairman, this is an extremely serious matter. We lose the services of a submarine for from 9 to 12 months. The public is going to have to pay another big bill, $25 million for what appears to be gross stupidity, or lack of proper supervision.

It makes absolutely no sense that some workman could do a poor job of flooding a ballast and let a ship get entirely away from him.

It would seem that this would be something that the entire Navy would be extremely concerned with and that very strong action would be in process now to find out exactly what happened and to insure that it won't happen again.

We have heard that so many times it is beginning to have a hollow ring.

This committee is going to have to answer for this before this week is out and there is no easy answer for it. We keep assuring the Members of Congress that the military officials are responsible people, that they are doing a job that they are entrusted with and doing it in a responsible way, but the fact that this submarine sank at her dock, suddenly it gives every indication that we are wrong in what we have been saying. I don't know any way to defend this.

I would hope, Mr. Chairman, that we will go further into this and we will have a complete report on what happened and what is going to be done regarding those who are nominally in charge at the respective levels.

Mr. MAHON. I would like to ask the clerk to place in the record at this point the names and titles of the chain of command here. Of course, the Chief of Naval Operations is the top man in the military part. We must have the name of the Secretary of the Navy, and we need the name of the top military command at this Navy yard. Let's have their names here. They are the people who just must bear or clearly determine the responsibility for this goof. Let's spread it on the record.

(The list referred to follows:)

Hon. John H. Chafee, Secretary of the Navy.
Adm. Thomas H. Moorer, Chief of Naval Operations.
Adm. I. J. Galantin, Chief of Naval Material.
Rear Adm. E. J. Fahy, commander, Naval Ship Systems Command.
Rear Adm. N. Frankenberger, commander, San Francisco Bay Naval Shipyard.

This committee feels that a very searching study must be made of this entire incident which we have been discussing. It shouldn't be a whitewash; we should have all the information that is available. We will pursue this matter further in the committee and through our own investigators, if necessary, but I'd like to call upon the Secretary of Defense, the Secretary of the Navy and others to make sure that we have all the information which is available.

(The Navy provided the following additional statement for the record:)

A Court of Inquiry was convened by the Chief of Naval Material to investigate all the facts and circumstances connected with the sinking and the damage resulting therefrom, including cost of repairs of the submarine and its equipment, and to fix individual responsibility for the incident. Rear Admiral Paul L. Lacy, Jr., was appointed President of the Court, whose investigation commenced on 20 May 1969. After deliberation, the Court shall submit its findings of fact, opinions, and recommendations and will recommend administrative or disciplinary action, as appropriate.

Other Procurement, Navy

Mr. Mahon. This morning we shall consider the "Other Procurement, Navy" appropriation request of $2,022,700,000 in new obligational authority for fiscal year 1970. This request will support a total direct program of $2,356,393,000.

In fiscal year 1969 $2,505,600,000 was appropriated by Congress for this purpose. The current fiscal year 1969 direct program is $2,771,387,000.

Admiral Shifley, the committee is pleased to have you appear again in support of "Other Procurement, Navy," budget request. You may proceed with your statement.

Admiral Shifley. I will submit my biographical sketch for the record.

(The document follows:)

Vice Adm. Ralph L. Shifley, U.S. Navy

Ralph Louis Shifley was born in Mounds, Ill., on October 26, 1910, was graduated from Cario (Ill.) High School, attended the University of Illinois for a year, and entered the U.S. Naval Academy from his native State on June 13, 1929. Graduated and commissioned ensign on June 2, 1933, he was designated naval aviator on November 17, 1937, and attained the rank of vice admiral, USN, on September 1, 1967. He completed the Naval War College course in strategy and tactics in June 1952.

During the period July 1933 to December 1936, he served at sea in the cruisers *Memphis* and *Astoria*, and after flight training at the Naval Air Station, Pensacola, Fla., served in the aviation unit of the cruiser *Savannah*, and subsequently had duty as her senior aviator. At the outbreak of World War II, he was an instructor at the Naval Air Station, Jacksonville, and after his detachment in May 1942, was assigned successively as executive officer of the Naval Air Gunners School, Hollywood, Fla., and as air gunnery training officer on the staff of the Chief of Naval Air Operational Training.

In June 1943 he assumed command of Bombing Squadron 8, and from May to November 1944 was commanding officer of Air Group 8, operating with Admiral Mitscher's Task Forces 38 and 58. For "extraordinary heroism as pilot of a fighter plane and commander, Air Group 8, attached to the U.S.S. *Bunker Hill* . . . in the first battle of the Philippine Sea . . ." he was awarded the Navy Cross. He was four times awarded the Distinguished Flying Cross and three times awarded the Air Medal, and is entitled to the ribbon for the Presidential Unit Citation to the U.S.S. *Bunker Hill*.

During the last 8 months of the war he served as superintendent of aviation training at the Naval Air Station, Jacksonville, and in June 1947 he again went to sea, serving successively as air officer and executive officer of the carrier *Randolph*, as operations officer of the carrier *Leyte*, and as operations officer on the staff of Commander Air Force, Atlantic Fleet. After completing the Naval War College course in June 1952, he was assigned for 2 years to the Office of the Chief of Naval Operations (aircraft programs), then served as deputy chief of staff to the commander 6th Fleet in the Mediterranean.

In August 1956 he reported as commanding officer of he USS *Badoeng Strait*, and in February 1957 returned to the Office of the Chief of Naval Operations, where he served from May of that year until July 1958 as executive assistant

and senior aide to the Chief of Naval Operations. He next commanded the attack aircraft carrier *Franklin D. Roosevelt* and in August 1959, was assigned as assistant director of the Aviation Plans Division, Office of the Chief of Naval Operations.

His selection for the rank of rear admiral was approved by the President in July 1960 and in October of that year he became director of the Aviation Plans Division. He was Commander, Carrier Division 7 from May 1962 until April 1963 when he was assigned to the Office of the Chief of Naval Operations. Two months later, on June 1, 1963, he was assigned to duty with the Chief of Naval Material to assist in the planning for the organization of the Naval Material Support Establishment. Upon its activation in December 1963 he was ordered as Vice Chief of Naval Material with additional duties as Deputy Chief of Naval Material (programs and financial management). In September 1965 he was relieved of his additional duties as Deputy Chief of Naval Material, but continued his primary assignment as vice chief until August 1967. "For exceptionally meritorious service from June 1963 to August 1967 . . ." he was awarded the Legion of Merit.

Promoted to the rank of vice admiral on September 1, 1967, he assumed duties as Deputy Chief of Naval Operations (logistics.)

Decoration and medals include the Navy Cross, Legion of Merit, Distinguished Flying Cross with three gold stars, Air Medal with two gold stars, the Presidential Unit Citation, and various campaign medals and ribbons.

General Statement

Admiral Shifley. Mr. Chairman and members of the committee, I am Vice Adm. Ralph Shifley, Deputy Chief of Naval Operations for Logistics. I welcome this opportunity to once again appear before you to present the fiscal year 1970 "Other procurement, Navy" budget.

I will make the only formal statement on the overall appropriation. However, the systems commanders, bureau chiefs, and project managers or their representatives, are here with me to respond in detail to questions in their specialty areas.

This appropriation funds all major Navy procurements except ships, aircraft, and missiles. Procurements range from quanties of expendable ordnance, weapons systems, electronics and communications equipment to miscellaneous items such as forklift trucks, training devices, and spare and repair parts.

The budget activity structure in this appropriation is the same as that presented in the 1969 submission. The appropriation contains seven budget activities: Budget activity 1 is ships support equipment; 2, communications and electronics equipment; 3, aviation support equipment; 4, ordnance support equipment; 5, civil engineering support equipment; 6, supply support equipment; and 7, personnel and command support equipment.

The initial fiscal year 1970 budget request for the OPN appropriation, as presented in the January President's budget, was for $2 billion 271 million in new obligational authority to support a total direct program of $2 billion 575 million. Mr. Chairman, as you know, the current administration has presented to Congress a budget amendment that revises downward our fiscal year 1970 budget request by $218.3 million and our fiscal year 1969 funding levels by $30.0 million. As I proceed through my statement I will be utilizing these amended amounts to present our fiscal year 1970 request.

The amended budget request for this fiscal year, 1970, is for new obligational authority in the amount of $2 billion 23 million to support a total direct program of $2 billion 356 million. Of this, about $557 million relates to SEASIA operations. This is a decrease of $570 million from 1969 and reflects, in general, anticipated reductions

in activity levels and associated resource expenditure reductions for SEASIA operations.

The program decrease from 1969 is $415 million, significant portions being the communications and electronics equipment of $68 million and ordnance support equipment of $178 million. It is noted that these reductions are computed from the reduced funding levels occasioned by (1) the Revenue and Expenditure Control Act of 1968, (2) necessary fiscal year 1969 SEA program adjustments made during the formulation of the fiscal year 1970 budget requests, and (3) fiscal year 1969 program adjustments contained in the current administration's budget amendment. Throughout this statement, prior year comparisons are made with reference to these reduced funding levels.

Now to highlights of the seven activities in the OPN Appropriation.

BUDGET ACTIVITY 1—SHIPS SUPPORT EQUIPMENT

This activity finances the procurement of major shipboard components such as hull, mechanical and electrical equipment, spares and repair parts, replacement nuclear cores and components, deep submergence equipment, small boats, and industrial production equipment for the naval shipyards. Included also is the ship alteration program.

The total request for this activity in fiscal year 1970 is $540.5 million, a decrease of $10 million from fiscal year 1969. This decrease is the net effect of increases and decreases in several different programs.

The scheduled number and type of nuclear powered ship overhauls and refueling determine the requirements for replacement nuclear cores and components. The fiscal year 1970 request of $98.5 million is $12.5 million lower than the fiscal year 1969 level and is based on the overhaul and refueling schedules for fiscal year 1973 and 1974.

Of primary importance is the procurement of initial and replenishment spare parts to support the major items of equipment financed under this activity. An increase of $23 million is requested for spare part support. This increase will provide greater depth of stock levels and will enable the Navy to greatly improve its supply responsiveness.

The deep submergence program has also fluctuated significantly during the past year. The fiscal year 1969 program has been increased by $14.9 million from lower priority programs to finance procurement of a new, higher priority system. The fiscal year 1970 request is $22.7 million lower than the adjusted fiscal year 1969 level.

The increase of $12.7 million over fiscal year 1969 for other support equipment represents the level of effort required to sustain and augment our planned program of shipyard modernization. Eight naval shipyards are to be updated in the area of machine tools, industrial shop equipment and technical collateral equipment. Also included are funds to replace and improve tools and equipment at ship repair facilities and other activities.

The request for ship alterations is $297.9 million in fiscal year 1970 which is just slightly above the fiscal year 1969 level of $291.6 million. The request represents the minimum funding level considered necessary to meet essential mission requirements.

BUDGET ACTIVITY 2—COMMUNICATIONS AND ELECTRONICS EQUIPMENT

This activity finances the procurement of shipboard electronics equipment for the active fleet. Included are naval tactical data systems, detection and tracking radars, radar repeaters and indicators, electronic countermeasures, automatic carrier landing systems, mine avoidance and other sonars, and shipboard communications equipment. It finances that portion of the program for antisubmarine warfare which extends to surface ships, submarines and special shore activities of the active fleet. It provides equipment essential for detecting, tracking, localizing and classifying submarines.

Communications equipment for the naval communications system, assigned components of the defense communications system, and other selected shore facilities of the Navy are also financed under this activity. This activity provides the equipment necessary to meet most of the Navy's fleet communications requirements. Included also is the procurement of special equipment in support of major shore-based electronic systems such as Casear.

In addition, this activity finances the procurement of cryptographic aids and devices to meet naval communications security requirements and cryptologic equipment necessary for specialized Naval Security Group functions.

The total fiscal year 1970 request of $316.7 million for activity 2 is $67.8 million lower than the fiscal year 1969 program. In part this reduction reflects completion of short-range improvement programs.

The ship electronics equipment program has been increased in fiscal year 1969 to incorporate the $12.3 million Ship Anti-Missile Integrated Defense (SAMID) system. The $108.3 million requested for ship electronics equipment in fiscal year 1970 is funded $17.8 million below the level in fiscal year 1969. This level of funding will permit the continuation of the program to equip fleet ships with effective electronic warfare capabilities.

The decrease from fiscal year 1969 of $17.4 million in the Anti-Submarine Warfare programs reflects the decision to defer or diminish the initial scope of procurement for several ASW electronic systems originally planned for fiscal year 1970. The $41.6 million requested in fiscal year 1970 will provide the support necessary to oppose the current undersea threat and provide new ASW surveillance systems for selected operational areas.

Obligational authority of $166.8 million is requested for electronics support and cryptographic/cryptologic equipment. This is a decrease of $32.6 million from 1969, due primarily to deferral of the special communications program and portions of the shipboard communications equipment program until 1971. The remaining programs are funded at approximately the 1969 level.

BUDGET ACTIVITY 3—AVIATION SUPPORT EQUIPMENT

This activity finances the procurement of all air-delivered weapons required by the Navy and Marine Air Forces, except guided missiles which are funded under the Procurement of Aircraft and Missiles, Navy Appropriation. It also includes general support equipment for aircraft and other weapon systems, air-launched antisubmarine warfare ordnance such as sonobuoys, and air electronic control equipment.

The funds requested in fiscal year 1970 for aviation support equipment total $713 million, or a net decrease of $107 million below the fiscal year 1969 funding level.

Air-launched ordnance and support equipment requirements, including air-launched ammunition, comprise approximately two-thirds of the fiscal year 1970 aviation support equipment budget request. Our ammunition procurement program will provide for Southeast Asia consumption and pipeline requirements, provide a reserve for non-Southeast Asia forces as well as a NATO reserve, and provide for worldwide training requirements. Although the major portion of funds requested in fiscal year 1970 is required for continued production of current high-usage weapons, the estimates do include funds to accelerate production of newer weapons. Among these are the target identification bomb MK–121 and the zero antiaircraft potential weapon.

The fiscal year 1970 estimate for general aircraft and other support equipment is $163.5 million, a reduction of $8.4 million below the fiscal year 1969 program. This reduction is a result of not procuring aircraft matting in fiscal year 1970 due to the current asset position. The matting reduction is partially offset by small increases in other support programs. Two of the more significant support programs included herein are the versatile avionics shop test (VAST) systems and the industrial plant equipment programs. VAST is a major effort toward standardization of test equipment and procedures for complex avionics systems installed in Navy and Marine aircraft. The industrial plant equipment program is required to provide necessary tools for the overhaul and repair of aircraft at shorebased air activities. Other items include various training equipments, a variety of shop and test equipment, catapults and landing aids, and photographic and meteorological equipments. Spares and replenishment items are also budgeted to support the introduction of new weapons systems and to replace worn-out items.

Funds in the amount of $52.2 million are required for expendable sonobuoys, explosive echo ranging charges, and related support equipment. These equipments are used by carrier and land based ASW aircraft for the detection, classification, and localization of submarines. The fiscal year 1970 request represents a net increase of $17.9 million over the fiscal year 1969 level. This increase is attributed primarily to augmented procurement of a more sophisticated sonobuoy required to obtain the increased effectiveness we seek in all ASW aircraft.

The funds requested in the fiscal year 1970 air electronics control equipment budget total $21.4 million, or a decrease of $9.4 million from the fiscal year 1969 funding level. Primarily, the net decrease of $9.4 million reflects the transfer of $4.8 million of ground electronic equipment installation costs to the operation and maintenance appropriation. The remaining $4.6 million represents a reduction in a variety of other electronic support equipment programs. Funds in the fiscal year 1970 request provide $5.8 million for weapons range support equipment, $5.2 million for telemetry conversion equipment, 3.7 million for UHF transmitters and transceivers, $2.9 million for the all-weather carrier landing system, and $3.8 million for all miscellaneous electronic equipment.

BUDGET ACTIVITY 4—ORDNANCE SUPPORT EQUIPMENT

This activity provides for the procurement of all expendable ordnance used by the Naval Forces except for guided missiles and air-launched munitions. Included are ship gun replacements, small arms, and the ammunition required for this wide range of weapons. Also included are mines, torpedoes and other explosive devices. In addition, this activity budget for all weapon systems (including guided missile systems) for active fleet shipboard installations. It does not budget for the weapon systems scheduled for installation in new construction ships or ships undergoing major conversions. Weapon systems and equipment required for training activities and engineering or manufacturing tests are also included. Various production and logistic support material such as spare parts, manufacturing facilities, training aids, and training devices are included in this activity.

The fiscal year 1970 request for ordnance support equipment is for $620.8 million. This is $177.6 million less than the fiscal year 1969 program of $798.4 million. This decrease is attributed principally to the decrease in planned expenditures of ship gun ammunition in Southeast Asia. Since the Navy inventory objectives for ship gun ammunition programs will be attained with fiscal year 1969 funding, this request provides primarily for replacement of worldwide consumption. As a result of the reduction in the fiscal year 1970 ammunition program, it is planned to stretch out the fiscal year 1969 approved production program into the fiscal year 1970 production year. The advantage of this plan will be to maintain at the lowest possible level the hot production base developed during the SEA buildup. This will provide the ammunition production mobilization base required to reach, in 6 months, previous SEA production levels attained during fiscal year 1969.

Even though it is anticipated that the wear and tear on the gun systems will be much lower in calendar year 1969 than in 1968, we are continuing the systematic program of restoration and modernization of ship gun systems at a cost of $17.9 million in fiscal year 1969 and $21.9 million in fiscal year 1970. This is being done to correct deficiencies in performance, reliability, and maintainability, brought about by advancing age and sustained combat usage during the last 2 years of the war. This program will continue until all ship gun systems have been restored to acceptable performance standards.

The fiscal year 1970 request of $29.1 million for the mine program reflects a reduction of $29.8 million from the current fiscal year 1969 program. The major portion of this reduction was realized by terminating procurement of the MK–75 destructor. This action stemmed from a reduction in SEA requirements for that device. The fiscal year 1970 budget requests $17.9 million to continue the multiyear contract for the MK–56 mines.

The fiscal year 1970 request for surface missile system (SMS) support is $37.3 million. This is a decrease of $17.8 million from the fiscal year 1969 program. This request includes $23.7 million to procure alteration material for the improvement of missile systems available, reliability, performance, and maintainability. Currently, there are 80 operating ships with installed Terrier, Tartar, and Talos weapon systems.

The decrease of $17.8 million from the fiscal year 1969 program results from the decision to forgo budgeting for additional basic point defense surface missile systems. The fiscal year 1969 program of $20.8 million will add 45 systems to prior procurement for a total of 74 systems. Future procurement will shift to the improved point defense systems.

A sum of $5.7 million is required for procurement of SMS shipboard telemetry equipment. These equipments provide for conversion from the present VHF radio communication band to the UHF band in accordance with an international telecommunications agreement; $3 million is requested to provide maintenance training material, services, and equipment required to train naval personnel in the maintenance and operation of surface missile systems. The remaining $4.9 million is for procurement of stabilization equipment for the ships antimissile integrated defense system, and for the procurement of AVR type surface target boats to provide KOMAR configured surface targets in support of fleet training requirements.

The fiscal year 1970 ASW program request for "Budget activity 4," of $225 million reflects an increase of $100 million over the fiscal year 1969 budget. The inclusion of the torpedo MK 48 program in the budget for $110 million is the primary reason for this increase. Initiation of production with funds provided in fiscal year 1968 was deferred, and the program rephased to permit more time for successful completion of a comprehensive inwater test program and demonstration of performance-capability requirements. These tests are now being conducted and are scheduled for completion in 1969. Initiation of production following successful completion of the tests will permit the first large procurement of the torpedo MK 48 to be scheduled as an integral part of the fiscal year 1970 ASW budget.

The FBM portion of this request, including spares and repair parts, amounts to $69.9 million in fiscal year 1970. This is a decrease of $22.4 million from fiscal year 1969. The reduction reflects the procurement of Poseidon training equipment in fiscal year 1969.

BUDGET ACTIVITY 5—CIVIL ENGINEERING SUPPORT EQUIPMENT

This account funds passenger carrying vehicles, general and special purpose automotive equipment, construction and weight handling equipment, and other specialized types of equipment for the Navy general purpose forces. The other specialized equipment includes amphibious vehicles, combat construction support equipment, NBC warfare defense equipment, fleet mooring, and mobile utility support equipment.

The fiscal year 1970 request of $121.3 million for civil engineering support equipment is $41.4 million less than fiscal year 1969 due primarily to one-time Southeast Asia procurement, accomplished in fiscal year 1969. This one-time procurement provided for the first combat tactical zone in Vietnam a generator pool, tanker moorings, matting, tactical support material, and desalinization barges. Included in the fiscal year 1970 request is $57.6 million directly related to procurement of support equipment for Southeast Asia. The remaining $63.7 million provides for non-SEA equipment procurement or replacement requirements.

BUDGET ACTIVITY 6—SUPPLY SUPPORT EQUIPMENT

This activity finances the procurement of material handling equipment at Navy installations and certain self-propelled equipments used aboard ships. It also finances automated material handling systems for rapid movement of supplies at supply distribution centers, investment type support equipment, and clothing for protection against nuclear contamination and chemical and biological agents.

The funds requested for fiscal year 1970 amount to $12.9 million. This reflects a net decrease of $1.7 million from the fiscal year 1969 funding level, and in general reflects deferred procurement of automated material handling systems.

BUDGET ACTIVITY 7—PERSONNEL AND COMMAND SUPPORT EQUIPMENT

A total of $31.2 million in new obligational authority is requested for personnel and command support equipment in fiscal year 1970, a decrease of $9.3 million.

In the personnel support segment of the activity, $9.7 million is requested for procurement of training aids and devices and general support equipments for the Regular Navy and Naval Reserve training program. It includes provisions for the antisubmarine warfare, antiair warfare, submarine, and other training support programs.

The $21.5 million for the command segment of this activity will procure necessary replacement material for Bureau of Medicine and Surgery and provide equipment for the hydrographic and oceanographic survey programs of the Oceanographer of the Navy. It will also provide intelligence collection equipment and nontechnical collateral equipment for the operating forces and their support activities.

CONCLUSION

Mr. Chairman, two key factors which form the basis of our 1970 program are essentially the same as they were for our 1969 program. These factors are:

First, the levels of stocks to be maintained are influenced by the hot production base which exists today. This permits funding principally for anticipated consumption and pipeline requirements.

Second, items for modernization or replacement of present equipments have been held to a minimum or deferred.

Mr. Chairman, this concludes my formal statement.

Mr. MAHON. Thank you very much, Admiral.

Mr. Sikes has a question.

Mr. SIKES. Thank you, Mr. Chairman.

REASON FOR HAVING U.S.S. "NEW JERSEY" OFF KOREA

Admiral, this is not a question which should properly be addressed to you but possibly you can throw some light on the subject.

The press accounts of the complement of the ships making up the task force for the protection of intelligence missions off North Korea includes the *New Jersey*. I don't know whether the *New Jersey* actually was dispatched with the ships that for a time were on duty

in the area or not, but as a very high ranking and very able naval officer, why would the *New Jersey* be made a part of such a task force?

Admiral SHIFLEY. Mr. Sikes, the *New Jersey* never joined up with the forces in close proximity to Korea. The forces were in the Sea of Japan and later shifted around then to the Yellow Sea. The *New Jersey*, which was preparing to return to the U.S. was held to be in the area to the south of Japan. I would say she was delayed there to be available to respond to take care of any contingency that might arise, sir.

Mr. SIKES. It seems in a case of that kind the *New Jersey* would have to be taken care of. She has no antiaircraft capability. She certainly wouldn't be needed against the type of ship that seized the *Pueblo*. She would be an extremely inviting target. I still wonder about the logic of including this inviting target on a mission to which she could contribute nothing short of punitive action against the North Korean mainland itself.

Admiral SHIFLEY. The *New Jersey* would be useful, Mr. Sikes, in two areas. First, she is without parallel in her ability to bombard shore targets, if such were called for. She also, of course, would provide a very fine capability to sink other ships at sea.

Insofar as her protection is concerned, if she had joined up with the ships in the Sea of Japan, she would not have contributed significantly, if at all, to the antiair defenses of that task group. On the other hand, I think it would be fair to say that the mere fact that she was with the task group would not require any additional defenses for the task group.

Mr. SIKES. Where is the *New Jersey* now? We have investigated a great deal in the recommissioning of the *New Jersey* and presumably, from the standpoint of cost, we can't say that we got very much to show for it. She did some bombardment of the Vietnamese coast, which could have been done a lot of other ways for much less money.

Admiral SHIFLEY. She is in Long Beach at the present time, sir. She has returned from the Western Pacific as she has completed her tour in Southeast Asia——

Mr. SIKES. How long was she there, 6 months?

Admiral SHIFLEY. She was there about 6 months, yes, sir.

Mr. SIKES. For $40 million we got 6 months' use in Vietnamese waters.

Admiral SHIFLEY. That was her first tour in Southeast Asia and she is scheduled for additional deployment to Southeast Asia. I might say that she was very popular with the forces ashore, particularly the Marines there, because of the gunfire support that she provided to them.

Mr. SIKES. All right. That isn't the subject of this hearing.

NET EXPENDITURES BY BUDGET ACTIVITY

I would like to have provided for the record, for the other procurement appropriation, a breakdown of the estimated expenditures in fiscal 1970 by budget activity showing for each activity the estimated expenditures from fiscal 1970 appropriations and those for each of the prior year programs.

(The information follows:)

DEPARTMENT OF THE NAVY FISCAL YEAR 1970 AMENDED NET EXPENDITURES, BY PROGRAM YEAR AND BUDGET ACTIVITY—OTHER PROCUREMENT, NAVY

[In millions of dollars]

Budget activity	Total	Program year		
		1970	1969	1968 and prior years
(1)	(2)	(3)	(4)	(5)
Ships support equipment	502.8	228.2	174.6	100.0
Communications and electronic equipment	360.0	32.8	197.0	130.2
Aviation support equipment	742.2	229.4	351.9	160.9
Ordnance support equipment	670.0	142.8	330.5	196.7
Civil engineering support equipment	161.0	34.8	103.5	22.7
Supply support equipment	17.6	2.3	6.8	8.5
Personnel and command support equipment	45.2	9.8	19.4	16.0
Total other procurement, Navy	2,498.8	680.1	1,183.7	635.0

SAVINGS RESULTING FROM CUTBACK IN 1969 PROGRAMS

Mr. SIKES. The justifications indicate that the fiscal year 1970 direct budget plan will be financed in part through $123,693,000 carried forward from the fiscal year 1969 program. Where did you obtain these funds?

Admiral GADDIS. The $123.7 million, sir, results from a number of plus and minus adjustments in the account during 1969. Basically it represents a net of $68.2 million reduction as a result of project 693 reductions. A reprograming——

Mr. SIKES. Did the Congress over-appropriate to this extent or was this the result of the required reductions later enacted by Congress, or was it the result of a shift in Navy programing?

Admiral GADDIS. This represented reductions beyond those addressed by the Congress, Mr. Sikes. In order to achieve the expenditure targets under 90-364.

The sum of $25.5 million become available as a result of additional reprogramings and review of the 1969 budget during the 1970 budget review season and the final $30 million results from a reduction in the current budget amendment reducing the ship gun ammunition buy in 1969. Those three items add up to $123.7 million.

Mr. SIKES. How was it determined in what areas these reductions could be made? Who determined it? Was it a Navy-initiated determination or was it a directed determination from OSD?

Admiral GADDIS. OSD provided the Navy a target for expenditure reductions, sir, from the 1969 program. It was the Navy's determination as to which specific programs and the division of those programs between appropriations as to how that target would be achieved. These OPN reductions resulted from that decision. They constitute a large number of line items which we could provide for the record if you so desire.

Mr. SIKES. Are these activities in areas where additional funding will later be required to make up for the reduction?

POSSIBLE FUTURE FUND REQUIREMENTS RESULTING FROM 1969 CUTS

Admiral GADDIS. I would expect it is probable that in a large number of funded programs, that some of them will require replacement in later years, because the justification for some of the reductions was that these programs were not ready for obligation in 1969, sir. Other programs were direct reductions.

Mr. SIKES. Would you provide for the record a listing of some of those which appear most likely to require additional funding at a later date?

Admiral GADDIS. We will do so.

(The information follows:)

PUBLIC LAW 90-364 EXPENDITURE REDUCTION IN OTHER PROCUREMENT, NAVY WHICH WILL MOST LIKELY REQUIRE ADDITIONAL FUNDING IN LATER YEARS

[Dollar amounts in millions]

Computer (lease versus purchase)	−$13.7	When economically feasible computer procurements will be made on a case-by-case basis in later years.
Deferred ship overhauls	−3.0	These funds are those related to planned alterations during a later overhaul.
NR-1 equipments	−2.9	Fund available due to slip in delivery of ship.
Submarine batteries	−3.0	This is a one time reduction related to a reduction in the safety level carried in stock.
Catapult track covers	−2.6	Revised CVA overhaul skid schedule allowed for this one time reduction in procurements.
Small boats	−3.7	This is a one time savings resulting from reduced inv. levels.
Shipyard modernization	−4.0	Program rephased to produce reduction.
AN/SPN-41	−2.8	Fiscal year 1969 program for ground all-weather carrier landing system monitor rephased.
Industrial plan equipment	−3.9	NARF modernization program rephased.
Training device X14AG	−1.1	Program deferred due to requirement for further development.
Total probably requiring additional funding in later years.	40.7	
Total Public Law 90-364 reduction	246.2	

Mr. SIKES. During fiscal 1969, $12,280,000 was transferred to OPN from other accounts. Would you give us the source of these funds?

Admiral GADDIS. Those funds originated from the 1968 emergency Southeast Asia fund, sir. It was a reprograming from the Southeast Asia emergency fund to this appropriation in support of the ships anti-missile Integrated Defense program.

Mr. SIKES Would this funding require replacements or additions at a later date?

Admiral GADDIS. No, sir.

UNOBLIGATED BALANCES OF FUNDS

Mr. SIKES. The committee notes you are making progress each year in reducing unobligated balances and the committee is very pleased to see this accomplishment. However, the unobligated balances for reimbursable programs remain relatively high each year. Why is that, and what is the problem in obligating these funds in a timely manner?

Admiral GADDIS. The principal source of reimbursable program in this account is two. First is the military assistance program and second is the procurement by Navy as the executive agent of a large proportion of the principal aviation ordnance for other services in response to Southeast Asia.

This program is done on MIPR for Army and Air Force. It constitutes a requirement on the administrator to procure, sequentially, the

components for this ordnance equipment, then manage the loading of this ammunition and finally the assembly and delivery.

The process by which this is done is time consuming and our ability to maintain our obligation schedule depends on the availability of money. Therefore, it is an item over which we do not have the kind of control we would, were it our own.

Mr. SIKES. Please submit for the record a tabulation showing (a) the unobligated balances as of the last reporting date by budget activity and by fiscal year; and (b) the estimated unobligated balances at the end of fiscal years 1969 and 1970 by budget activity.

(The information follows:)

UNOBLIGATED BALANCES

[Dollars in thousands]

	Actual Mar. 31, 1969	Estimated June 30, 1969	Estimated June 30, 1970
B.A.:			
1. Ships support equipment	171,506	14,966	17,626
2. Communications and electric equipment	243,399	35,076	33,876
3. Aviation support equipment	436,600	166,500	173,500
4. Ordnance support equipment	383,324	156,544	99,555
5. Civil emergency support equipment	75,549	17,038	13,939
6. Supply support equipment	13,616	1,477	896
7. Personnel and communications support equipment	44,766	6,466	4,241
Subtotal direct	1,368,760	398,067	343,363
Reimbursable	329,661	245,860	190,599
Subtotal	1,698,421	643,927	534,232
Carry forward	123,693	123,693	
Total other procurement, Navy	1,822,114	767,620	534,232

COMPETITIVE PROCUREMENT

Mr. SIKES. Please insert in the record a list of items in the Other Procurement, Navy, appropriation, by budget activity, which are to be procured in fiscal year 1970 on a sole-source basis, stating the reason therefor, and whether the Navy plans competitive procurement at a later date.

(The information follows:)

OTHER PROCUREMENT, NAVY—PROBABLE SOLE-SOURCE PROCUREMENTS, FISCAL YEAR 1970

P-1 line number	Nomenclature	Manufacturer	Reason	Date competitive procurement anticipated
	Budget activity 1, ships support equipment:			
3	SSBN improvements (spray-type switchboard panel mod kits).	ITE circuit breaker Co	Mod kits must be compatible with basic equipment	No future procurement planned.
32	SINS systems	Sperry Corp	Only supplier of MK III SINS	Do.
42	Other training (oxygen generators)	Treadwell, Corp	Training equipment should be similar to equipment installed on ships	Do.
63	Support ship equipment	Lockheed Missiles & Space Corp. and MIT.	It is equipment associated with DSRV	No future procurement planned.
64	Salvage equipment	Westinghouse	Equipment designed and tested by Sealab and is the only type available to work with this system.	Do.
66	NR-1	Sperry Rand Corp	Contract must be awarded to system contractor who produced original equipment	Do.
67	Technical sensor collection	Westinghouse	Classified program. Only 1 source has produced this type of equipment	Not known.
79	River patrol boat	Uniflite Corp	Urgent operational requirements dictate sole-source buy at this time	Future procurements will be considered for competitive award as military considerations warrant.
	Budget activity 2, communications and electronic equipment:			
2	NTDS	Hughes Aircraft Co., Collins Radio, Univac Corp., Electronic Comm. Co.	Training requirements which must be similar to shipboard installation	Partially in fiscal year 1971.
18	Telemetry receiver (ivy green)	F. & M. Systems Co	Urgent operational requirements dictate sole-source buy at this time	Fiscal year 1971.
20	AN-4530/ULQ-6A	RCA	do	Not known.
25	AN/WLR-6 (SSEP)	Sylvania	Sylvania only source capable of delivering required equipment	No future procurement planned.
26	O-1331/ULQ-6A	RCA	Urgent operational requirements dictate sole-source buy at this time	Not known.
27	AN/BLA-4	Sylvania	do	No future procurement planned.
33	AN/SLR-13	Scope, Inc	do	Do.
39	Shortstop	ITT	do	Not known.
40	Seesaw II	Magnavox	do	No future procurement planned.
41	Threat surveillance receiver system:			
	a. AN/SLR-14	American Electronics Laboratory	do	Do.
	b. IFM receiver	Blass Antenna Electronic Corp	do	Not known.
42	AN/ULQ-6 threat reactor system:			
	a. Recognizer programer	American Electronics Laboratory	do	No future procurement planned.
	b. AN/ULQ-6 antenna	RCA	do	Do.
	c. AN/ULQ-6	RCA	do	Do.
46	AN/SPN digitized solid state conversion kits.	Bell Aerosystems	Lack of technical data for competitive award	Do.

54	AN/SQS-26 improvements	EDO Corp. and General Electric	The prime contractors of the basic equipment are the only technically qualified sources.	Not known.
55	AN/SQS-26 rubber acoustic window	B. F. Goodrich	Delivery can only be met by the development contractor	Do.
58	Expendable BT's (submarine)	SIPPICAN (Francis Associates)	SIPPICAN parent corporation (Francis Associates) developed this equipment using its own resources and holds patent rights.	Fiscal year 1972.
64	SSBN Tophat sonar	Raytheon	Raytheon only company that has adequate technical knowledge to meet required delivery schedule.	Not known.
65	AN/BQR-15 towed array	Western Electric Co	Delivery can only be met by development contractor	Fiscal year 1971.
67	AN/BQQ-1 Ret III	Raytheon	There is no technical data package available for competitive procurement	Not known.
73	Caesar:			
	a. Engineering service	Western Electric	Specialized Caesar experience and abilities, developed at Government expense, do not exist elsewhere in industry.	Do.
	b. Station electronics	do	No other company has experience or special knowhow to meet the requirements	Do.
	c. Submarine coax cable	Simplex Wire & Cable Co	No other manufacturer exists	Do.
	d. Underwater hardware	Western Electric	No other manufacturer with capabilities to manufacture. Also contains proprietary hardware.	Do.
	e. Data processor	Control Data Corp	Second increment purchase. Initial procurement was competitive	No future procurements planned.
87	SG-801 ( )/URC	Hewlett-Packard	Lack of technical data package for competitive award	Fiscal year 1971.
100	AN/FGC-100	Teletype Corp	Teletype Corp. has proprietary rights	Not known.
108	Pacific Missile Range	do	do	Do.
113	Low-level mod kits	do	do	Do.
151	AN/FLR-11 on line	RCA	Sole source required because of technical knowhow, security considerations and limited time required to meet operational schedules.	No future procurement planned.
152	AN/FLR-11 off line	do	do	Do.
157	AN/GYK-3	Burroughs Corp	do	Do.
159	AN/UYK-3	Bunker-Ramo	do	Do.
	Budget activity 3, aviation support equipment:			
18	Rockeye II:			
	a. Dispensers and bomblets	Honeywell, Inc	Honeywell is the only producer with the technical knowledge and production capabilities necessary to meet delivery requirements.	Competition will be initiated when quantity requirements justify second source tooling.
	b. Bomblet fuzes	do	do	Do.
	c. MK 399 mod 0 mechanical fuzes.	General Time Corp	General Time is the only producer with the technical knowledge necessary to meet delivery requirements.	Do.
48	AN/SPN-42T1 all-weather carrier landing system.	Bell Aerosystems Co	Bell is the only producer with the technical knowledge necessary to meet delivery requirements.	Not planned.
85	MD-3 carrier tractors	International Harvester Co., Frank G. Hough Division.	International Harvester designed and developed this item and holds proprietary rights over the design. Successor model planned for development with 1970 R. & D. funds.	Development/procurement will be completed.
93	Versatile avionics shop and test equipment.	PRD Electronics, Inc	PRD Electronics designed and developed this item and suitable technical data will not be available for competitive award until November 1970.	Fiscal year 1972.

OTHER PROCUREMENT, NAVY—PROBABLE SOLE-SOURCE PROCUREMENTS, FISCAL YEAR 1970—Continued

P-1 line number	Nomenclature	Manufacturer	Reason	Date competitive procurement anticipated
109	Photographic equipment and supplies:			
	a. EN-6 contact printer	Miller-Holzwarth, Inc	All EN-6 color printers now in Navy use are of M-L design and manufacture. Introduction of equipment from a different manufacturer would create serious logistics problems.	Not planned.
	b. EH-73 aerial color processor.	Eastman Kodak Co	Eastman Kodak is the only producer with the technical knowledge necessary to meet delivery requirements.	Do.
	c. Ground combat camera, motion picture.	Mitchell Camera group	Mitchel Camera is the only known American source for this type of equipment	Do.
120	Rewson: IOIC changes and updates.	North American Rockwell, Inc	North American Rockwell is the prime supplier and the only one capable of handling the changes and updates to the integrated operational intelligence centers.	Do.
	Budget activity 4, ordnance support equipment:			
25	Surface gun system fire control equipment.	Ford Instrument	Equipment to be modified is designed by the contractor who is the best qualified and most reliable.	Fiscal year 1971.
26	ORDALT material, surface gun systems.	Dynell Electronics Corp	The producer is the design agent of both the basic radar signal processing equipment and modification of side lobe blanking.	Do.
27	ORDALT material fire control switchboards.	I.T.E. Imperial Corp	The developer is the design agent and only producer of the equipment	Do.
41	ORDALT material, SMS	Sperry Univac	The TARTAR digital computer MK 152, Mod 1 is procured from Sperry Univac because they are the only producer who can meet, without substantial redesign, the requirements of the MIL-E-16400 design logistics of the naval tactical data system interface compatability, computations and quality of available input/output (I/O) channels.	Do.[1]
41	do	Raytheon	Only Raytheon, the designer and sole producer of the AN/SPG-51 series radar, and the design agent for the MK-74 fire control system, is considered to be properly qualified to be the manufacturer of the signal data converter MK-72, Mod 0.	Do.[1]
49	Torpedo MK-48	Westinghouse	Westinghouse Electric Corp. is the sole producer and development contractor for the torpedo MK-48. Documentation suitable for competitive procurement will be available in February 1971.	Fiscal year 1972.
53	Mobile target MK-27	do	Westinghouse is developing this special target concurrent with the torpedo MK-48 development. Documentation suitable for competitive procurement will be available in February 1971.	Fiscal year 1972.
54	Mobile target MK-30	Northrup	Procurement of this item is scheduled for fiscal year 1970 only and is sole source because of inadequate documentation.	No plan.
57	Torpedo MK-48 fire control and launcher.	Librascope	Librascope is the sole developer and manufacturer of all modification kits procured by the Navy for MK-48 application. Sole-source procurement is required because of the complexity of the equipment, the rigid reliability requirements and the necessity for standardization and interchangeability of parts	Do.
62	Torpedo MK-48 fire control training equipment.	do	do	Do.[1]

76	Spares and repair parts, initial replenishment	Lockheed Missiles & Space Corp.; Sperry Rand Corp.; Westinghouse; General Electric Corp.; Interstate Electronics Corp.	These manufacturers are the designers, developers, and producers of the FBM subsystems. They possess unique technical capabilities to produce, assemble, and ship spare and repair parts required to attain and maintain supply effectiveness. The cost of qualifying competitive sources is high compared to the procurement value.	Not known.
78	Initial training	General Electric Corp.; Sperry Rand Corp.	Equipment for training is procured in the same configuration as the tactical equipment installed on SSBN's. To assure realistic training the equipment must be procured from the same sources that are engaged in the design, development and manufacture of Poseidon tactical hardware, in order to meet CNO-approved RFT (ready-for-training) dates. GE and Sperry are the only sources with technical knowledge. Complete design disclosure packages were not procured because of high cost.	Do.
79	Refresher training	General Electric Corp.; Sperry Rand Corp.; Westinghouse; Lockheed Missille & Space Corp.	Installation and checkout of tactical training equipment must be accomplished by the producers of the hardware. No other contractors have the specialized technical knowledge.	Do.
80	Training equipment alterations	do	Alterations to training equipments must be accomplished by the hardware manufacturers. No other firms have the specialized technical know-how.	Do.
81	598 class overhaul	Sperry Rand Corp; General Electric Corp.; Westinghouse; Loakheed Missiles & Space Corp.	These equipment producers are the only sources with the depth of specialized technical knowledge required to meet overhaul schedules within shipyard availability dates.	Do.
82	608 class overhaul	General Electric Corp	GE is the only source with specialized technical knowledge required for the advance preparation for installation of the fire control subsystem for the 608 class SSBN.	Do.
83	Test instrumentation equipment	Interstate Electronics Corp	IEC is the designer, developer, and producer of the test instrumentation equipment, and is the only capable source. Complete design disclosure packages were not procured because of high costs.	Not known.
84	Alteration equipment	Sperry Rand Corp; General Electric Corp; Lockheed Missile & Space Corp; Westinghouse.	These are the designers, developers, and producers of FBM susbsystem equipments; they are the only sources with the specialized technical knowledge required to design, produce, and install these alterations.	Do.
85	Maintenance and support equipment.	Lockheed Missile & Space Corp; General Electric Corp; Sperry Rand Corp; Westinghouse.	As designers, developers, and producers of the FBM subsystem, these manufacturers are the only sources of the specialized technical knowledge necessary to accurately and rapidly diagnose and repair subsystem equipment.	Do.
86	Test and training equipment	Westinghouse; Lockheed Missile & Space Corp.	These corporations are the designers, developers, and manufacturers of the material expended during tests and training. They are the only sources with the technical knowledge required to produce the equipment.	Do.
	Budget activity 5, civil engineering support equipment:			
71	Items under $500,000 each (Deep Freeze):			
	a. Flammable store building	H. H. Robertson	Only company interested in bidding, thus has developed into sole source; each year some buildings are put on bid with same results.	Do.[1]
	b. Commercial transportation building.	do	do	Do.
	c. Utilities/grounds maintenance buildings.	do	do	Do.
	d. Geodesic dome	Temcor Inc	Only company with capability to produce dome to rigid specs necessary	Do.
	e. D-8 tractor	Caterpillar Co	Standardization on equipment and spares necessary to simplify operation and maintenance.	Do.
	f. D-4 tractor	do	do	Do.
	g. D330A generator	do	do	Do.
	h. D333 engine	do	do	Do.
	i. Transmission	do	do	Do.
	j. Prime mover	Kelsey Hayes	do	Do.

OTHER PROCUREMENT, NAVY—PROBABLE SOLE-SOURCE PROCUREMENTS, FISCAL YEAR 1970—Continued

P-1 line number	Nomenclature	Manufacturer	Reason	Date competitive procurement anticipated
123	Mobile utility support equipment: 1,500-kw. diesel driven power plant.	A. G. Schoonmaker, Inc.	Equipment to be utilized in SEA and in order to provide logistics support standardization of types required.	Fiscal year 1971.
124	Specialized equipment:			
	(a) Automatic telephone switching equipment.	Automatic Electric Co.	Equipment from other suppliers is not interchangeable with existing equipment bays or racks.	Not known.
	(b) Voice frequency amplifiers and signal units.	Lenhurt Electric Co.	do.	Do.
3	Budget activity 6, supply support equipment: Forklift trucks.	Clark Equipment Co.	To assure standardization and interchangeability of parts on equipment used in research operations at advanced naval bases in Antarctica.	Fiscal year 1970.
	Budget activity 7, personnel and command support equipment:			
1	Periscope system for SSN/SSBN attack center.	Austin Electronics.	Austin has developed the only operable periscope simulator; therefore, it is most practical that they provide this system.	Additional periscope systems, when required, could possibly be awarded competitively if other manufacturers develop capability.
7	AN/SQS-26 sonar capability for developing 14A2 series trainer.	Honeywell.	Since Honeywell built the basic device 14A2, they possess the documentation necessary to interface the AN/SQS-26 sonar with the 14A2.	Possible that future procurements may be competitive if other manufacturers develop capability.
8	Developing X14A6, coordinated ASW tactics trainer (configuration revision).	Lockheed Electronics.	The vast X14A6 complex was constructed by Lockheed and they are the only manufacturer who could make the configuration revision.	(4).
26	Intelligence Command support equipment items less than $500,000 each.	Various.	(3).	(4).

[1] This is the only manufacturer with the required specialized knowledge and technical capability since he originally produced the prime equipment.
[2] The construction program will continue at approximately the same level through fiscal year 1974 and the equipment program as long as Navy has the responsibility for logistic support in Antarctia.
[3] Approximately 50 percent of the $5,200,000 requested for this line item will be used in sole-source procurement. The items to be procured are of a scientific and technical nature produced by various manufacturers. The reasons for sole-source procurement are one-of-a-kind systems previously developed by source, research, and development cycle involving only source of manufacturer, and add-on item to existing equipment made by same manufacturer to insure compatibility.
[4] Not available.

Mr. SIKES. What percentage of the items, funded under this appropriation account and having a value of $10,000 or more, are procured on a competitive basis?

(The matter referred to follows:)

Statistics on Navy contracts are not compiled by appropriation. However, it is estimated that the extent of competition in the "Other procurement, Navy" appropriation compares favorably with overall Navy contract statistics. The percent of total Navy contracts (dollar value) of $10,000 or more awarded competitively for fiscal years 1963-68 follows:

Fiscal year:	*Percent*
1963	33.2
1964	31.1
1965	37.1
1966	33.3
1967	30.4
1968	28.6

TYPES OF CONTRACTS

Mr. SIKES. Based on the DD form 350, how many contracts were awarded in fiscal year 1968 for all OPN procurement, and what was the value of these contracts?

(The information follows:)

The DD form 350 is used to report data on procurement actions of $10,000 or more processed by Navy contracting offices. The DD form 350 report does not identify the contract funding source by appropriation or identify contracts executed by Navy for other DOD components. Consequently, information on contracts classified by appropriation cannot be obtained from DD form 350 reports. Therefore, responses to certain of the questions on "Other procurement, Navy" contracts must reflect data on total contracts processed regardless of appropriation or DOD component. The alternative to reporting data on all contracts processed would be the manual compilation of the requested data from approximately 45,000 contractual documents, located at various Navy contracting offices.

In fiscal year 1968 there were 45,797 contractual actions (new contracts plus contract amendments) of $10,000 or more totaling $12 billion processed by Navy contracting offices.

Mr. SIKES. How many letter contracts were awarded in fiscal year 1968 and what was the total value of these letter contracts?

(The matter referred to follows:)

During fiscal year 1968 there were 371 letter contracts issued by Navy. The total dollars obligated under letter contracts during fiscal year 1968 was $3,725,893,000. This amount includes funds obligated during 1968 under existing letter contracts issued prior to fiscal year 1968.

"Other procurement, Navy" fiscal year 1968 letter contract awards (91 contracts) with a value of $296,900,000 are included in the above total.

Mr. SIKES. How many fixed price contracts were awarded sole source in fiscal year 1968 in number and value, and how does this compare with the number and value of fixed price contracts awarded as a result of competition?

(The matter referred to follows:)

Information on total procurement actions processed by Navy contracting offices is reported because statistics on contractual actions are not compiled by appropriation.

In fiscal year 1968 there were 17,455 firm fixed price contractual actions (new contracts plus contract modifications) totaling $3,738,597,000 in which only one source was solicited. This included 459 actions totaling $94,962,000 classified as follow-on awards to contracts previously based on price competition. It also included 890 actions totaling $1,102,056,000 classified as follow-on awards to contracts previously based on design or technical competition.

During fiscal year 1968 there were 17,451 contractual actions (new contracts plus contract modifications) totaling $2,884,881,000 which were awarded as price or design or technical competitive.

Mr. SIKES. How many cost-plus-fixed-fee contracts were awarded in fiscal year 1968 in number and value?

(The matter referred to follows:)

Information on total procurement actions processed by Navy contracting offices is reported because statistics on contractual actions are not compiled by appropriation.

In fiscal year 1968 there were 3,363 contractual actions (new contracts plus contract modifications) awarded on the basis of cost-plus-fixed fee for a total of $852 million.

Additionally, in fiscal year 1968 there were 135 contractual actions (new contracts plus contract modifications) awarded on the basis of cost-plus-award fee for a total of $333 million.

Mr. SIKES. Based on procurement contracts of $10,000 or more in value, what has been the trend in the percentage of awards on a competitive basis for the past 7 fiscal years?

(The matter referred to follows:)

Information on total procurement actions processed by Navy contracting offices is reported because statistics on contractual actions are not compiled by appropriation.

For the past 6 fiscal years the percentage of competitive awards over $10,000 has been as follows:

Fiscal year:	*Percent*
1963	33.2
1964	31.1
1965	37.1
1966	33.3
1967	30.4
1968	28.6

NOTE.—Data for fiscal year 1962 is not available.

Mr. SIKES. How many contract modifications were awarded in fiscal year 1968 and what was the total value of these modifications?

(The matter referred to follows:)

Information on total procurement actions processed by Navy contracting offices is reported because statistics on contractual actions are not compiled by appropriation.

In fiscal year 1968 there were 13,340 contract modifications for a net total of $4,932,197,000. This amount includes additional procurements of end items accomplished by modifications to existing contracts.

RECOUPMENTS

Mr. SIKES. The recoupment objective for 1968 was $160 million. In fiscal year 1969 it was $200 million. Were you able to meet these goals?

Admiral GADDIS. The 1968 recoupment was met, sir, but not completely out of prior year programs. Approximately $80 million was met from prior year programs and the balance was met by cancellation of fiscal 1968 programs. The fiscal 1969 recoupment, which is due by the end of this fiscal year, has not been achieved as yet. I would note, sir, that we have achieved some $59 million of the required amount from prior year funds. We anticipate the possibility of another $50 million by the end of the year. This, unfortunately, leaves about $100 million to be made up by program cancellation if we cannot achieve it in any other way.

Mr. SIKES. Do you expect to do this, to cancel programs in order to make this objective?

Admiral GADDIS. We will avoid it if at all possible, but it requires program cancellation if we can find no other way.

Mr. SIKES. It appears you are very far removed from accomplishing the desired figure. You have a little more than a month to go.

Admiral GADDIS. Our problem, sir, is that we have had so many downward program adjustments in this appropriation, as a result of changes in Southeast Asia program, and fiscal actions at all levels, that it is difficult to find further financial adjustments that will not hurt programs.

Mr. SIKES. Was the $200 million objective an unrealistic one? Is that the problem?

Admiral GADDIS. It is my personal opinion that it was, sir.

It possibly could have been achieved had we not had the other financial adjustments in the 1969 period.

Mr. SIKES. What is the recoupment objective for fiscal year 1970?

Admiral GADDIS. $200 million.

Mr. SIKES. Does this mean it is also unrealistic?

Admiral GADDIS. I feel so on the basis of the already reduced program for fiscal year 1970, sir.

Mr. LIPSCOMB. How much of the total fiscal year 1970 program is in direct support of combat operations in Southeast Asia?

Admiral SHIFLEY. $557 million, sir.

SUPPORT OF FREE WORLD FORCES

Mr. LIPSCOMB. How much is in support of free world forces?

Admiral GADDIS. A total in this account, sir, of $4,203,000.

MODERNIZATION OF VIETNAMESE ARMED FORCES

Mr. LIPSCOMB. How much is in fiscal year 1970 budget to modernize and improve the Republic of Vietnam Armed Forces?

Admiral GADDIS. About $354,000.

Mr. LIPSCOMB. Thank you, Mr. Chairman.

SHIPS SUPPORT EQUIPMENT

Mr. SIKES. Under ships support equipment, the fiscal year 1970 program is $540.5 million, which is $10 million less than last year's program. The second largest category within this budget activity in terms of funds programed is shipboard components. The program totals $215.6 million. Under SSBN support equipment, how many Polaris subs are scheduled for overhaul during this budget period?

POLARIS SUBMARINE SUPPORT EQUIPMENT

Captain FITZPATRICK. Mr. Chairman, there is no Polaris overhaul scheduled for fiscal year 1970.

Mr. SIKES. What is included in the $1.3 million for SSBN overhaul pool?

Captain FITZPATRICK. The overhaul pool program is a pool program

which is intended to reduce the length of time that the FBN submarines are in overhaul, by having on hand a complete ship set of hull, mechanical and electrical components, which if they had to be overhauled and put back during the ship overhaul, would be in the critical path of the submarine overhaul as far as time is concerned.

The program here is to have comparable items which can be put aboard the submarine when the like items are removed and subsequently overhauled and placed back in the pool for subsequent use.

Mr. SIKES. How does this differ from the SSBN improvements category?

Captain FITZPATRICK. The SSBN improvement program, sir, is to procure equipments for purposes of altering or modernizing the submarines in certain specific areas.

Mr. DAVIS. Mr. Chairman, apparently from the statement that has been made here there is a 3- to 4-year leadtime for replacement of nuclear cores and components, is that correct?

Captain FITZPATRICK. In case of nuclear core and components; yes.

SPARES AND REPAIR PARTS

Mr. SIKES. Under spares and repair parts, provide for the record a tabulation of the $52.1 million for spares and repair parts, showing the ships for which replenishment and initial spares are required.

(The information follows:)

The procurement of these spares and repair parts is for the support of hull, mechanical, and electrical components installed on all active fleet ships.

(CLERK'S NOTE: No further supporting detail had been provided at time of printing.)

Mr. SIKES. The fiscal 1970 request for spares and repair parts is a significant increase over last year. Are we going to bring our supply system to acceptable levels in 1 year?

Captain FITZPATRICK. No, sir; we are not. This is a significant increase for these appropriation purchase spares. The attempt here is to get us back up to a more acceptable level than we have been at, sir. Our responsiveness in these secondary spares has been very, very low in the past year due to underfunding in fiscal 1969.

Admiral GADDIS. Mr. Chairman, the 1970 level is approximately the average of 1967 and the 1968 level; 1969 was down significantly from those levels.

TOTAL VALUE OF SPARES AND REPAIR PARTS PROCUREMENTS

Mr. SIKES. I would like to have for the record a tabulation showing the total value of spares and repair parts by fiscal year since fiscal 1965.

(The information follows:)

The total value of procurements for spares and repair parts since fiscal year 1965 is as follows

Fiscal year:	*In millions*
1965	$10.8
1966	29.0
1967	63.4
1968	50.0
1969	29.1
1970	52.1

HULL, MACHINERY AND ELECTRICAL MAINTENANCE EQUIPMENT

Mr. SIKES. Under the title "Hull, machinery, and electrical maintenance equipment," your justification book indicates a requirement of $9.7 million, an increase of $1.8 million over last year. The P–1 does not support the justification, it lists only one item totaling $100,000, line item 23 on page 12. Is the remaining $9.6 million included in the sum of $14.4 million for items under $500,000 each, line item 47, page 13?

Captain FITZPATRICK. Yes, sir. That is where the rest of it is.

Mr. SIKES. Line item 24, the air compressor, costs only about $47,000 each. Why is this not included in the line item No. 47 grouping?

Admiral SHIFLEY. May I take that, please? You will notice that was over the threshold in fiscal year 1968 so we had to have two line items in there. It would have indicated there was no further procurement. Rather than do that, we put it up there although it is under $500,000.

SHIP ALTERATION EQUIPMENT

Mr. SIKES. Under "Alterations," you are buying $3.3 million worth of submarine silencing equipment, 11 type 18 periscopes at a total cost of $4.6 million, and the 1,275 catapult track covers at a total cost of $4.1 million. Is all this equipment to be used for ship alteration?

Captain FITZPATRICK. Yes, sir, it is.

Mr. SIKES. When are the ships scheduled for alterations for which this equipment is requested?

Captain FITZPATRICK. Largely in fiscal 1971–72, sir.

Mr. SIKES. There is a need to acquire it now?

Captain FITZPATRICK. We must purchase the equipment now in order to have it available when the ships are available for overhaul.

Mr. SIKES. Under the deep submergence program, the fiscal 1970 estimate totals $27.4 million. You are requesting $6.7 million for support ship equipment. What is this equipment and on what ships will it be used?

Captain NICHOLSON. This equipment falls into three categories, spares for the range ship IX501, range support equipment for installation on the range at San Clemente Island in support of DSRV testing, and maintenance and checkout equipment for the DSRV's 1 and 2.

SUBMARINE RESCUE PROGRAM

Mr. SIKES. I would like to have a discussion of the submarine rescue program, and I would like to know how many ships you propose to build, and how they will operate during submarine disasters such as we experienced with the *Thresher* and *Scorpion*.

I believe it would be best that the witness tell us generally of the progress we are making in this field, what changes, if any, are being built into the submarine rescue program at this time, and then a more detailed statement for the record.

Captain NICHOLSON. Yes, sir.

At the present time the program actually underway consists of the first two rescue vessels themselves; two submarine rescue ships, ASR's which are under construction, and two mother submarines which are being built with a provision for carrying the DSRV. The first DSRV

rescue vessel itself is within about 1 month of being ready to roll out at Lockheed completely assembled and ready for test. It will have about a year of test program, leading to a trial mating with the submarine in about September 1970. It will be ready for complete fleet test and evaluation in the fall or winter of 1971. The second vessel is about 3 months behind the first one. The ASR's—the submarine rescue ships which will work with these—are due to be delivered in the same timeframe as the rescue vessel test; in other words, late 1971. So the complete system, the ASR–DSRV combination, can be fleet tested at that time. The mother submarines are intended—and here I should shift to the operational concept—the operational concept is that the DSRV's, which are small craft about 50 feet long, be maintained in a stateside rescue home port. They are air transportable and they would be flown to a scene of need.

At that point they would be mated with either the ASR or a mother submarine, configured specially to carry it. The intent is that there be a number of fleet submarines so there will be a probability of one of those submarines being deployed in any area where you might use it. The areas of training, like New London, where you have a lot of training operations, are the most likely areas for a disaster to occur. They would have the ASR assigned on a permanent basis. It would be there at all times. In forward areas you would rely on the mother submarine. We are in short supply on mother submarine conversions. The total program calls—at least our goal not currently approved—for six DSRV's to provide three rescue unit home ports. It calls for 10 ASR's. This is currently under discussion. That number, I believe, will be reduced. The current best estimate is that five is a minimum acceptable long-range number of ASR's, to allow for overhaul cycles, deployment cycles, and complete coverage of the three rescue unit home ports.

Regarding final programing of rescue mother submarines, our estimates indicate that 24 is about the minimum acceptable number. This must be programed into normal overhauls and into new construction.

At the present time we do not have sufficient of these in the schedule. This is a matter of budgetary limitations. I do not think that we will attain that goal in the time the DSRV's will become available.

I might sum this up by saying that by the fall of 1970 we will have an interim marginal capability to react to an emergency, consisting of two DSRV's, which will not have completed their total test program, but which should have by that time actually performed a mate at sea and demonstrated a capability. We will have one mother sub in each ocean.

In the fall of 1971 we will fill in with one ASR submarine rescue ship in each ocean.

Mr. SIKES. What capability will they possess? What is it that they will be able to accomplish in the way of submarine rescue? In neither the case of the *Thresher* nor the *Scorpion*—let me ask the question this way—would this new capability which you are developing have been of any value in the instance of either the *Thresher* or *Scorpion*?

Captain NICHOLSON. No, sir; in neither case would this system have worked.

Mr. SIKES. These are the two most recent. What capability will the

submarine rescue vessels have? What can they do to be helpful during an emergency?

Captain NICHOLSON. They are predicated, Mr. Sikes, on being able to rescue personnel in any submarine that gets into trouble in water not deeper than 2,000 feet.

Mr. SIKES. Our present capability for rescue is limited to what depth?

Captain NICHOLSON. 850 feet.

Mr. SIKES. You are extending the state of the art two and a half times?

Captain NICHOLSON. Yes, sir. The 850 feet is quite marginal. It depends on mooring an ASR in a fixed position in that depth of water which requires excellent weather and good conditions.

Mr. SIKES. What do you actually mean when you say you are extending the depth of 2,000 feet. What does that mean in terms of waters in which submarines operate? Isn't that a rather minimal additional capability when you consider that most of the waters in which submarines operate would be more than 2,000 feet deep?

Captain NICHOLSON. Yes, sir; except our most likely areas for accidents to occur—it is in the approaches to harbors and training areas where the water is within this depth.

Mr. SIKES. You feel this is a significant improvement?

Captain NICHOLSON. Yes, sir. Experience tells us there have been a number of cases in which collisions have occurred in this kind of water and fortunately the submarines did not go down but they could just as well have gone. We were fortunate to escape.

There have been a couple of occasions where they have actually hit the bottom and accidents have occurred which could have left that submarine disabled in that location. We were lucky that it did not happen.

The DSRV could respond to that type of emergency.

Mr. SIKES. The committee applauds the efforts being made to minimize the danger of loss of life and ships such as we have undergone. Now will you tell us something about the steps that have been taken since the two disasters, the *Thresher* and the *Scorpion*, to prevent a recurrence of that type of a loss which obviously cannot be improved by the construction of the rescue vessels?

Captain NICHOLSON. Mr. Sikes, I cannot answer that question. That is in the operational area.

Mr. SIKES. Is there anyone here who can, Admiral? I realize this is not within your sphere of responsibility but it can be helpful to the record if we have more information on it.

SUBMARINE SAFETY

Admiral SHIFLEY. I can talk generally. As a result of the *Thresher* accident a number of things which have been done to improve the safety of submarines. Insofar as the *Scorpion* is concerned, we have never gotten any definitive information as to what caused that and therefore we cannot say we have done anything as a result of that, sir. I can provide for the record more details on the submarine safety program that came about as a result of the *Thresher* accident.

Mr. SIKES. If you will.

(The information follows:)

SUBMARINE SAFETY PROGRAM

AREAS OF IMPROVEMENT

The areas of improvement, associated with the submarine safety improvement program, fall into the following general categories:

(*a*) Certification of critical piping systems by a review of the adequacy of design criteria, fabrication techniques, inspection procedures, and materials used in the sea water, higher pressure air hydraulic, and oxygen systems. This includes the increased use of welded joints, application of newly developed ultrasonic techniques to determine the adequacy of silverbrazed joints, radiography of castings, elimination of unsatisfactory types of aluminum bronze, and more reliable flexible piping connections.

(*b*) Certification of the hull boundary of deep diving submarines for adequacy in regard to design, fabrication materials, and inspection.

(*c*) Improvement of the flooding control and recovery capability by providing the ability to secure sea valves quickly and by increasing the ability to blow main ballast tanks.

(*d*) Reduction of the amount of pressurized sea water piping within the ship by provision of nonpressurized cooling, flushing, and fuel oil compensation systems. This includes the elimination of nonessential sea water piping such as some continuous venting systems.

(e) Improvement in the ability to resist damage by protection of electrical equipment, provision of more reliable hydraulic control systems, and other changes.

(*f*) Increased crew training and a thorough assessment by the submarine force commanders of the readiness of the crew to safely operate their submarine. Upon successful completion of dock trials, fast cruise, and crew examinations the force commander certifies that the crew is considered capable to take the submarine to sea. This process is a requirement for every submarine following each shipyard overhaul or extended upkeep whether or not the ship has been mechanically certified.

(*g*) Until a submarine is certified SUB–SAFE it is limited to a reduced operating depth. After completion of SUB–SAFE certification the submarine is thorized to operate to its test depth.

(*h*) The Naval Ship Systems Command has increased its audit activity of submarine shipbuilding activities to insure adherence to specifications for submarine building, overhaul, and repair.

(*i*) Studies to develop submarine operating procedures which maximize recovery possibilities under various damage control situations have been completed and distributed to individual submarines.

(*j*) The Submarine Safety Center, responsible for analysis of events and developments which pertain to submarine safety, and timely dissemination of such information, was established. The Submarine Safety Center has recently been incorporated into the Navy Safety Center.

PROGRESS TO DATE

(*a*) O. & M., N/OPN—Seven SS's, six SSBN's, and six SSN's have been certified to date. One SSN is scheduled to be certified by the end of fiscal year 1969. Two additional SSN's are scheduled to be certified during fiscal year 1970.

Certified to date, O. & M., N/OPN	To be certified by end of fiscal year 1969 (OPN)	To be certified in fiscal year 1970 (OPN)
SS 564	SSM 575	SSN 584
SS 567		SSN 590
SS 568		
SS 576		
SS 580		
SS 581		
SS 582		
SSBN 601		
SSBN 602		
SSBN 608		
SSBN 610		
SSBN 611		
SSBN 618		
SSN 578		
SSN 579		
SSN 583		
SSN 587		
SSN 588		
SSN 597		

(b) SCN–15 SSN's and 12 SSBN's have been certified to date. One AGSS, two SSN's, and one LPSS are scheduled to be certified during the remainder of fiscal year 1969. Eight additional SSN's are scheduled to be certified during fiscal year 1970.

Certified to date (SCN)	To be certified by end fiscal year 1969 (SCN)	To be certified in fiscal year 1970 (SCN)
SSBN 640	AGSS 555	SSN 646
SSBN 641	SSN 667	SSN 652
SSBN 642	SSN 671	SSN 665 [1]
SSBN 643	LPSS 574	SSN 666
SSBN 644		SSN 668
SSBN 645		SSN 669
SSBN 654		SSN 670
SSBN 655		SSN 673
SSBN 656		
SSBN 657		
SSBN 658		
SSBN 659		
SSN 613		
SSN 614		
SSN 615		
SSN 637		
SSN 638		
SSN 639		
SSN 648		
SSN 649		
SSN 650		
SSN 651		
SSN 653		
SSN 661		
SSN 662		
SSN 663		
SSN 664		

[1] It is probable that this submarine will slip to a subsequent fiscal year.

(a) OPN—During the period fiscal year 1971 through fiscal year 1979 it is planned to certify three additional SS's, 12 additional SSN's and 14 additional SSBN's.

(b) SCN—During the period fiscal year 1971 through fiscal year 1979 it is planned to certify 18 additional SSN's and nine additional SSBN's.

To be certified during fiscal year 1971—fiscal year 1979 (OPN)		To be certified during fiscal year 1971—fiscal year 1979 (SCN)	
SS 563	SSBN 598	SSN 606	SSN 684
SS 565	SSBN 599	SSN 647	SSN 685
SS 566	SSBN 600	SSN 660	SSN 686
SSN 571	SSBN 609	SSN 672	SSN 687
SSN 585	SSBM 627	SSN 674	SSBN 616
SSN 591	SSBN 628	SSN 675	SSBN 617
SSN 592	SSBN 629	SSN 676	SSBN 619
SSN 594	SSBN 630	SSN 677	SSBN 620
SSN 595	SSBN 631	SSN 678	SSBN 622
SSN 596	SSBN 632	SSN 679	SSBN 623
SSN 603	SSBN 633	SSN 680	SSBN 624
SSN 604	SSBN 634	SSN 681	SSBN 625
SSN 605	SSBN 635	SSN 682	SSBN 626
SSN 607	SSBN 636	SSN 683	
SSN 612			
SSN 621			

O. & M.N./OPN COST OF SUBMARINE SAFETY BY FISCAL YEAR

Ship type	1964	1965	1966	1967	1968	(Estimate) 1969	(Estimate) 1970
AGSS	.3	.6	.4				
LPSS		.1					
SS	6.4	6.3	13.6	9.5	1.1		
SSN	4.7	20.2	17.0	16.2	7.2	14.2	13.9
SSBN	15.0	25.9	34.3	26.7	.4	2.9	
Total O. & M.N. (OPN beginning fiscal year 1968)	26.4	53.1	65.3	52.4	8.7	17.1	13.9

SEARCH SONAR FOR SUBMARINE RESCUE

Mr. SIKES. You are buying $6.7 million worth of search sonar equipment. What kind of ship is this being provided for?

Captain NICHOLSON. This relates to the same submarine rescue system. We expect very much, as a fire engine is not always used to put out a fire, this system is useful for many other things. It is our hope that it will be used primarily as a search and recovery system. For example, had this system been available, it would have been very efficient in the search for the bomb. This equipment would enable the DSRV to go down and search for small objects and do research. It is secondary mission equipment for that system which we hope in fact will be the primary use.

Mr. SIKES. On the deep submergence rescue vessel itself, has there been slippage?

Captain NICHOLSON. Yes, sir; there has been a slippage since the original program was set up.

Mr. SIKES. How long?

Captain NICHOLSON. I think we are about—I am going back pretty far and I would like to correct it for the record—I think it is about a year.

DEEP SUBMERGENCE RESCUE VEHICLE

Mr. SIKES. The committee understands you have experienced cost overruns amounting to about $30 million, some $17 million of which is attributable to the contractor and $13 million to the Navy; is that correct?

Captain NICHOLSON. Let me rephrase that. I think that is correct. We are referring primarily to the Lockheed contract which went up in

value from $20 to $38 million. That is correct. This is an escalation cost, not an overrun.

Mr. SIKES. What do you mean by that?

Captain NICHOLSON. Let me explain it this way: The cost of building this first prototype vessel has been much more than any of us anticipated because of the resolution of unanticipated technical problems. To illustrate that, the second vehicle is coming in just about on the $23 million target or within 10 percent. The first vehicle which bears all of the research and development charges did run quite a bit more.

Mr. SIKES. The DSRV-1 is R.D.T. & E. funded and DSRV-2 is funded under "Other procurement, Navy."

Captain NICHOLSON. Yes.

Mr. SIKES. Why was the first DSRV funded under R.D.T. & E.?

Captain NICHOLSON. Because it was a totally new development. It was a research craft.

Mr. SIKES. Does that mean that the second vessel is receiving the benefits of the experience of the first? Is that the reason there have not been the additional costs on the second?

Captain NICHOLSON. Yes, sir. All of the research charges and the resolution of materials problems, technical wiring problems, and things like this were charged to the development of the first design.

Mr. SIKES. Was the award of this contract based upon contract definition competition?

Captin NICHOLSON. No, sir. It was given a modified contract definition procedure. The Department of Defense approved a modified process in which we had a competition between industrial firms. I think there were three who proposed on the original design. The winner was selected on the basis of the technical competition and we then entered a modified contract definition program with Lockheed to build the vessel.

Mr. SIKES. We have no request for the DSRV-2 in fiscal 1967. For what purpose was the $22.5 million funded in fiscal year 1968 and 1969?

Captain NICHOLSON. This is DSRV-2?

Mr. SIKES. Yes.

Captain NICHOLSON. In 1968 we bought essentially a bare boat. The funds in 1969 were to purchase equipment for that boat.

Mr. SIKES. Why were these vessels not funded under "Shipbuilding and conversion, Navy"?

Captain NICHOLSON. I am not certain of that, but my view of that is that they were funded in the same philosophy that we buy small craft. They are carried on another ship. They are not commissioned. They are not ships in that sense. They are equipment which is carried on many different ships.

Admiral GADDIS. We class them as a vehicle because they are dependent on other ships and are carried in ships or aircraft. They have no locomotion of their own of significance.

Mr. SIKES. Captain, I believe you touched on this earlier but at this point you might tell us of your future DSRV requirements as presently approved.

Captain NICHOLSON. We have a request in the 1971 budget for one ship. We originally asked for four, in the planning process this number has been reduced to one. It is my hope that we can get some form

of multiyear authorization so if we buy one, we can buy additional up to the number that is finally approved on some sort of continuing contract. Otherwise, we will have a very inefficient operation. We asked for four in 1 year. There are two discussions going on. One is to the total number, whether it should be two or four additionally; the other is as to how we buy them, whether we buy two or four at once or spread them out. These problems have not yet been resolved.

At the moment I believe there is one surviving in the 1971 budget process.

SUBMARINE DISASTERS SINCE 1920

Mr. SIKES. How many submarine disasters or emergency conditions have we had where the DSRV could have been used successfully in rescuing submarine crewmen; not the ones that almost happened, but the ones that happened?

Captain NICHOLSON. I know right off of four. The British loss of the Thetis included.

Mr. SIKES. Complete it for the record.

(The information follows:)

Between 1920 and 1930 there were eight U.S. submarine disasters or emergency conditions where the DSRV could have been used. Since 1930 there have been two rescuable disasters. In addition to these U.S. casualties there have been 19 rescuable foreign submarine disasters since 1920. The worldwide total since 1920 is thus 29 exclusive of losses from war actions. In each instance the submarines were bottomed at less than their collapse depth.

DEEP SUBMERGENCE VEHICLE, NR–1

Mr. SIKES. Under the Deep Submergence Research Ocean Engineering Vehicle (NR–1), a total of $6.4 million is requested for various equipment. Is this ship in the fleet or still under construction?

Captain NICHOLSON. She is still under construction. She is scheduled to run sea trials at the end of next month. She is scheduled to be delivered in September.

Mr. SIKES. What use will be made of this vessel?

Captain NICHOLSON. We will first use her to demonstrate the effectiveness and utility of nuclear power in the deep submergence vessel, which was her original authorized purpose. We then have a series of trials to demonstrate the ship's capability in navigation, recovery of bottom equipment, location of small objects, and this type of work, as well as a series of operations for the scientific community wherein they want to do such things as study the deep scattering layer over long periods of time. These trials will probably consume, I would expect, about 2 years.

There are other operations possible after that. However, it will take about 2 years to complete the original purpose of the ship and develop her capabilities fully.

DIFFERENCES, NR–1 AND DSVR VEHICLES

Mr. SIKES. In what ways will the mission of this ship differ from the DSRV?

Captain NICHOLSON. The most significant way in which her mission and capabilities differ is the length of time she can remain submerged,

which is 30 days. No other system we have can do this. The limitation on almost all other systems is less than a day even under extended conditions.

Mr. SIKES. What is the comparative cost?

Captain NICHOLSON. The MR–1 vehicle cost for a direct comparison would be $76 million versus the $43 million for the prototype DSRV and $23 million for the production DSRV.

Mr. SIKES. How is the DSRV powered?

Captain NICHOLSON. It is powered by silver cell water batteries.

Mr. SIKES. Does that account for the short submergence period?

Captain NICHOLSON. Yes, sir.

Mr. SIKES. Would it be practical to build in a longer submergence capability or would it be desirable?

Captain NICKOLSON. We may do that, Mr. Sikes, in connection with the deep search program which is just now getting underway. We are developing for that program a modular fuel cell which will be used to extend the bottom durability of the DSRV, the search vehicle to 30 hours. This is the order of magnitude which can be used in the present vehicle. Additional time could be built in, but habitability and crew responsiveness is degraded in small vehicles over longer periods. Such a fuel cell could be backfitted for the longer submergence.

Mr. SIKES. How desirable is this?

Captain NICHOLSON. I would at this time not feel it desirable to expend funds for this purpose, because the mission profile for the DSRV is very closely constrained. The addition of a relatively small time on the bottom would not significantly affect the mission profile.

Mr. SIKES. Your answers have been very helpful.

SMALL BOATS

Under "small boats," you are requesting $5.9 million for 200 small boats. With one exception, none of these boats were funded last year. Why do you have a requirement for 128 more 26-foot motor whaleboats, when 84 were funded in fiscal year 1968?

Captain FITZPATRICK. These boats are all being procured for stock. They are the boats that we issue to the fleet as replacement when the boats that they have are no longer economically repairable. In the case of the motor whaleboats, these are the standard lifeboats of a large number of ships in the fleet. They deteriorate in service and many times suffer extensive damage and have to be replaced.

This is merely to maintain a reasonable inventory level.

Mr. SIKES. I would like to have for the record a list of small boats in the category under $500,000 which you are proposing to procure in fiscal year 1970, showing designation, unit cost, quantity, and total cost.

(The information follows:)

Type of boat	Quantity	Total cost
14 foot punt	48	$42,000
18 foot utility boat	60	207,000

Mr. MINSHALL. On the small boats, are you going to use fiberglass in any of these?

Captain FITZPATRICK. Yes, sir. Practically all of them are fiberglass construction.

Mr. MINSHALL. Are these on a bid basis and if so, to what companies?

Captain FITZPATRICK. I do not have the list of the companies that are presently in the business.

Mr. MINSHALL. Would you put the types and everything else in the record and supply that also?

Captain FITZPATRICK. Yes, sir.

(The information follows:)

The following companies are qualified to bid on the boats being procured in fiscal year 1970:

American Marine Industries, Inc., Santa Clara, Calif.
Aquanautics, Inc., Mountain View, Calif.
Atlantic Research Corp., Costa Mesa, Calif.
C. N. Beetle Plastics Corp., Fall River, Mass.
Bertram Yacht Division, Miami, Fla.
Braincon Corp., Marion, Mass.
Buck Smith Boats, Bakersfield, Calif.
Chesapeake Marine Industries, Inc., Newport News, Va.
Chris Craft Corp., Pompano Beach, Fla.
Commodore Boats, Inc., New Bern, N.C.
Elizabeth City Iron Works & Supply Co., Elizabeth City, N.C.
Firestone Tire & Rubber Co., Akron, Ohio
Glass Fab, Inc., New London, Wis.
Goodyear Aircraft Corp., Akron, Ohio
Gulfstream Industries, Inc., Channelview, Tex.
Harbor Boat Building Co., San Pedro, Calif.
Hatteras Yacht Co., High Point, N.C.
Kaman Aircraft Corps., Bloomfield, Conn.
Kettenburg, San Diego, Calif.
Lane Lifeboat & Davit Corp., Brooklyn, N.Y.
Lippincott Boat Works, Inc., Riverton, N.J.
Henry Luhrs Sea-Skiffs, Inc., South Amboy, N.J.
Aero-Mar Plastics Division, Miami Beach, Fla.
Midwestern Industries Corp., Harlan, Ind.
National Boat Works, Inc., Greenville, N.C.
Pacemaker Corp., Egg Harbor, N.J.
Pacific Plastic Co., Seattle, Wash.
Penn Yan Boats, Inc., Pen Yan, N.Y.
Peterson Builders, Inc., Sturgeon Bay, Wis.
Plas Trend, Ft. Worth, Tex.
Plastic Engineering & Fabricating Co., Thibodaux, La.
Rondout Marine, Inc., Connelly, N.Y.
San Diego Aircraft Engineering, Inc., San Diego, Calif.
Santa Barbara Yachts, Inc., Santa Barbara, Calif.
Sea Craft, Inc., Miami, Fla.
Teleflex Industrial Products, Inc., Jacksonville, Fla.
Tollycraft Corp., Kelso, Wash.
Trojan Boat Co., Lancaster, Pa.
Uniflite, Inc., Bellingnam, Wash.
Webber's Cove Boat Yard, Inc., E. Ble Hill, Maine
Welderaft Manufacturing, Inc., Sarasota, Fla.
Winner Boat, Inc., Dickson, Tenn.

All of the boats to be procured in this fiscal year are of fiberglas construction.

OTHER SUPPORT EQUIPMENT

Mr. SIKES. Under "Other support equipment," you are requesting $27 million, an increase of $12.7 million over last year.

SHIPYARD MODERNIZATION

Of this $24.5 million is for shipyard modernization. I would like the identity of each shipyard to be improved and modernized together with the type of equipment and the cost to be procured for each yard. I would also like to have for the record a table showing how much we have spent on shipyard modernization since fiscal 1965 in all appropriation accounts. I would like to have for the record the proposed shipyard modernization program for fiscal 1969.

(The information follows:)

The following is a list of shipyards to be improved and modernized and the type of equipment and cost per yard for fiscal year 1970:

OTHER PROCUREMENT, NAVY, EQUIPMENT BY TYPE

[In thousands of dollars]

Shipyard	Machine tools	Industrial plant equipment	Nonindustrial plant equipment	Test equipment	Other technical collateral	Other plant equipment	Total
Boston	389.5	132.5	227.9	450.0	0	210	1,409.9
Philadelphia	991.5	538.0	93.2	215.0	60.0	212	2,110.3
Norfolk, Va	283.3	523.0	165.0	80.0	492.6	310	1,853.9
Charleston	25.9	1,089.9	407.9	364.0	601.4	210	2,699.1
Long Beach	270.9	361.9	48.0	17.1	0	215	912.9
San Francisco Bay	3,900.0	1,057.1	167.1	544.7	1,115.0	686	7,469.9
Puget	716.7	1,134.9	323.0	200.0	24.0	320	2,718.6
Pearl	986.4	592.1	1,146.1	150.0	2,282.1	200	5,356.7
Total	7,564.2	5,429.4	2,578.2	2,020.8	4,575.7	2,363	24,531.2

FUNDS SPENT ON SHIPYARD MODERNIZATION

Fiscal Year 1965-68

[In millions of dollars]

Appropriation	1965	1966	1967	1968	Total
Military construction (MILCON)	2.8	19.2	9.3	29.7	61.0
Other procurement, Navy (OPN)	11.2	22.5	16.6	15.4	65.7

Funds proposed for fiscal year 1969

	In millions of dollars
Military construction	37.8
Other procurement, Navy	11.8
Total	49.6

Mr. SIKES. For the yards which are to be modernized in fiscal 1970, is this complete modernization? Will these yards be fully modernized and capable of utilizing the most advanced information that we have on bringing about economy in ship construction and improvement?

Captain FITZPATRICK. Mr. Sikes, this program is a program which is intended to spread over a number of years. It is being done in increments, and it is interfaced with the Milcon program, to provide collateral equipments for installation in the new construction facilities as

they are ready. Most all of these equipments which are being purchased have been subject to an economic benefits analysis, if you will, to determine the time to amortize the purchase of the new equipment. It will, in fact, improve the efficiency of the shipyards greatly.

Mr. SIKES. Are you omitting steps in modernization which are desirable and which would bring about further economies in ship construction or ship changes?

Admiral SHIFLEY. Mr. Sikes, the modernization we are doing is aimed primarily at improving their capability to repair ships, not new construction.

Mr. SIKES. The question would be the same in either event. Are you omitting steps in modernization which should be included at this time in order to add to the economy of their operation?

Admiral SHIFLEY. No, sir. We have a plan that we hope we can carry out over a 10-year period to bring them up to the optimum situation.

NAVY VS. DEFENSE-APPROVED YARD MODERNIZATION

Mr. SIKES. Are you proceeding with shipyard modernization at the rate you would desire?

Admiral SHIFLEY. No, sir; somewhat slower than we desire.

Mr. SIKES. Will you provide information for the record showing what the Navy has requested or feels would be the optimum?

Admiral SHIFLEY. Yes, sir. I believe this applies not only to the OPN, but also the Milcon appropriation.

(The information follows:)

The following two charts show the approved Navy long range investment program:

SHIPYARD MODERNIZATION—10-YEAR PROGRAM, FISCAL YEARS 1970-79

[In millions of dollars]

	Fiscal year										
	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	Total
BY APPROPRIATION											
Milcon	59.4	96.4	120.5	102.6	92.1	58.8	79.6	63.7	49.4	46.9	769.4
OPN	24.5	34.2	26.0	24.0	16.7	15.5	12.3	13.1	12.2	13.5	192.0
O. & M.N	5.4	13.8	14.6	13.9	12.6	10.6	8.0	6.2	4.1	2.9	92.1
Total	89.3	144.4	161.1	140.5	121.4	84.9	99.9	83.0	65.7	63.3	1,053.5
BY SHIPYARD											
Boston	9.6	28.2	37.5	15.8	24.0	23.2	16.6	26.6	11.4	5.4	198.3
Philadelphia	13.5	11.8	23.0	15.8	20.1	5.0	7.1	4.0	10.3	6.5	117.1
Norfolk, Va	4.9	29.1	16.6	15.5	13.5	4.9	7.0	7.4	10.5	2.9	1[illegible].3
Charleston	3.9	13.3	8.1	13.1	9.1	4.0	3.3	4.3	3.9	16.9	79.9
Long Beach	9.9	16.7	18.2	13.8	9.2	22.2	22.1	11.6	6.9	3.7	134.3
San Francisco	22.4	24.4	34.2	28.1	24.0	18.1	26.4	19.9	13.9	19.6	231.0
Puget Sound	10.7	11.5	12.5	14.6	9.7	3.8	10.4	5.7	5.3	3.7	87.9
Pearl Harbor	14.4	9.4	11.0	23.8	11.8	3.7	7.0	3.5	3.5	4.6	92.7
Total	89.3	144.4	161.1	140.5	121.4	84.9	99.9	83.0	65.7	63.3	1,053.5

The Navy developed an 8-year overall shipyard modernization plan which was reviewed and technically approved by the Office of the Secretary of Defense, but the funding plan was extended from an 8-year to a 10-year proposal. Extending the program to a 10-year span does not deny the projected bene-

fits, however, extending the investment plan beyond 10 years would hazard Navy's ability to actually overcome plant obsolescence. Decreasing the investment period below 8 years would hazard Navy's ability to maintain the required level of work performance.

The funding levels which Navy proposed in fiscal year 1969 and currently in fiscal year 1970 are below what was our optimum program recommendations. These earlier figures appear below. The effect of the actual fiscal year 1969 authorization and the fiscal year 1970 proposals now before the Congress is to defer proposed investments to later years.

EARLIER OPTIMUM PROGRAM RECOMMENDATIONS

	Fiscal year 1969		Fiscal year 1970	
	Optimum	Authorization	Optimum	Being proposed for authorization
MILCON	54.8	37.8	82.0	59.1
OPN	11.8	11.8	30.0	24.5
O. & M.N	1.2	1.2	14.0	1.8

Note: The above 10-year investment plan reflecting all fiscal constraints imposed to date, while not optimum, will overcome shipyard obsolescence and gain the new technical capabilities required to service the modern fleet.

SAVINGS RESULTING FROM 1970 EQUIPMENT PROCUREMENT

Mr. SIKES. I would like to have for the record a tabulation of examples of savings estimated to be incurred through the procurement of the equipment in the fiscal 1970 program.

(The information follows:)

Examples of savings estimated to be incurred through the procurement of the equipment in fiscal year 1970 program.

MACHINE TOOLS

[Dollar amounts in thousands]

Item	Quantity	Estimated cost	Estimated savings	Amortization years
Shear and squaring machine	2	$76	$41	1.6
Machine center numerical control	1	277	93	2.6
Band saw	1	6	4	1.1
Horizontal boring machine	2	186	61	3.0
Milling machine, horizontal	1	37	28	.8
SHOP EQUIPMENT				
Vacuum pickup unit	1	$48	$100	0.4
Sand blast machine	24	92	353	.3
Sand removal machine	2	50	129	.4
Swaging press	1	23	51	.5

EQUIPMENT IMPROVEMENT, SHIP REPAIR FACILITIES

Mr. SIKES. I would like to have for the record the ship repair facilities and other activities for which tools and equipment will be replaced and improved, and the cost.

(The information follows:)

The following chart indicates the tools and equipment that will be replaced and improved, and the estimated cost for ship repair facilities and other activities:

APPROPRIATION SUMMARY

[Dollars in thousands]

Activity	Machine tools	Other IPE	Non-IPE	Degauss-ing equip-ment	Technical collateral	Other plant	Tota
SRF Guam	216.2	162.0	0	0	0	70	448.2
SRF Subic	58.0	138.0	0	0	0	50	246.0
SRF Yokosuka	9.7	108.0	0	0	0	30	147.7
	283.9	408.0	0	0	0	150	841.9
INACTSHIPMAINTFAC:							
San Diego	15.0	0	0	0	0		15.0
Philadelphia	0	0	0	0	0	25	25.0
Bremerton	17.0	0	0	0	0		17.0
Orange	0	0	0	0	0		0
San Francisco	18.0	0	0	0	0	30	48.0
Norfolk	0	0	0	0	0		0
	50.0	0	0	0	0	55	105.0
Degaussing stations:							
Charleston	0	0	0	100.0	0	40	140.0
Norfolk	0	0	0	100.0	0	40	140.0
Pearl Harbor	0	0	0	100.0	0		100.0
San Francisco	0	0	0	100.0	0		100.0
	0	0	0	400.0	0	80	480.0
NAVSEC Philadelphia	250.0	310.5	0	0	0	40	600.5
Portsmouth Naval Shipyard	0	114.0	67.5	0	0	175	356.5
	250	424.5	67.5	0	0	215	957.0
Total	583.9	832.5	67.5	400.0	0	500	2,383.9

Mr. SIKES. Have you checked with the defense industrial plant equipment center and other military departments to determine whether any machine tools and shop equipment is available through these sources before establishing the requirements in this budget?

Captain FITZPATRICK. Yes, sir; that is done routinely. We also recheck before we actually start a purchase of this equipment.

Mr. SIKES. Has there been a thorough check?

Captain FITZPATRICK. To my knowledge, yes, sir.

Mr. SIKES. Admiral, you have no request in fiscal year 1970 for FBM support equipment; why is this?

Captain FITZPATRICK. May I answer that, sir? That is now carried in budget activity four.

SHIP ALTERATIONS

Mr. SIKES. The largest single program in the ships support equipment budget activity is for ship alterations. A total of $297.9 million is requested for fiscal year 1970, an increase of $6.3 million.

Your justification book indicates that $297.9 million does not include the costs of the procurement of equipments to be installed. Can you provide the other costs involved in ship alterations for the record, please?

(The information follows:)

The procurement cost of equipment to be installed in fiscal year 1970 is $93.25 million.

Mr. SIKES. In fiscal 1968 a total of 174 ships were scheduled to receive alterations and in fiscal year 1969 there were 243 ships to

receive alterations. How many of these ships actually received ship alterations in each of the 2 fiscal years?

Captain MORGAN. The fiscal 1969 ship overhaul program included 197 ships. This was after the budget reduction. The number of ships which receive alterations in that program was 165. In fiscal 1970, 192 ships are scheduled for overhaul of which 170 will receive alteration.

Mr. SIKES. When will the ships that did not receive alterations in fiscal 1968 and 1969 receive their alterations?

Captain MORGAN. The ships which did not receive alterations and were originally scheduled will receive them at their next overhaul.

Mr. SIKES. What happens to the equipment that is set aside for these alterations?

Captain MORGAN. It is utilized for the next ship in line.

EXAMPLES OF MAJOR SHIP ALTERATIONS COSTS

Mr. SIKES. Have you maintained records to determine how many times ships in the fleet receive ship alterations during their life and the cost for each ship?

Captain MORGAN. We have records of the alterations installed in each ship of the fleet. We could develop the cost details for you.

Mr. SIKES. If so, could you provide some examples for the record, please, particularly those ships that seem to receive most of the alterations during their life times.

(The information follows:)

U.S.S. "Forrestal" (CVA–59) commissioned 1955

Initial cost	$188,881,000
Subsequent Alterations:	
1957	6,454
1958	904,347
1959	4,110,268
1961	479,882
1962	5,494,425
1965	125,240
1966	10,470,866
1968	476,520
1969	8,611
	22,077,613

U.S.S. "Macdonough" (DLG–8) commissioned 1961

Initial Cost	43,662,000
Subsequent Alterations:	
1963	33,000
1965	720,448
1968	2,000
1970 (planned)	1,283,000
	2,047,448

Mr. SIKES. How far ahead do you procure and schedule ship alterations?

Captain MORGAN. The equipment is procured approximately 2 years in advance. At that time an approximate schedule of installation is available. The detailed schedule of installation is developed about 18 months before the budget year. We are in the process of developing a 5-year installation plan which will permit us to schedule the installation and the procurement with greater exactness.

SHIP ALTERATION EQUIPMENTS DEFERRED

Mr. SIKES. If a ship fails to receive all its alterations scheduled for it, is that equipment used for another ship or does it wait until the scheduled ship returns?

Captain MORGAN. In general it is used for another ship.

Mr. SIKES. Are there any instances when ship alts become outdated or superseded by subsequent ship alterations?

Captain MORGAN. Yes, this happens. In that case the alterations are canceled. We try to regulate procurements in such a fashion that we do not have obsolete equipment on hand.

Mr. SIKES. Do you have any information indicating how often this happens and the cost of the equipment that is not used? If so, could you provide something for the record along those lines?

Captain MORGAN. I would have to provide that for the record.

(The information follows:)

In those relatively rare cases (that is, approximately 1 in 50) in which equipment planned for installation during a ship alteration either is under procurement or has been procured but not installed, and the equipment or the alteration in which it was to be used it superseded, the following action is taken:

a. Procurement action is halted if economically feasible; and/or

b. Equipment received but no longer required are either held in stock for support of equipments already installed or assigned to other programs as, for example:

1. Installed in other active fleet ships not originally designated to receive the equipment but which can put it to effective use.
2. Installed in new construction under same conditions as 1.
3. Installed in Naval Reserve training ships.
4. Consigned to training activities ashore.
5. Installed in Military Sea Transportation Service ships.
6. Consigned to other Government agencies (for example Coast Guard).
7. Consigned to military assistance program ships.

Specific examples of this are:

(*a*) O_2 generators at $225,000. Originally procured 62, of which 40 were installed in fleet ships. Of the 22 placed in stock, four are now being diverted to new construction SSN.

(*b*) AN/SPS T 2 radar trainers at $18,000. Originally procured 35, of which 29 were installed in fleet ships. Six are carried in stock for support of the 29 installed units.

(*c*) AN/SPA 43 INTAC radar indicator at $145,000. Originally procured 41, of which 25 were installed in fleet ships. Of the remaining 16, six were installed in shore-based training commands, one was installed in an Australian ship under the military assistance program, and nine are carried in stock.

Admiral GADDIS. The principal time when this happens is when you have specific independent ship alts on a specific item of equipment which is incorporated into a more comprehensive ship alteration; a radio receiver replacement which will then be incorporated into a redesign of a communication station. In many cases you can incorporate the utilization of the equipment provided for the earlier ship alteration.

IMPROVING EXISTING SYSTEMS, COSTS

Mr. SIKES. How much are we proposing to spend in fiscal 1970 for the purpose of improving systems, subsystems and equipments we have already provided and installed aboard ships? Speaking of equipments, apart from new developments.

Maybe you can provide some information for the record.
(The information follows:)

In answering this question, the following definitions have been used:
(*a*) *Improving ships' systems.*—Providing ships with improved capability to perform missions or to counter enemy threats where some systems capability already exists on those specific ships; or to enhance intership standardization and compatibility to improve overall logistic support to ships and to permit them to operate efficiently and effectively together.
(*b*) *New developments.*—Providing ships with the capability to perform new missions or to counter new enemy threats for which those specific ships previously had no capability. In the fiscal year 1970 budget for ship alterations, $213 million is programed for improving ships' systems, and $85 million is programed for new developments.

Captain MORGAN. For example, such a thing as ship safety might consist of both modification and new development.

Mr. SIKES. Through ship alterations what do we get in return in the nature of ship modernization and how do you measure the value of this investment?

Captain MORGAN. The primary return on our investment in ship alterations is increased military effectiveness and precisely quantifying that is subject to the same difficulties as precisely quantifying the difference in effectiveness between a new ship and the 20-year-old ship she replaces. It is a matter of judgment.

VALUE OF SHIP ALTERATIONS COMPARED WITH NEW SHIPS

Mr. SIKES. When we speak of the age of our ships and the need for modernizing the fleet, has the Navy taken into consideration the advanced sums we have spent over the years for ship alterations which in effect serves to modernize the fleet? If this is not a valid assumption, then why are we continually spending vast sums of money for ship alterations when they serve little or no purpose in fleet modernization?

Captain MORGAN. Ship alterations are improvements which are relatively minor in comparison with the improvements in effectiveness to be derived from a new ship. Furthermore, there is a limit to the extent to which one can modernize a ship by the installation of new equipment or the improvement of old equipment. The hull itself is often to small to carry additional equipment. The electrical power requirements become excessive, and so on. There is a necessary balance between maintaining the ships which we have in the inventory combat ready during their useful life, which is the object of the alteration program and maintaining the inventory at a suitable average age; that is, replacing ships at the end of their useful life. We need to do both.

Admiral SHEFLEY. I would add to that. I think you can almost always say that an alteration improves the operational capability of a ship. Many of the alterations are designed to permit the ship to operate with other ships. As new ships come out, they have different operating characteristics. These changes all provide a greater capability in those ships. In that sense the alteration to permit the older ships to operate with the newer ones improves their capability. This is an improvement in their capability. As Captain Morgan indicated, the alterations are generally minor in nature as compared to a modernization of a ship.

COMMUNICATIONS AND ELECTRONIC EQUIPMENT

Mr. SIKES. Are there any questions on ship alterations? If not, the fiscal 1970 request for communications and electronic equipment totals $316.7 million or $67.8 million less than last year's program. How much of this is in support of our antisubmarine warfare program?

Mr. CUBLEY. $41.6 million for ship electronics equipment and $66.8 million for CAESAR.

SHIP ELECTRONICS EQUIPMENT NOT SERVICE APPROVED

Mr. SIKES. You are requesting $108.3 million for ship electronics equipment. What items contained in this budget request are not yet service approved? Could you provide that for the record?

(The information follows:)

STATUS OF CODE B ITEMS

Item	Fiscal year 1970, amount	Completion of development model	Technical evaluation completion	Operational evaluation completion	Est. date of service approved
Ship electronics:					
QMCS	1.0	Complete	Complete	Complete	October 1969.
AN/BLA-4	.9	do	do	do	June 1969.
Seesaw II	.9	do	do	do	May 1969.
AM-4530/ULA-6A (fiscal year 1969)	3.9	do	do	do	Do.
Total, ship electronics	6.7				
Ship electronics—ASW:					
Expendable BT's (sub)	1.0	Complete	Complete	Complete	June 1969.
SSBN Tophat sonar	1.9	do	September 1969.	December 1969.	January 1967.[1]
AN/BQR-15	.5	do	Complete	June 1969	July 1969.
Total, ship electronics (ASW)	3.4				

[1] Waiver to procure in advance of service approval granted by CNO.

NATIONAL EMERGENCY COMMAND POST AFLOAT

Mr. SIKES. I note that none of the funds requested for 1970 are to be used for national emergency command post afloat. Does this mean the equipment of these command ships has been completed?

Captain FITZPATRICK. No, sir. We are procuring nothing in fiscal 1970 in the way of equipment for later installation on these ships. I believe in the ship alteration program there is about $200,000 for each of the *Northampton* and the *Wright* for installation of equipment already procured.

Mr. SIKES. For the record, would you provide information indicating how much we have spent in modifying and equipping these two ships?

(The information follows:)

A total of $47.2 million has been spent on the *Northampton* and *Wright* in modifying and equipping these ships with the NECPA system.

HISTORY OF USS NORTHAMPTON

Mr. MAHON. Would you prepare on a piece of paper for the committee the history of the *Northampton*, when it was built, where it was built, the original cost and the additional costs that have been brought

about by overhaul and installation of equipment and so forth, to the extent that is reasonable? I don't want you to make a major project out of it, but I would like to have a little more information about the *Northampton*.

(The information follows:)

The keel of the *Northampton* was laid at the Bethlehem Steel Co., Quincy, Mass., on August 31, 1944, as a CA-68 class cruiser. Construction was halted in 1945. In 1948 work was resumed at Bethlehem Steel Co. to complete this ship as a CLC-1 (fleet flagship). On March 7, 1953, the *Northampton* was comissioned. Total cost to this point was $104 million. On September 15, 1961, she was recommissioned as a CC-1 (command ship). An additional $6.5 million has been subsequently spent for the NECPA system.

Mr. MINSHALL. Are you using the *Northampton* as an example of all these ships?

Mr. MAHON. No; it is a unique ship. I spent a night aboard the ship once. It is a very interesting ship.

NAVY TACTICAL DATA SYSTEM

Mr. SIKES. We are continuing to fund the Navy tactical data system in fiscal year 1970 at $5.5 million.

Fiscal 1969 completed the installation of this system on major combat ships. How many ships now have this system?

Captain FITZPATRICK. Twenty-eight ships now have the installation in one form or another.

Mr. SIKES. Could you provide for the record a list identifying these ships?

Captain FITZPATRICK. Yes, sir.

(The information is classified and has been supplied the committee.)

Mr. SIKES. For what purpose will the fiscal 1970 funds be used?

Captain FITZPATRICK. There are no new NTDS systems being procured in fiscal 1970; 4 million of the $5.5 million is to be used to procure training equipments for four training centers at various places in the country. The remaining million and a half is to procure some modification equipment for backfitting into existing ships. This is largely UHF communication equipment and some video simulators which will update the capability of the ships.

Mr. SIKES. What four training centers are involved here?

Captain FITZPATRICK. The Tactical Advanced Combat Direction and Electronic Warfare Center, Atlantic Fleet and Pacific Fleet, the U.S. Naval School Command Mare Island School, and the U.S. Guided Missile School at Dam Neck, Va.

INSTALLATION COSTS PER SHIP

Mr. SIKES. When you provide the list of ships having received the NTDS, will you also provide the cost per ship for this system?

(The information provided the committee is classified.)

VALUE OF NAVY TACTICAL DATA SYSTEM

Mr. SIKES. Is this system worth the money we are spending on this program; how do you measure this?

Captain FITZPATRICK. I think I would like to defer to one of the people who sailed with this system to answer that.

Admiral SHIFLEY. Yes, sir; I would like to talk to that. I very definitely think it is not only worth the cost, but I think with today's weapons that we have to defend against it would be very difficult for a task group to operate at sea without it. In the past when the aircraft we had to defend against were propeller driven and did not have weapons that could be launched at long range, we could get by with an air defense system that was more or less manually operated. With today's fast sophisticated weapons you cannot do that. Our defenses have to be computer controlled. That is one of the things that we do with the NTDS system. This is an oversimplification, but is a principal problem that illustrates why we must have an automated air defense system.

Mr. SIKES. Admiral, could you provide a statement briefly for the record indicating just what the NTDS does and what capability it provides that we did not have previously?

Admiral SHIFLEY. I would be happy to.

(The information follows:)

The NTDS system provides to the commanding officer of a ship the capability to perform all combat direction functions in the execution of the established mission and tasks of the ship when operating independently or in tactical organization with other ships, similarly equipped. Specifically, it provides for the capability to direct strike and assault operations, air defense, antisubmarine and amphibious operations, individually or concurrently in any mixture as required by the operational commander or tactical situation. Increased individual ship capability is provided to assess and act semiautomatically or automatically at high speed on tactical data which the ship itself collects.

Previously, individual ship capability, at high speed, or multiple ship real-time tactical coordination was not possible.

Mr. SIKES. What type of command and control system do the smaller ships use?

Admiral SHIFLEY. They have equipment that permits them to use in effect the computers on the larger ships. They have data links with them that provide them with information two ways so that they can feed information into the computers on the larger ships and the computers on the large ships can provide information back to them. They are coordinated into the operation of the task group.

Mr. SIKES. Are we incorporating new equipment of this nature into smaller ships now?

Admiral SHIFLEY. Yes, sir.

Mr. SIKES. How much is in the 1970 budget for this purpose?

Captain FITZPATRICK. There is nothing in the 1970 budget for this purpose. We expect to budget for this in 1971, however.

Mr. SIKES. How about fiscal year 1969?

Captain FITZPATRICK. No, sir. The only small ships that have an NTDS system are two destroyer escorts which were a special case and in which it was installed during the shipbuilding process.

FUNDS OF NTDS TO BE INSTALLED

Mr. SIKES. The justification book speaks of the introduction of new NTDS equipment or systems in the fleet. What does this statement mean?

Captain FITZPATRICK. This is a continuing process of installing these NTDS systems. In addition to the 28 which I mentioned, there are ships, another six, that are presently in the process of receiving the

NTDS system. There are seven more, I believe, that are scheduled for installation during fiscal year 1970.

Mr. SIKES. What fiscal year funds were involved in those ships?

Captain FITZPATRICK. A large number of these are shipbuilding funds. I will have to provide that.

Admiral GADDIS. They are budgeted in the annual program of the SCN conversion or new construction account. There are none this year that go in as a result of ship overhaul, is that correct?

Captain FITZPATRICK. I believe that is correct. Let me check that. No, I am wrong. In the ships that are scheduled for installation in fiscal 1970 there are two systems that were purchased in previous years with OPN funds. I am not sure what years they were purchased. I will have to provide that.

(The information follows:)

During fiscal year 1970, a total of seven ships are scheduled to receive this installation. The equipments were procured in the following fiscal years and with the appropriations as indicated. ———.

"SHORTSTOP"—ANTI-SHIP-MISSILE DEFENSE

Mr. SIKES. For what purpose will the ——— million for Shortstop be used? Isn't this in the conceptual stage at the present time?

Captain FITZPATRICK. Yes, sir, it is. It is my understanding that the ——— million will be used for engineering services in connection with the Shortstop installation which is being provided under R. & D.

Mr. SIKES. How is this Shortstop program progressing?

Commander BROWN. The program is progressing on time. However, it had a little delay a few months back. ———.

Mr. SIKES. Is this the system that is to be included in the DXGN ships?

Commander BROWN. This system, if it proves out as such, is a system that is definitely under consideration for this class ship.

Mr. SIKES. Will you provide for the record a description of this system and just what it does?

Commander BROWN. Yes, sir.

(The information was provided to the committee and is classified.)

ANTIAIR WARFARE ITEMS

Mr. SIKES. Are there any questions? If not, for the record identify the items in the P–1 which make up the $9.8 million for antiair warfare.

(The information follows:)

P–1#	*Fiscal year 1970*
5 AN/SPS–40 improvement	1.2
6 AN/SPS–30 improvement	2.0
7 AN/SPS–39/39A improvement	.5
12 Detection/tracking display (CIC update)	3.0
AAW items under $500,000	3.2

COMMUNICATIONS AFLOAT ITEMS

Mr. SIKES. Also insert in the record the items in the P–1 which make up the $9.8 million for communications afloat.

(The information follows:)

P-1 #		Fiscal year 1970
13	Antenna surface ships	2.4
14	ASW integrated submarine communications antenna subsystems	1.6
16	AN/URQ-13 standard system	.5
17	Quality monitoring control system MK II	1.0
18	Telemetry receivers/ivy green	1.6
	Commission afloat items under $500,000	2.6

Ship Anti-Missile Integrated Defense System

Mr. Sikes. You are requesting $44 million for countermeasures to provide an improved intercept capability for defense of major combatant fleet ships against an enemy antiship missile attack. Is the $12.3 million for ship antimissile integrated defense system, the SAMID a part of this $44 million program?

Captain Fitzpatrick. Yes, it is.

Admiral Shifley. The $12.3 is fiscal year 1969.

Mr. Sikes. What is this system and for what type ships?

Commander Brown. The SAMID system in 1969 is called the immediate package. This consists of ——

Mr. Sikes. For what purpose will the $3.2 million in fiscal year 1970 budget for SAMID systems be used?

Commander Brown. In 1970 there is a different part for SAMID. SAMID in 1969 was an overall system. SAMID in the 1970 contains only the integration and data links. The $3.2 million covers ——— ships. There are presently ——— ships which have been approved for the SAMID portion of the antiship missile suit.

Mr. Sikes. What ——— ships are they?

Commander Brown. The ——— ships under consideration right now are ———

Mr. Sikes. Is all this equipment developed specifically for cruise missile intercept or is this an interim fix until something better is developed?

Commander Brown. This basically starts from air defense where the greatest threat is the missile threat. It is a combination of modified existing equipment and new equipment which is integrated throughout the ship, the follow-on system will be a SHORTSTOP system which will also integrate defensive systems throughout the ship.

Mr. Sikes. This is an interim fix situation.

Commander Brown. Budgetwise we cannot put SHORTSTOP aboard all ships. Therefore, we have to have a system which is compatible to take care of the ships which are considered of high value but not high enough to receive a SHORTSTOP.

Mr. Sikes. SAMID was not developed specifically for the cruise missile threat?

Commander Brown. Yes, sir, SAMID Integration and Data Links were developed for this threat.

Admiral Gaddis. This is an interim threat reactive system within the current state of the art. A large number of the components will be incorporatable into SHORTSTOP which is considered the engineered package for the same operation. It will be far more responsive to the threat. Essentially this threat reactive system that we call SAMID

is, within the current state of the art, an attempt to get on board an immediate threat reactive capability for use off South Vietnam.

Mr. SIKES. Is the $9.5 million for threat surveillance receiver system and $19.6 for the threat reaction system part of this intercept system?

Commander BROWN. Yes, sir. I have a diagram which shows what the shipboard systems have presently and what this new threat reactive system and data links does for the system, going from a manual phone talker system to split second information exchange system linking all defensive systems.

Mr. SIKES. Could you provide for the record a list of items in the P–1 which apply to this SAMID system and the cost?

Commander BROWN. Yes, sir.

(The information follows:)

[Dollars in millions]

Title	Purpose	Amount
Threat surveillance system	Long-range detection of antiship missile launch platforms.	$9.5
Threat-reactive system	———	19.6
SAMID	Integration of shipboard weapons, EW and sensor systems into coordinated combat system.	3.2

Mr. SIKES. How much did we have in the fiscal year 1969 program for this purpose? You can provide that for the record.

Commander BROWN. For the SAMID portion it was $12.3 million.

Mr. MAHON. Gentlemen, we will reconvene at 2 o'clock.

AFTERNOON SESSION

Mr. MAHON. We will resume our hearing on the Navy budget.

SHIP ELECTRONIC SPARES AND REPAIR PARTS

Admiral Shifley, you are requesting $27.8 million for ship electronic spares and repair parts. You were funded a total of $83 million for this purpose in the last 2 fiscal years. Would you provide a tabulation showing the total value of the stocks of this equipment for each fiscal year since 1965?

Admiral SHIFLEY. Yes, sir.

(The information follows:)

The total value of procurements for ship electronic spares and repair parts since fiscal year 1965 is as follows:

[Millions of dollars]

Fiscal year 1965	7.9
Fiscal year 1966	27.8
Fiscal year 1967	37.9
Fiscal year 1968	42.4
Fiscal year 1969	40.6
Fiscal year 1970	27.8

Mr. MAHON. You are requesting $1.7 million for improvements to the AN/BQR–2B and BQS–4. What is the status of this equipment?

Admiral SHIFLEY. BQR–2B and BQS–4 improvements are field changes required to correct deficiencies in fleet equipments. Last year we procured items to improve, reliability, such as newly designed switches and transducers.

Mr. MAHON. Is this equipment still under test?

Admiral ABHAU. I am manager of the ASW systems project. The basic equipment, as installed in our submarines, at the present time is equipment that we have previously procured. This program simply replaces parts that are no longer reliable.

The higher reliability equipment includes items like new output transformers, delay line test sets and changes to eliminate electromagnetic interference between the components.

RETROFIT OF BQQ-1

Mr. MAHON. You are programing $41.6 million for ASW ship electronic equipment. What is the AN/BQQ-1 Ret III for which you are requesting $18.9 million in fiscal year 1970?

Admiral ABHAU. The BQQ-1 retrofit III is a replacement of an inboard component of the sonar in order to obtain higher reliability. The initial equipment had a mean time between ———. The new equipment makes an improvement of a factor of ———. That is, the tests have demonstrated a mean time between ———.

Mr. MAHON. How many sonars will be retrofitted?

Admiral ABHAU. ——— in ships and ——— in schools.

Mr. MAHON. What was the original cost of the AN/BQQ-1?

Admiral ABHAU. We will provide it for the record.

Mr. MAHON. All right.

(The information follows:)

The original cost of the basic BQQ sonar system was ——— million.

EQUIPMENT FOR DESTRUCTION OF CLASSIFIED MATERIAL

Mr. LIPSCOMB. Admiral, do you have responsibility under this "Other procurement" account for obtaining and installing new equipment in regard to destructing classified material aboard ship?

Admiral SHIFLEY. Yes; that would be under the cryptologic equipment.

Mr. LIPSCOMB. Are there funds proposed for any new equipment or equipment in general?

Admiral SHIFLEY. Let me correct that. The answer is "No." This is not provided for in this appropriation.

Admiral RICE. There is nothing in this budget, to my knowledge, to procure equipment with built-in self-destruct devices, but there is developmental work going on in methods—how to best use the methods to destroy this material.

Mr. LIPSCOMB. There is nothing of emergency nature of any sort in this budget to put modern destruct devices either for destroying classified material or destroying equipment for fiscal year 1970?

Admiral RICE. Not to my knowledge, sir. I am only familiar with the development which will be for improved methods for use as part of cryptographic equipment and how to use existing methods in the best possible way and this may lead to emergency procurement, but to my knowledge there is nothing in this part of the budget right now to buy extra material. The Ordnance Systems Command may be able to add some comments.

PROCUREMENT OF DEVICES DEVELOPED BY ARMY

Admiral Woods. We are procuring in this budget the demolition charges and the items that go with the destruction of classified equipment. As of now we are putting aboard these various types of ships destruct devices which were primarily developed by the Army. In addition to this, we have from CO a requirement to look into all new types of developments to see if we can come up with better methods of destructing cryptological equipment and paper. That is in R. & D.

Mr. Lipscomb. You say you are procuring destruct devices, which are Army developments?

Admiral Woods. Yes, sir.

Mr. Lipscomb. Is there money in this budget for these destruct devices?

Admiral Woods. Yes, sir; the document-destroyer M–3 which we are buying in fiscal year 1969 and also in fiscal year 1970.

There is the file destroyer, M–4, which we are also buying in both fiscal year 1969 and fiscal year 1970.

Mr. Lipscomb. In what quantity?

QUANTITY OF DESTRUCT DEVICES

Admiral Woods. Sufficient to equip all the ships that carry out this type of mission.

Mr. Lipscomb. What does that mean? "Sufficient to equip all the ships?"

Admiral Woods. We are buying ——— of the M–4 file destroyers in fiscal year 1969 at a unit cost of ——— there is an additional ——— of the ——— types in fiscal year 1970. We have additional money and I am not sure whether it is all out of this budget, which we are now using to put this equipment aboard all this type of ship, of which there are some ——— right now. This I am sure of.

Mr. Lipscomb. By "all the ships," you mean all of the electronic surveillance ships?

Admiral Woods. Yes, sir. In fact, we have been actively engaged in a program of testing the devices and instructing the crews and making certain that each ship, before it goes out now, has not only paper-burning equipment, but cryptographic-destroying equipment in addition.

Mr. Lipscomb. Where does that show in the justification material which we have before us?

Admiral Woods. I am surprised to see here, Mr. Lipscomb, that we are only buying ——— because I know we are buying a lot more than ——— and it must be out of some other fund and we will have to find this for the record.

Excuse me, sir. These are in quantities of thousands, where I said ———. I mean ——— document-destroyers M–3 in both fiscal year 1969 and fiscal year 1970, and ——— file destroyers M–4 in fiscal year 1969 and fiscal year 1970.

Mr. Lipscomb. We have ——— surveillance ships still operating, I think; something like that. You use the term "all ships." If you buy ——— what kind of a program are we talking about?

Admiral Woods. What we are talking about is several sets for each ships. In other words, each file cabinet and each set of cryptographic gear has to have its own separate destruction equipment and essentially one of these sets of equipment will destroy a file cabinet full or will destroy a particular set of cryptographic materials. There will be several on any one ship.

We are procuring this equipment and putting it aboard the ships that are in active service now. The additional equipments will be for back-up or additional ships if they are planned, and I am not aware of the total number, the additional numbers of ships we will require right now.

Mr. LIPSCOMB. Does this include ——— ships such as the Liberty-type?

Admiral WOODS. Yes, sir. The MSTS ships.

PROGRAM ADOPTED AFTER "PUEBLO" SEIZURE

Mr. ANDREWS. Is this the program you adopted after the *Pueblo*, Admiral, or did you have it prior to that time?

Admiral WOODS. After the *Pueblo*, sir.

Mr. ANDREWS. You are trying to avoid a future *Pueblo* incident?

Admiral GADDIS. These are items of under $500,000 in P–1 item "Miscellaneous pyrotechnics" in budget activity 4.

Mr. LIPSCOMB. What are you planning as a time schedule on the installation of these destruct devices aboard these ships? When will it start and when will it be completed?

Admiral WOODS. It is already aboard several of the ships. It takes a matter of about 3 to 4 weeks, if I recall, to rig the firing circuits, bring the equipment aboard and train the crew. Every ship which has sailed on a mission, since we started this program—and I have been involved in it for the last 6 to 8 months—has had her complement of this equipment on board. We are continually putting it aboard additional ships. I do not believe all of them have it now, but all of those, before they go on their missions, are so equipped.

Mr. LIPSCOMB. Why did it take the *Pueblo* affair, or incident, to call this to the Navy's attention?

DANGER IN OPERATION OF DESTRUCT DEVICES

Admiral WOODS. Well, sir, I don't have a very satisfactory answer for that one. I will say this in regard to the equipment that we now use, it is extremely dangerous. By that I mean in destroying your files you may well destroy your ship. There are large quantities of smoke that come from this equipment. In addition, it creates very hot fires and if there is aluminum involved such as in tape reels, you are liable to get minor explosions. This is the reason why we have been asked to look for better and more favorable methods of destroying classified equipment.

Mr. LIPSCOMB. Is the program with R.D.T. & E. a crash program? Does it have priority in funding?

Admiral WOODS. It has the highest priority, yes, sir.

CAESAR SYSTEM COSTS

Mr. MAHON. In the past two fiscal years you have been funded a total of $115.8 million for Caesar. This year you are requesting another $66.8 million. Will you explain the purpose of this rather expensive system?

Admiral SHIFLEY. I would like to call on Captain Kelly to answer the question.

Captain KELLY. I am the project officer for Caesar.

Of the $66.8 million, $1.9 million will be used to complete the ———.

Mr. MAHON. How much have we invested in this system and what is the estimate for the total program?

Captain KELLY. The total investment, up to and including fiscal year 1970 is about $545 million or $550 million. The installations which are authorized, ———.

OMEGA NAVIGATION SYSTEM

Mr. MAHON. You are requesting $9.7 million for OMEGA equipment to outfit four new foreign stations with construction costs borne by foreign countries. How many worldwide stations do you propose to have and where are, or where will they be located?

Admiral SHIFLEY. I would ask Captain Polk to speak to that.

Captain POLK. Of a total of eight stations, one in the north central portion of the United States, one in Hawaii, one in Norway, one in Trinidad, one in the Indian Ocean, probably on the French Island of Reunion, one in Australia, one in Japan, and one in Argentina.

The four new stations we are talking about are the Japanese, the French, the Argentine and the Australian. It is going to be a cooperative venture where they pay the construction cost with no base rights problems. We furnish the electronics.

Mr. MAHON. What will be the total cost of this system to the United States?

Captain POLK. About $50 million with what we have as sunk assets and $32 million additional, including this money we have here. $32 million is our portion of it.

Mr. MAHON. Will that include the total program of eight stations?

Captain POLK. Yes, sir. We have about $30 million in R. & D., but only a little of that goes into station construction. There is roughly 32 for us and 20 million for foreign participants.

RELATIONSHIP TO LORAN-C SYSTEM

Mr. MAHON. Will this system replace LORAN-C stations worldwide?

Captain POLK. No, sir, this is a different system than LORAN-C. As far as the Navy is concerned, we replace LORAN-A. In fact, we replaced LORAN-A on a one-for-one basis with the OMEGAS.

LORAN-C is a more precise system. Very precise. It can't be worldwide because it is a different system. It is a strategic system. The OMEGA is general purposes.

Mr. MAHON. What is the requirement for OMEGA then, if we have LORAN-C and it is a far better system?

Captain POLK. LORAN-C gives coverage in specific areas and for a specific purpose. We don't have any system right now that gives us a worldwide continuous navigation. The advantage of OMEGA is its coverage. Eight stations, and you can use the same system. It has an additional advantage. It is a VLF system. You can use it on submarines submerged as well as aircraft or ships.

Mr. MAHON. How accurate is the system?

Captain POLK. It is a one-to-two nautical mile system for general purposes; LORAIN-C is an order of magnitude more precise.

Admiral SHIFLEY. It is impractical for LORAN-C to be worldwide. It would be impractical because it would take too many stations.

Captain POLK. There are about 30 LORAN-C stations now and it covers a little less than 25 percent of the world. Eight OMEGA stations will cover the whole world.

Admiral GADDIS Additionally, there are magnetic anomaly conditions in certain places in the world where LORAN-C is not too accurate.

Mr. MAHON. We have read where OMEGA is accurate to the point of one-to-two miles. How will this help any type of ship for navigation purposes?

Captain POLK. In en route navigation it helps tremendously because we have nothing now that can give us accuracies to 5 or 10 miles. After you get out of the reaches of land, all we have is cellestial at the present time. In bad weather you can go for days without getting a fix.

A ship or an airplane going from point to point, 1 to 2 nautical miles is, oh, 10 to 100 times better than what they have now by guessing. You can cut down deployment times. Tactically, we can use it for forces together on the military side of it. It is about one-tenth of a nautical mile accuracy when you can have aircraft, submarine and ships working together. They know their position geographically within 1 to 2 miles and the position in relation to each other within about a tenth of a mile.

Mr. MAHON. How many ships will be provided with OMEGA receivers with the $1.2 million?

Captain POLK. Ships and submarines: 84.

Mr. MAHON. How many ships will be equipped with OMEGA and what will the total cost be of the program?

Captain POLK. Ships and submarines, we are planning about 800 ships and about $12.5 million total.

Mr. MAHON. This system will be available for use by any country with ships equipped with OMEGA receivers?

Captain POLK. Yes, sir; and also it is unclassified so it will be available to civilian use as well.

Mr. LIPSCOMB. What foreign countries are programed in this budget?

Captain POLK. Argentina, Japan, France primarily; Madagascar, to back up, and Australia.

Mr. LIPSCOMB. You have eight stations, or will have?

Captain POLK. Eight stations total.

Mr. LIPSCOMB. Where are the other four?

Captain POLK. North Central United States, Hawaii, Norway, and Trinidad.

Mr. LIPSCOMB. Does the Soviet Union have the capability to use this system?

Captain POLK. I am sure they will, sir. It is not hidden and it has been in open literature for the last 20 years. In fact, they have advertised as of June last year a system, a local system, that is somewhat similar.

Mr. LIPSCOMB. This system that they have publicly acknowledged can use the OMEGA operation?

Captain POLK. No, sir. The frequencies are different. The same type of system, but different frequencies.

Mr. LIPSCOMB. What nations have the capability, other than ourselves, to use the OMEGA system?

Captain POLK. At the present time?

Mr. LIPSCOMB. Yes.

Captain POLK. Norway, England, France, Japan, the Netherlands, the Danes, the Canadians, the Brazilians, and the Argentines at the present time. They are all testing it. Nobody has started putting it in operational ships. We have a few, but we need it to—we didn't get the program approved until September of last year so we didn't start installing production equipment until we had the signal on the air. These countries have ships in it and have receivers working at the present time.

Mr. LIPSCOMB. What is the advantage of the Soviet Union having a different frequency?

Captain POLK. Really, not very much. Their advertised system is three stations, all owned on Soviet soil. Since we were not exchanging information, really, with the Soviets during the last 15 years——

Mr. LIPSCOMB. We haven't?

Captain POLK. Not on VLF. They couldn't use the same frequencies that we used because we have the international permission to use the frequencies. If they work in the system, they had to use frequencies other than those we were using. Basically, this is the allocation of frequencies by the International Frequency Control Board.

Mr. LIPSCOMB. If this system is a strategically important system such as for deployment, can it be jammed?

Captain POLK. It can be jammed. To effectively jam the system, you have to have almost as large a station as that which we are putting up. You can do local jamming. We have put more than one frequency in to make the jamming a little bit more difficult. The other aspect, in looking at it from a strategic standpoint, is that it will be owned and operated by six different nations, but it has a certain military connotation also in that someone who is mad with us also has to make five other nations, France, Japan, Australia, Argentina, Norway, et cetera, mad at the same time. It is a calculated risk. It looks as if the enemy, or potential enemy, unless you had an all-out war, would not worry about jamming. Then, it is not a strategic weapons delivery system, so whether or not anyone would go to the expense of trying to jam this one rather than work on a strategic weapons delivery system is questionable.

AGREEMENTS WITH FOREIGN COUNTRIES

Mr. LIPSCOMB. Who negotiates the agreements with the countries with which you have agreements?

Captain POLK. The State Department. We are using local embassies in each of the countries and the State Department sets it up with the local embassy and I have been acting as the technical backer for it.

Mr. LIPSCOMB. How far along are you in your negotiation for the four new stations?

Captain POLK. We expect to get into—we have gone through all the preliminaries with Argentina. We expect to get into formal final negotiations before the 30th of June. Japan is scheduled in June to finish the last preliminary negotiation discussions. We will start formal discussions with them in August. With France, we were supposed to have completed negotiations with them before their present political situation came up. Now we don't know.

Australia won't be ready until about the first of the year to start formal negotiations. They were scheduled to be the last station to come in. We have the State Department to negotiate with the necessary countries for these stations.

COMMERCIAL AIRLINE USE OF SYSTEM

Mr. LIPSCOMB. How far along are commercial airlines in using this system?

Captain POLK. They are really just starting. We started off building a ship and submarine system within the DOD and the Navy and were slow on the aircraft side. The first receivers for airlines are really not coming off the line until next month. It is scheduled to go into four different commercial airlines. This is a commercial version of what we are doing for the Navy. Since this equipment hasn't been proved and also the new stations haven't come in, their plans, as far as I can ascertain, are to get stations in the far reaches which we are now negotiating for, before they start investing their money for it.

Mr. LIPSCOMB. What is the status of our military aircraft using the system?

Captain POLK. There again, our receiver, we will start flying it on the second of June. We do not have the service approval, but we expect to start installing in our airplanes in fiscal year 1971.

Mr. LIPSCOMB. How large a program is this? In this budget, according to the justifications, the request of $9.7 million provides for electronics equipment to outfit four new stations. The foreign countries are supposed to furnish all construction costs. Is that right?

Captain POLK. Yes, sir. This is what we are trying to negotiate for. All base rights, foreign construction, and payment for the operation and maintenance. It will not cost us anything after the station is built.

Mr. LIPSCOMB. You say "trying". This justification sheet says:

This represents the total contribution of the United States as all construction costs will be borne by the foreign country.

That is not a correct statement?

Captain POLK. This is what the goal is, but until we get the negotiations signed with the foreign country, I can't make—that is not to the way we had written it originally, no sir.

Mr. LIPSCOMB. Suppose we hold up the appropriation until you finish negotiations, would that do any harm?

Captain POLK. Yes, sir.

Mr. LIPSCOMB. Why?

Captain POLK. Because it is 18 months leadtime on these equipments and one of the things the State Department is using, we had promised from the U.S. standpoint we would furnish the electronics. This is our side of the coin.

ANALYSIS OF OMEGA PROGRAM COSTS

Mr. LIPSCOMB. For the record, would you insert at this point the total cost of all kinds and of whatever nature that are associated with the OMEGA program?

Captain POLK. I think I can give it to you right now, sir. The station cost, OPN, Military Construction—because we have some—and the foreign military construction, $52 million, of which our best estimate is $32 million of that, United States, and $20 million foreign. Receivers, $12.4 million. This is the initial outfitting of our ships. $12.4 million for ships and submarines and 50.6 million for aircraft.

Mr. LIPSCOMB. If you will put an analysis in the record, it would be appreciated.

Captain POLK. Yes, sir.

(The information follows:)

PLANNED OMEGA INVESTMENTS

[In millions of dollars]

	Fiscal year—						
	1968	1969	1970	1971	1972	1973	Total
Receivers:							
Ship	3.5		1.2	5.5	4.7	1.0	66.5
Aircraft				19.5	18.3	12.8	
Station electronics		3.2	9.7	6.1			19.0
Construction:							
U.S. (Milcon)[1]			8.8	4.8			33.6
Foreign (estimated)[2]				20.0			
Total investment cost							119.1
Less host nation offset							20.0
U.S. cost							99.1

[1] U.S. milcon funds to be used to convert present stations from R. & D. configuration to final operational configuration.
[2] Foreign engineering estimates of station construction costs are falling below U.S. estimates and may result in a decrease of up to $8,000,000 in this figure. (This will not affect total U.S. cost.) Annual operation and maintenance cost of $300,000 per station also to be funded by foreign governments.

Mr. LIPSCOMB. You have to qualify that with the fact that you really don't know what your agreements are going to require or what arrangements are going to be fulfilled?

Captain POLK. Well, this is the best estimate we have. This is the unofficial word on the arrangements. This looks good.

Mr. LIPSCOMB. Thank you.

GENERAL COMMUNICATIONS IMPROVEMENTS

Mr. DAVIS. Who can bring me up to date a little bit from knowledge that is 34 years old relating to shipboard and shore communications equipment? My knowledge goes back to TBS and the FOX schedule,

but I imagine we have long since abandoned anything that unsophisticated. Where are we now in these areas?

Admiral RICE. Going back to the TBS, you remember the TCS probably, which was a little high frequency set. We still have a few of those around. The TBS of today is in ultrahigh frequency and is many times more effective as far as volume of traffic is concerned. We still have distance limits problems because of the frequency we are in. We still have VLF broadcasts. They are much faster and no longer a hand key; they are a teletype, and they are being expanded to higher speed. As far as your high frequency is concerned, we have multichannel broadcasts and multichannel reception. You work a ship directly today with high-speed schedule, secure equipment. That is another big step forward. Today everything has to be covered (that is encrypted), it works faster and is more effective. We are just about to move into satellites, a wide band, if you will. We have proven that at sea and that is probably the next big step forward. The differences in volume, effectiveness, speed, automatic, if you will, as compared to, say, 30 years ago, and specific equipment, if you are interested, we can supply you with that.

Mr. DAVIS. When you say automatic, I imagine the old ECM has long since been discarded, has it?

Admiral RICE. Yes, sir. It is on line now, so to speak. You go straight through, plain language to plain language, and user to user. It is automatic in its incryption and decryption and printing out at high speed.

Mr. DAVIS. What is the FBM command and control system?

Admiral RICE. That applies to the Fleet ballistic missile, the Polaris system, and there are special communications for that. We use the VLF that goes down in the water and we have some special methods of processing that ——— which will again give worldwide coverage with much more a surety of getting through and survivable under attack and so forth. But this whole program to get communications to and from the ballistic missile submarines is a special aspect of communications that we are working on real hard.

Mr. DAVIS. How, in this sophisticated concept of communications, is it anything like the hours delay with respect to the *Liberty*? I guess it was more than an hour's delay, wasn't it?

Admiral RICE. Well, all I can say to that, sir, is, computers make mistakes too and if it goes to the wrong place and is not corrected by someone, these delays can happen. But unless things pile up on us, you should in minutes be able to get through today where it used to be hours.

I think if you will look back of that, either human or otherwise mistakes which—like the discussion this morning, we don't seem to be able to stop it completely, but it was an anomaly in the system and how it happened at that time I can't answer. Maybe some operator can.

Mr. DAVIS. Did you ever get that pinned down as to how something like that could occur?

Captain VAN SICKLE. I would not want here to point the finger, but it was analyzed and it was determined that it was human error, just as Admiral Rice points out. The equipment was not at fault. It was

a human error in the assignment of an address to the particular message in question and, as Admiral Rice pointed out, you can't eliminate completely the human error and that is what happened.

Mr. DAVIS. Navy communicators still make mistakes, do they?

Captain VAN SICKLE. I am a Navy communicator and I just want to say the fact of the matter was, it was not a naval communication error. It was not the Navy's fault.

Mr. DAVIS. Well, I am glad to hear that.

Captain VAN SICKLE. That is why I don't want to point the finger.

Mr. ANDREWS. Several years ago the Navy spent a lot of money over here in West Virginia. ———.

Admiral RICE. ———. Part of that today is being used for communications receiving station, a very modern one just commissioned the 10th of this month in West Virginia.

Mr. ANDREWS. I was on the subcommittee that handled appropriations for the construction at the time. ———.

Admiral RICE. I am not familiar with that aspect of the ——— and the site is being used today as the most modern communications station in that zone. It was commissioned on the 10th of May and is used as a receiving site for the Washington complex.

Mr. ANDREWS. Was there a number of years there where they didn't use it?

Admiral RICE. It has been used continuously by ———. The area is being used ——— and for receiving communications by the Navy.

Mr. ANDREWS. Do you have a system in use now where you ———.

Admiral RICE. Yes, sir.

Mr. ANDREWS. Where is that headquartered?

Admiral RICE. We have that in various places. This is being used in some of ———. I am not sure where they all are now, but we have several ships receiving and using that and we have shore stations——

Mr. ANDREWS. What kind of messages do they get? Are they dots and dashes?

Admiral RICE. It is ——— sir. It can be used to get quite secure information back and forth ——— so that system is being used.

Mr. ANDREWS. Can the ship use the same system ———.

Admiral RICE. Yes, sir. It requires quite a ———.

Mr. ANDREWS. That system is not subjected to ——— is that correct?

Admiral RICE. It is highly resistant, but to say it cannot be is a pretty broad statement, sir, most anything today can. It is a matter of relativity, but it is ———.

Mr. ANDREWS. You find it a useful system?

Admiral RICE. Yes, sir, but it is ———.

SHORE COMMUNICATIONS EQUIPMENT

Mr. MAHON. Your fiscal year 1970 program for shore communications equipment is $18.7 million. What is the purpose of the request of $2.1 million for AUTODIN?

Admiral GADDIS. I could answer that and Admiral Rice can amplify as necessary. The $2.1 million will procure equipment, card readers, printers and page printers, for use with terminal equipment.

Admiral RICE. This is the automatic digital system run by DCA around the world, and this is to get the Navy's subscriber ancillary equipment brought up so we can make use of this system.

Mr. ANDREWS. You had no funds for this purpose in fiscal year 1969. What brought about this request in 1970?

Admiral RICE. The digital subscriber terminals have been in development. As a matter of fact, they are being tested now and the Navy is being sure that they are properly maintained before we put them in the field. So the system we are getting into is with data communications at this stage of the game and we will be continuing to make more use of this type of communication.

Mr. ANDREWS. Are these the so-called high-speed terminals to interphase with the AUTODIN switch?

Admiral RICE. They are both high and low speed. They are card readers and printers. You need a complete station if you put this system in to make proper use of it, both high speed and low speed, cut tapes and this type of thing. Then you get into the DCA and send it to where you are going. Each Navy station has to have complete equipment of these ancillary devices.

LOCATION OF DIGITAL SUBSCRIBER TERMINALS

Mr. ANDREWS. Could you provide a list, Admiral Rice, of the Navy shore stations receiving this equipment from the fiscal 1970 budget?

Admiral RICE. Yes, sir.

Naval Radio Station, Sugar Grove
Fleet Weather Facility
Commander Cruiser/Destroyer Force, Atlantic
Marine Corps Air Station, Cherry Point
Fleet Weather Central, Alameda
Commander Cruiser/Destroyer Forces, Pacific
Naval Air Station, Dallas, Tex.
Marine Corps Air Station, El Toro, Calif.
Naval Air Station, Lemoore, Calif.
Naval Air Station, Moffet Field, Calif.
Fleet Weather Central, Kodiak, Alaska
Fleet Weather Central, Yokosuka, Japan
Fleet Weather Central, Sangley Point, Philippines
Fleet Weather Central, Honolulu, Hawaii
Fleet Weather Central, Spain
Air Transportable Communication Unit
Naval Communication Station, Newport, R.I.
Commandant, 8d Naval District
Marine Corps Supply Center, Albany, N.Y.
Marine Corps Supply Center, Philadelphia, Pa.
Atlantic Undersea Test and Evaluation Center, West Palm Beach, Fla.
Anti-Submarine Classification Analysis Center, Jacksonville, Fla.
Anti-Submarine Classification Analysis Center, Patuxent, Md.
Anti-Submarine Classification Analysis Center, Brunswick, Ga.
Anti-Submarine Classification Analysis Center, Argentia, Newfoundland
Anti-Submarine Classification Analysis Center, Keflavick, Iceland
Naval Post Graduate School, Monterey, Calif.
Naval Communication Unit, Rio de Janeiro, Brazil
Naval Reserve Training Center, Omaha, Nebr.

CONSOLIDATION AND COMMUNICATIONS SERVICES ASHORE

Mr. ANDREWS. Where does the Navy stand in its program to consolidate the communications service ashore?

Mr. OATES. Office of Naval Communications. You have reference, I believe, to the report last year which was derogatory to the military department about consolidation. The Navy has always had consolidated communications and message distribution center. We are consolidating in geographical complexes but not these individual communications facilities that the Army and Air Force have run independently.

Mr. ANDREWS. I was not referring to the consolidation of message centers at comcenters. I had reference to consolidation of communications centers at various shore activities. For example, in the same building in Hawaii, CINCPAC has a very large communications center and also FM, Pacific.

Mr. OATES. Yes, sir.

Mr. ANDREWS. Have those been consolidated into one?

Mr. OATES. They have not been consolidated as yet. In the period from July to December 1968, we consolidated 19 facilities in six geographical complexes. We are planning after December 1968, in the future, with no specified date but studies are under way, to consolidate an additional 38 facilities in 11 more geographical complexes, one of which is in the Hawaii area.

Mr. ANDREWS. What do you mean by geographical complexes?

Mr. OATES. You mentioned the Hawaii one. In Hawaii we will be consolidating all of the CINCPAC, the Navy, maybe even Army and Air Force facilities.

Mr. ANDREWS. Are we buying high speed terminals now that might be installed in a station that would be consolidated later on?

Mr. OATES. No, sir. In fact, all communication terminals will not be high speed. We will have many different types of terminals depending on the traffic into and out of a location. Some of them will not even get the data terminal to handle data traffic. I think we must remember that AUTODIN is not only for data traffic, but it will handle pure teletype and other record means of communication. We are in effect consolidating our regular teletype, our data and other record communications into the AUTODIN system. This is the purpose for the procurement of some of these card readers, punches, et cetera.

Admiral RICE. If I may amplify, he is right, teletype is really digital. You have the switching centers, your regional centers, and you get right down to a subscriber. You may have very minimum of equipment. It is built on whatever his requirements are. These items the Navy is buying are tailored to the use. There may be in an area a communication station which may receive most of the traffic and you may have a subscriber the way you have a teletype today in the next building and you could give him whatever he needs and its goes through the switch and subcenter. This is going on. It is kind of slow. In the Washington area all high frequency communications are being consolidated. Even in CNM we are trying to consolidate our message center. So the process is moving ahead. We lean on the communications station, Washington, to take this over to the administrative people.

Mr. ANDREWS. Is this consolidation of communications centers moving as fast as it can?

Mr. OATES. Yes, sir.

Mr. ANDREWS. For example, how long would it take to consolidate the communications centers of CINCPAC and FMF PAC?

Mr. OATES. I cannot answer that specifically. It is under study right now. To my knowledge there is not a target date established.

Mr. ANDREWS. What kind of study is being made?

Mr. OATES. As I indicated they are looking at Army, Air Force, the Unified Commander, and the Navy.

Mr. ANDREWS. Who is making the study? Let us take the one at CINCPAC. What kind of study do we have to have to determine whether CINCPAC and FMF PAC communications can be consolidated into one center in the same building?

Mr. OATES. Whether the one center can accommodate all traffic, et cetera.

Admiral RICE. Sir, may I recommend something be put in the record because I think there is confusion when you say "center" as to what you are talking about.

The naval communications system, Washington, supports the main Navy complex and the Pentagon. We may need AUTODIN drops, if you will, there, and bringing in communications. But you may have to go out for administrative and other purposes, which may mean the center you are talking about is two operations that could not be consolidated.

Down to some points you consolidate and then you break out from that. I would suggest that they describe what is going on for the record, because message center and consolidation might lead to confusion.

CONSOLIDATION OF FACILITIES

Communications center and message distribution center functions historically have been combined and performed by a single communications terminal facility within headquarters and activities throughout the Navy. In order to achieve centralized management of communications resources/programs within specific geographical complexes the Navy has been pursuing a consolidation program since 1960. Under this program, naval communications facilities (communications centers, transmitting facilities, receiving facilities) in each complex have been consolidated and incorporated into the organization of the command or activity assigned the preponderance of communications functions and facilities in the complex.

Some facilities can be consolidated in a short period of time within current resources of affected activities. In most cases, however, consolidation requires detailed surveys and planning, alteration of spaces, programing/transfer of resources, and procurement of equipment. Effective dates for consolidation are established accordingly.

As of this time there are no plans for the consolidation of CINCPAC and FMF Pacific communications centers in Hawaii.

SATELLITE COMMUNICATIONS TERMINALS

Mr. ANDREWS. You are requesting $5.3 million this year for SATCOM shore terminal equipment. How many SATCOM shore stations does the Navy have at present?

Mr. OATES. Satellite terminals. Today we are operating three MSC–46 ground terminals, two at Naval Communication Station, Honolulu, and one at the Naval Comunication Station, Guam. We are operating four TSC–54 terminals, one at Honolulu, two at Guam, one at Naval Communications Station, Harold E. Holt.

Mr. ANDREWS. What is the difference between the two stations you mentioned?

Mr. OATES. The MSC–46 is a large terminal and the 54 is a smaller terminal. The 46 has a 40-foot dish antenna and weighs 140,000 pounds. The TSC–54 has a 20-foot dish antenna and weighs 2,600 pounds.

Mr. ANDREWS. Why do we have to have two different types?

Mr. OATES. The volume of the traffic transmitted between the terminal and satellite.

Mr. ANDREWS. Do they handle different types of traffic? I am not quite clear on the difference between the two.

Captain VAN SICKLE. The 46 is much less mobile. It has a greater number of channels. It has a greater channel capacity and although it is movable, it is essentially an in-place fixed installation. The 54 is a smaller, much more mobile piece of equipment. It is Army equipment and will handle a lower level of traffic volume. Therefore, depending upon the size of the command that it serves, you will have either the larger or smaller terminal. The smaller command requires a smaller volume of traffic and therefore uses a small equipment.

Mr. ANDREWS. You are not moving the mobile equipments around, are you? Aren't they set up in more or less a fixed operation?

Captain VAN SICKLE. They are at the present time. But they can be moved. They are equipments furnished by the Army.

Mr. ANDREWS. But is not the Navy operating those mobile stations?

Captain VAN SICKLE. The Navy is operating those Mr. Oates mentioned.

Mr. ANDREWS. Is the Navy going to move them around?

Captain VAN SICKLE. If it is called on for them to be moved, arrangements will be made to move them. Whether the Navy moves them or not will depend on who has the best capability at the time.

Mr. ANDREWS. Are the mobile stations serving a particular command, for example, on Hawaii?

Captain VAN SICKLE. The equipment in Hawaii—the 46s provide voice channels to Commander in Chief, Pacific, for joint use from Hawaii to Saigon and to Washington. The 54 provides Commander in Chief, Pacific Fleet, voice or teletype channels to Guam or to the USS *Arlington*.

Admiral RICE. At this stage of development of satellite terminals, we often take a development by another service and put it in fixed service in the Navy. These are really in fixed service. We will be installing them with different size and different capacity. The shipboard and aircraft and jeep terminals are in development. This is quite a large program. We do not duplicate, and if the Navy can use them, we use another Service's development. We put it as a permanent installation and use it as if it were so designed. If you need to move it, you can. At this stage of development it is a family of terminals and all services use the developments of the others where it makes sense. The shipboard terminal, the aircraft terminal, and jeep terminals are coming along.

Mr. ANDREWS. Maybe we could provide something for the record to clarify this a little more and expand on the need for the two different types of terminals, mobile and fixed and why the installations of the fixed terminals did not replace the mobiles that you have or why it couldn't.

Admiral RICE. There are no fixed terminals per se at this stage of development.

Mr. ANDREWS. I thought the gentleman mentioned something about large fixed stations.

Admiral RICE. The 40-foot dish is still that.

Captain VAN SICKLE. What I intended to express was the difference in the mobility of the two. The 46 is a much larger installation and can be moved, but it takes a good deal longer to break it down and move it, that with the 20-foot dish it is quite mobile and can be moved in a matter of 3 or 4 hours, for example.

Mr. ANDREWS. How many shore terminals will be provided for with the equipment in the fiscal 1970 budget request?

Mr. OATES. There will be no shore terminals provided in the 1970 procurement.

Admiral RICE. The four terminals mentioned there are for the AGMR and NECPA ships. Those are for commitment of four SATCOM terminals to operate with the phase 1 and 2 satellites. They are to be of a modified commercial design. It was asked earlier were we doing anything to the NECPA ships, we are trying to allow them more freedom to go to sea. Right now they are limited to where they go and the full scale satellites would allow them much more freedom. The four terminals we are trying to get are two for the AGMR's and two for the *Northampton* and *Wright*.

Mr. ANDREWS. Has this equipment been tested and service-approved?

Admiral RICE. No, sir. We are trying to get the best available modified commercial for these ships. We can stand much more in the way of an antenna and use the state of the art. One of our problems with the shipboard program is when you try to get down to the very small dish stabilized in the high RF environment aboard ship we have a lot of trouble keeping them on the air. With this special requirement we are going to try to go with the best industry has, and modify them. They can take large modified commercial gear—basically shore equipment.

Mr. ANDREWS. How large a dish would this be.

Admiral RICE. We are talking about 12- to 15-foot dish, almost as big as the 54.

Admiral SHIFLEY. In addition there is one other for training. There is a total of five.

Mr. ANDREWS. I was going to ask why is it listed as SATCOM shore terminals if four are going aboard ship?

Mr. OATES. There will be some modification of shore terminals with this $5.3 million also in order that the shore terminals we now have will operate with phase 2, DSCS or Defense Satellite Communications System.

Mr. ANDREWS. Could you provide a breakdown for the record of how this $5.3 million will be utilized?

Mr. OATES. Yes, sir.

(The information follows:)

$5.3 MILLION FOR SATCOM TERMINALS

Modification of existing shore terminals to operate with phase II of the Defense Satellite Communications System will require $1.7 million; $3.6 million will be applied to shipboard terminal requirements for specialized ships (NECPA and AGMR) that can take modified shore equipment.

Mr. ANDREWS. How many SATCOM shore terminals in total does the Navy plan to have and what will be the estimated cost?

Mr. OATES. I will have to provide that for the record, if we may, sir.

(The information follows:)

The final decisions have not been made as to the assignment of SATCOM shore terminals of the military departments for operation. However, as of this date it is indicated that the Navy will have 10 shore terminals. It is estimated that the total procurement cost of these terminals will be approximately $23 million.

AVIATION SUPPORT EQUIPMENT

Mr. ANDREWS. The proposed program of $713 million in fiscal year 1970 for aviation support equipment is $107 million less than last year's program. How much of this decrease is attributable to the reduction in air munitions and to the transfer of funding for equipment installation costs to the O. & M. appropriation?

Admiral SHIFLEY. The reduction due to air munitions is $107 million.

ADMIRAL GADDIS. The transfer of installation cost O. & M. Navy is $4.8 million. It was spoken to during the O. & M. hearings

ITEMS BUDGETED NOT YET APPROVED FOR SERVICE USE

Mr. ANDREWS. Would you provide a list of items in the fiscal year 1970 budget request which have not been approved for service use, the cost, and when you expect them to be approved.

Admiral SHIFLEY. Yes, sir.

(The information follows:)

ITEMS INCLUDED IN FISCAL YEAR 1970 BUDGET REQUEST WHICH HAVE NOT BEEN APPROVED FOR SERVICE USE

[Dollars in millions]

P-1 line item No.	Item	Amount requested in fiscal year 1970
17	———. Bomb CBU-55	$9.6
	Engineering design was completed in April 1969. Component development, engineering test, and design (limited production) releases are expected in June 1969. Approval for serivce use is expected in ———.	
	Development contractors:	
	Honeywell Inc., Minneapolis, Minn. (dispensers, bomblets and bomblet fuze).	
	NWC, China Lake, Calif. (technical direction weapon).	
	NOL, White Oak, Md. (technical direction fuze).	
18	Target identification bomb MK 121	2.3
	The target identification bomb MK 121 is a low light-level long-duration chemiluminescent target marker device which provdes a night target identification signal. Engineering design component development and engineering test have been completed. Design release (limited) was given in May 1969 and design release (unlimited) is expected in September 1969. Estimated date of approval for service use is October 1969.	
	Development contractors:	
	NWC China Lake Calif.	
	NAD Crane Ind.	
21	Practice bomb BDU-24/C	1.9
	This is a full-scale training weapon for the MK 43 weapon applicable for use as a loading and handling trainer and for fleet readiness exercises as a substitute and replacement for the operational suitability test (OST) weapons. Estimated completion dates are June 1969 for engineering design, August 9, 1969 for component development, November 1969 for engineering test, and December 1969 for design release. Estimated date of approval for service use is ———.	
	Development contractor: NOL, Dahlgren, Va.	

ITEMS INCLUDED IN FISCAL YEAR 1970 BUDGET REQUEST WHICH HAVE NOT BEEN APPROVED FOR SERVICE USE—Continued

[Dollars in millions]

P-1 line item no.	Item	Amount requested in fiscal year 1970
25	Zero Antiaircraft potential (ZAP) This is a wraparound fin aircraft rocket for use against a wide range of material and personnel targets. Engineering design (limited production) and component development have been completed. Engineering tests are expected to be complete in August 1969. The design has been released for pilot production and is expected to be released for limited production in July 1969. The estimated date of approval for service use is ——— Approval for service on limited production has been given based on a waiver. Development contractors: Naval Ordnance Laboratory, White Oak, Md.—designer and program coordinator. Thiokol Chemical Corp., Elkton, Md.—motors. Martin-Marietta Corp., Baltimore, Md.—warheads and launchers. Melpar Corp., Falls Church, Va.—Fuzes.	12.8
111	AN/PRC-87 crewman radio rescue helmet set This system is designed to provide the rescue crewmen with 2-way continuous communication with the SAR (search and rescue) aircraft in the performance of a rescue mission in the assist of a downed air crewman. Engineering design and component development have been completed. The estimated completion date for engineering test is May 1969. Approval for service use is expected in July 1969. Development contractor: Magnavox Corp., Torrence, Calif.	.6
118	MISCELLANEOUS SURVIVAL EQUIPMENT	
	(a) Precision infra-red survivor locating device This item is designed to replace the SAR flare device, Signal mirror, and .38 caliber flare cartridge with improved item. Engineering design, component development, and engineering test have been completed. The estimated date of approval for service use is June 1969. Development contractor: Sanders Associates, Inc., Nashua, N.H.	2.4
	(b) Oxygen breathing mask This item is designed to replace the A-13 oxygen mask to provide greater visibility, comfort, and breathing effort improvement. Engineering design has been completed. Component development and engineering tests are expected to be completed in May 1969 and August 1969 respectively. The estimated date of approval for service use is October 1969. Development contractor: Sierra Engineering Co., Sierra Madre, Calif.	
	(c) Repairable oxygen communication hose assembly This item is designed to replace all integrated oxygen communication assemblies on an attrition basis to provide a system to replace parts in lieu of the entire assembly. The engineering design has been completed. Component development is expected to be complete in May 1969 and engineering test completions are anticipated in July 1969. The estimated date of approval for service use is September 1969. Development contractor: ARDC Corp., Sun Valley, Calif.	.2
	(d) Fire Resistant antiblackout suit This item is designed to replace the MK-2A anti-G suit to provide a reduction in fire hazards, increased comfort to the wearer, and lower fabrication costs. Engineering design and component development have been completed. Engineering tests are expected to be complete in July 1969. The estimated date of approval for service use is September 1969. Development contractor: David Clark Co., Worcester, Mass.	.2
	(e) Intermediate antiexposure suit PVC type, CWU-29/P This item is designed to provide a lighter weight, dual environmental capability and a possible replacement for the current winter flight suit and/or the Air Force (intermediate weight) coverall. Engineering design and component development have been completed. Engineering tests are expected to be completed in June 1969. The estimated date of approval for service use is July 1969. Development contractor: Empress Corp., Los Angeles, Calif.	.2
	(f) Lithium copper fluoride battery This item is designed to replace the Mallory battery in the PRC-90 survival radio in order to provide longer operational and shelf life with a higher degree of reliability. Engineering design, component development and engineering tests have been completed. The estimated date for approval for service use is July 1969. Development contractor: Honeywell Inc., Montgomeryville, Pa.	.2
	(g) Magnesium battery This item is designed to replace the AN/URT-33 survival beacon battery in order to provide improved low-temperature performance, extended shelf life, and a higher degree of reliability. Engineering design and component development have been completed and engineering tests are expected to be completed in May 1969. The estimated date of approval for service use is June 1969. Development contractor: Battery Corp. of America, Red Bank, N.J.	.3

AIR LAUNCHED ORDNANCE FOR ASW

Mr. ANDREWS. This year's request for ASW Air Launched Ordnance and Support Equipment is $52.2 million, an increase of $17.9 million over the fiscal year 1969 program. Why has your procurement program for sonobuoys increased from $31.8 million in fiscal year 1969 to $49.7 million in fiscal year 1970?

TYPES AND QUANTITIES OF SONOBUOYS

Admiral ABHAU. There are two reasons for the increase. The first is that the number of sonobuoys actually to be procured is ———, which is an increase of 24,000 over fiscal year 1969. This increase is for ——— active range sonobuoys, and ——— termograph buoys. It is necessary to preserve the inventory readiness. The second reason for the increase is that the mix of buoys we are procuring this year have a higher unit cost. Specifically, the Difar buoy, of which we will get ——— this year instead of ——— and a substantial procurement of the SSQ–47 active buoy, that is, for ——— that were not contained in fiscal year 1969.

Mr. ANDREWS. Admiral, could you provide a tabulation for the record of the type and quantity of each sonobuoy and cost contained in this budget request?

(The information follows:)

The program as proposed provides for five different type sonobuoys. There are ——— AN/SSQ–41 JULIE/JEZEBEL buoys for $9.9 million which are compatible with processing equipment in older fleet aircraft; ——— AN/SSQ–53 (DIFAR) for $28.2 million which are being phased in with newer production aircraft and provide a greatly enhanced ASW capability; ——— AN/SSQ–57 sonobuoys for $.3 million which are specially calibrated for use in special applications; ——— AN/SSQ–57 active range sonobuoys for $4.3 million, required for final localization of submarine targets; ——— AN/SSQ–36 bathythermograph sonobuoys for $2.3 million which are air-droppable buoys for determining water temperature profiles necessary for effective ASW operations; and lastly, test range and production support for $2.2 million completes the total request for fiscal year 1970 amounting to $47.2 million.

Mr. ANDREWS. What is the explosive echo ranging charge and how does this work in connection with the sonobuoy program?

Admiral ABHAU. The explosive echo ranging charges have several different uses. ———.

ANTISUBMARINE CONTACT EVALUATION SYSTEM

Mr. ANDREWS. What is the antisubmarine contact evaluation system for which you are requesting another $2.5 million in fiscal 1970, and how does this fit into this overall sonobuoy program?

Admiral ABHAU. The ASCES system is a center provided on ——— show bases for patrol aircraft and ——— carriers for the purpose of processing the contact data that are obtained by the aircraft. At the present time, these ——— installations have been made up out of off-the-shelf equipment. This was satisfactory with the older-type aircraft, but as we introduce the P–3C aircraft with the ANEW system for automatic data processing, we find it necessary to update the shore and shipboard terminals in the same fashion. This year's procurement

is simply for one installation, and the rest of our procurements will be timed to be phased with the introduction of the P–3C aircraft.

Mr. ANDREWS. What are we actually buying with these funds?

Admiral ABHAU. It is data processing equipment that allows up to ———.

Mr. ANDREWS. What system have we had in the past, Admiral, to perform this function before we entered the ASCES program?

Admiral ABHAU. The installation that exists at the present time uses ———.

Mr. ANDREWS. What is the total estimated cost for this system in terms of meeting future requirements?

Mr. CUBLEY. Approximately ——— million for the ——— shore stations and ——— CVS through 1975.

Mr. ANDREWS. That is the total program from the beginning?

Mr. CUBLEY. Yes, sir.

AIR-LAUNCHED ORDNANCE

Mr. ANDREWS. The total fiscal 1970 program for air-launched ordnance and support equipment is $475.9 million, which is $107.1 million less than the fiscal 1969 estimate. Most of this reduction is in the procurement of general and special purpose bombs. Aircraft gun ammunition and miscellaneous ordnance and support requirements have actually increased over last year. Why is this?

Admiral SHIFLEY. Because of different targets involved. The targets that are available and have to be struck are different in character from those of last year.

WALLEYE BOMBS

Mr. ANDREWS. Your program for general and special purpose bombs totals $322.6 million.

You are requesting $28.3 million for ——— Walleyes. We did not procure any in fiscal 1969. For what purpose was the $4 million used last year?

Admiral SHIFLEY. $4 million in 1969 funding was used to support the Walleye program. This consisted of technical support of existing production contracts, monitoring and testing samples from contracts and fleet support. In other words, the $4 million was used in connection with the preceding contracts for the Walleye.

Admiral GADDIS. Ongoing engineering support.

Mr. ANDREWS. Did it involve cost overrun?

Admiral SHIFLEY. No. There is no cost overrun. This $4 million was not used for that.

Admiral GADDIS. We originally had Walleye in our budget for 1969. We programed along with the Walleye buy the engineering support that went with it. When the buy was wiped out we still had to maintain the engineering support.

Mr. ANDREWS. Why has the cost of this weapon increased from a unit price of $16,200 shown last year to $23,583 in fiscal 1970?

Admiral MCCLELLAN. The unit cost in the fiscal 1969 budget presented in 1968 was ———. It was computed on a total buy of ——— planned at that time. The ——— planned buy was divided equally between Navy and Air Force. The unit cost in the fiscal 1970 budget

was based upon the procurement of only ——— Walleye II weapons which will contain improved ——— sections and ———. The unit cost increase is due to the lower production quantity and the improvements contained in the Walleye II weapon.

Mr. ANDREWS. Tell us in the record at this point what the mission of the Walleye is.

Admiral MCCLELLAN. Walleye is a specialized electro-optically guided bomb designed to hit targets of very high value and with very high accuracy. The circular error probable (CEP) is labeled as ———. It is air to ground.

RELIABILITY AND ACCURACY OF WALLEYE

Mr. ANDREWS. Could you provide for the record how effective is the Walleye from a reliability, accuracy and kill potential standpoint.

(The information follows:)

WALLEYE RELIABILITY

1. Reliability: Premised upon the manufacture/assembly and shipment of approximately ——— weapons through all echelons of the logistics cycle, including combat, Walleye has experienced a reliability factor of ———.
2. Accuracy: Based upon analysis of ——— launches of Walleye I ——— of the weapons dropped have scored a direct hit on the selected target. It is anticipated that the ——— improvements incorporated in the Walleye II will result in a significant increase.
3. Kill potential: Since Walleye has a ——— kill potential is defined as ——— of all weapon launches expected to hit within the accuracy circle of ——— feet. Combat experience to date has yielded a ——— success rate.

Mr. ANDREWS. Did the Walleye replace any other bomb in your inventory?

Admiral MCCLELLAN. No, the Walleye II being bought this year is not replacing per se. It is used in conjunction with Walleye I, which has a ———.

Mr. ANDREWS. You might compare Walleye I with Walleye II in the record.

(The information requested is classified and has been supplied the committee.)

SNAKEYE BOMBS

Mr. ANDREWS. You are requesting $177.5 million for the procurement of ——— Snakeye 500-pound bombs. This request represents over ——— percent of your procurement program for bombs. In what instances do you use this bomb in preference to others, such as the Walleyes?

Admiral SHIFLEY. This bomb that you are speaking to here is an unsophisticated bomb that is equipped with a tail to permit it being released at low altitude.

The Mark-82 is a 500-pound bomb. Is that the one you are speaking to?

Mr. ANDREWS. Yes.

Admiral SHIFLEY. That is a 500-pound bomb and is the backbone of the conventional, unsophisticated air-launch ordnance being dropped in Southeast Asia. Five hundred pounds is about the optimum size of bomb needed to destroy the typical target that they have

out there. There is no point in using too large a bomb. They use the maximum number of the smallest bomb that will do the job. That is the reason it is so popular out there. It is used by the aircraft operating from the carriers, by the Marines, and also by the B–52's in very large numbers. The bombs for the B–52's are funded by the Air Force but they are buying them from us.

Mr. ANDREWS. How does this bomb compare with the so-called blockbuster of World War II?

Admiral SHIFLEY. Much smaller. A blockbuster was a bomb of 2,000 or 3,000 pounds.

Admiral GADDIS. This series of bombs is the follow-on to the iron bombs of World War II. It has aerodynamic and drag characteristics that optimize its dropping from jet aircraft.

Mr. ANDREWS. Admiral, if the 500-pound Snakeye is the optimum bomb, why has your requirement for the 250-pound Snakeye bomb increased this year?

Admiral GADDIS. Primarly for Marine close ground support. They use a lot of those.

Admiral SHIFLEY. We had a lot of the Mark 81's, the 250-pound bomb, in stock, and it was not necessary to buy very many of them in 1969. We are were going up from ——— in fiscal year 1970. These are used primarily by the Marines. It has been found to be a very good bomb for close support of troops. That is what most of the Marine flying in South Vietnam is in support of.

ROCKEYE WEAPONS

Mr. ANDREWS. You are requesting $45.9 million for ——— Rockeye weapons, an increase over your fiscal year 1969 program. Why has your requirement for this weapon increased?

Admiral SHIFLEY. That is a new bomb just coming in. It is quite a sophisticated bomb. We are just building up production. It is a very popular bomb for restricted use.

Mr. ANDREWS. Tell us a little something about it.

Admiral SHIFLEY. It is a cluster bomb. It has a case filled with ——— inside and they have shaped charges. At the appropriate time after it is dropped, it kicks all these out and gives area coverage. It is extremely effective in destroying trucks and equipment such as that. If one of these things hits it, the shape charge will go through it.

Mr. ANDREWS. Is it also used for antipersonnel?

Admiral SHIFLEY. No, sir; it is primarly antimateriel.

HELOTRAP WEAPON PROGRAM

Mr. ANDREWS. The fiscal 1969 program for the Helotrap weapon originally was ——— at a total cost of $16.7 million. Your current P–1 indicates the program was reduced for fiscal 1969 to only ——— of these weapons at a total cost of $3.8 million. Why was this done?

Admiral MCCLELLAN. The Helotrap weapon is equipped with a retardation parachute and impact fuze. The decrease in fiscal 1969 weapons from ——— at a cost of $16.7 million, in the January 1968 congressional budget to ——— at a cost of $3.8 million is due to slippage of design release and approval for service use dates. The design release date was August 1967 for limited quality production.

The design release date for unlimited quantity production was January 1969. As a result of the slippage the approval for service use also slipped from March 9, 1968, to January 1969.

Mr. ANDREWS. Tell us a little something about that bomb.

Admiral MCCLELLAN. It is designed to clear underbrush, booby-traps, and people from selected helicopter landing areas. ———.

Admiral SHIFLEY. It does this without making a crater. You want to keep the terrain level for the helicopter to land.

Mr. ANDREWS. Is it used for personnel?

Admiral MCCLELLAN. No, but it would knock out any personnel in the way.

Admiral GADDIS. It is a very effective antipersonnel weapon, but we are just starting out with the production.

Mr. ANDREWS. Admiral, what happened to the unused funds for the Helotrap?

Captain JAY. We stretched the production because of the slippage. We can provide you a schedule of production if you desire. The funds not required for this revised program were reprogramed to meet other ammunition requirements for Southeast Asia.

Mr. ANDREWS. The remaining funds will be used to buy this weapon during fiscal 1970?

Captain JAY. Yes, sir; the fiscal year 1969 funding is being placed on contract now, and deliveries will extend through the fiscal year 1970 funding period.

Mr. ANDREWS. The P–1 indicates this weapon is still not approved for service use. When will this occur?

Captain JAY. It should be February 1969.

Admiral MCCLELLAN. I am informed that it was approved in January 1969.

Admiral GADDIS. The P–1 was published in January. It is an error in not bringing this up to date, sir.

CLUSTER BOMB CBU–55

Mr. ANDREWS. Why are you increasing the buy of the ——— cluster bomb when it has not been approved for service use?

Admiral SHIFLEY. This is the CBU–55. The approval date of that is supposed to be ——— and that will be prior to contract award.

Mr. ANDREWS. Where do we stand in the testing?

Captain JAY. If I may, I would like to expand on this. We have a development lot of ——— a quantity we are buying from Honeywell, which is the sole source producer. The approval for service use is scheduled for ———. The limited production will not commence until ———. We feel this is an excellent weapon. As a matter of fact, this weapon in the future will probably replace the ———. If you would like a description of the weapon, I can give it to you. ———. We feel it has a great potential.

Mr. ANDREWS. Captain, have you already procured the ——— funded in fiscal 1969?

Captain JAY. No, sir, we have not. That is about ready to go on contract. We have a contract for ——— units with Honeywell. Administratively we are attempting to get it on contract with Honeywell for the ——— units in 1969.

CONTRACT DELIVERY SCHEDULED, WEAPON NOT APPROVED FOR SERVICE USE

Mr. LIPSCOMB. What would their production schedule be?

Captain JAY. The ——— units production schedule will commence delivery in ———.

Mr. LIPSCOMB. This is not approved for the service yet.

Captain JAY. It will be approved for service use in ———.

Mr. LIPSCOMB. In ———.

Captain JAY. Yes, sir.

Mr. LIPSCOMB. You are going ahead making your arrangements for your contract now and delivery in ———. Is that what I understand?

Captain JAY. Yes, sir. We will have this weapon released for production but not approved for service use.

We are convinced from our tests at Naval Weapons Center, China Lake, that we have a good weapon.

Mr. ANDREWS. Have you tested it?

Captain JAY. The breadboard models, yes, sir.

Mr. ANDREWS. How many did you test and what was the result.

Captain JAY. Approximately ———.

Mr. ANDREWS. What was the result?

Captain JAY. The results were excellent.

Mr. ANDREWS. All ——— of them?

Captain JAY. I cannot answer that, sir, I would have to provide for the record exactly how many.

(The information was provided to the committee and is classified.)

Mr. ANDREWS. You are satisfied it will work?

Captain JAY. Yes, sir.

Mr. LIPSCOMB. Does the contractor have to do any special tooling?

Captain JAY. Yes, sir.

Mr. LIPSCOMB. These you are testing at China Lake were prototypes?

Captain JAY. Yes. They were actually breadboard models. We are receiving our first preproduction tooling units from Honeywell in September.

Mr. LIPSCOMB. The reason we go into some of these in such depth is that we find with some of these items we have moved a little too rapidly. Isn't this one that we can slow down a little bit if you have not ordered the ——— and you are still operating on 1969 funds?

Captain JAY. I think it would be a waste if we did. If we do we will lose line continuity.

Mr. LIPSCOMB. That is an old story. Why don't we slow the line down at the outset?

Captain JAY. We can only slow it down so far. If the contractor has to work at a reduced rate, we will probably have to pay more money for the initial ——— units.

Mr. LIPSCOMB. That is better than the money going down the drain.

Captain JAY. In my personal opinion the money is not going down the drain.

Mr. LIPSCOMB. We are always concerned about some of these things.

LONG RANGE PROCUREMENT PLAN

Mr. ANDREWS. Do you expect to have them operational ———?

Captain JAY. Yes sir. I would expect them to be operational ———.

Mr. ANDREWS. When you appear here next year, you will have had actual experience ———.

Captain JAY. Yes, sir.

Mr. ANDREWS. Are you looking beyond the number you budgeted for?

Captain JAY. We are looking for the 1970 budget, yes. We have a long-range plan to run in future years. In 1971 we are calling for ———.

Admiral GADDIS. I think the point here, Mr. Lipscomb, concerning procurement prior to completion of operational evaluation, is that this weapon has been designed ——— and we are proceeding, with all, shall we say, cautious speed. The availability in the ——— time frame is an important element in this procurement.

Captain JAY. If I might add, Admiral, it would be an excellent weapon ———.

Mr. ANDREWS. That is what appeals to me.

Captain JAY. This is because of the ———.

Mr. ANDREWS. In fact, you need a weapon like this ———.

Mr. LIPSCOMB. Is there any other weapon of this nature in any of the other services, such as the ——— cluster?

Captain JAY. Not to my knowledge, sir.

Mr. LIPSCOMB. Why is the Navy the only one that is interested in it?

Captain JAY. It was developed by the Naval Weapons Center, China Lake. It looked very good to us. The other services may well become interested as they are in Rockeye. It appears in the next year or so the Air Force will be very interested in Rockeye.

Admiral SHIFLEY. There is a good deal of cooperation between the Navy and the Air Force in using air launched weapons. Almost all of these new exotic weapons we have in here are also used by the Air Force. We make them and the Air Force also uses them.

Mr. LIPSCOMB. If it is so good and will do such a job for ——— how far are you going to get with ——— this year and ——— next year, the way we drop ammunition?

Captain JAY. If I might say, this is just about the production capability of Honeywell for the ——— units in 1969 to build up the production to the ——— per month rate that we are requesting in the 1970 budget.

Mr. LIPSCOMB. How long will ——— last you?

Captain JAY. I am afraid I cannot answer that. It would depend entirely on the tactical and operational situation.

Mr. ANDREWS. How many can a ship carry?

Captain JAY. This is strictly a ——— type weapon.

Mr. ANDREWS. How many will a ——— carry?

Captain JAY. It should carry ——— of these weapons.

Mr. ANDREWS. It won't take long to burn up that many.

Captain JAY. No, sir. However, we are looking at development of a ———. This would require about 24 months leadtime.

Mr. ANDREWS. You are requesting $2.3 million for the initial procurement of ——— target identification bombs. This weapon has not received approval for service use. What is the status of the testing of this weapon?

TARGET IDENTIFICATION BOMB

Admiral McCLELLAN. The target identification bomb is a marker device. It is delivered by the forward air controller aircraft to provide a night target identification signal visible from 3 to 5 miles and last 10 minutes. It will provide the signal in either open terrain or on top of tree cover. Testing is complete and design is expected to be released this month. We estimate service approval this month, also.

Mr. ANDREWS. What weapon or weapons will this Mark-121 bomb replace?

Admiral McCLELLAN. It does not replace any other weapon. We have no long lasting marker of this nature.

Mr. ANDREWS. Are we still going to use the markers we have or is this going to replace the ones we are using?

Admiral McCLELLAN. We will continue to use the flares and smoke rockets we use now. But this night chemical device is unique and new.

AIR LAUNCHED ROCKETS

Mr. ANDREWS. Your fiscal 1970 program for air-launched rockets is $63 million, which is $21.1 million less than last year.

You are requesting $22.3 million for ——— 2.75 inch rocket components. This is almost a threefold increase over last year's request. What is the reason for this increased requirement for this weapon?

Captain JAY. We reduced the buy in 1969 because of existing inventory, particularly in the case of the rocket which is used for the fixed-wing type aircraft. The 1970 requirement has increased due to the extensive use in 1969.

ZERO ANTIAIRCRAFT POTENTIAL ROCKET

Mr. ANDREWS. This year you are requesting $12.8 million for the second procurement of zero antiaircraft potential rocket (ZAP). Where do we stand in the testing and service acceptance of this weapon?

Admiral McCLELLAN. ZAP had an original plan in the budget submission for fiscal 1969 to provide for procurement of evaluation and fleet introduction quantities in fiscal 1969. The Department of Defense budget decision first eliminated the funding altogether and then restored the procurement. This slipped the fleet production procurement to fiscal 1970, creating a delay of ——— in the fleet. The CNO review of the situation caused a reprograming action to be taken in fiscal year 1969 funding to provide long leadtime requirements and to enable fleet introduction to be moved up ——— lost. This is the current status of the 1969–70 OPN funding. The testing is on schedule and the preproduction units are due in ——— and the production units begin delivery in ———. It is not designed to replace any other weapon. It is estimated for service approval in ———.

Mr. ANDREWS. What does that mean, Admiral, the last statement?

Admiral McCLELLAN. The one about the service approval?

Mr. ANDREWS. No, not to replace any weapon being procured in fiscal 1970.

Admiral McCLELLAN. The weapon is not designed to replace any other weapon. The estimated date for service approval of ZAP is ———.

Are you familiar with the ZAP, sir?

Mr. ANDREWS. Would you explain its use?

Admiral MCCLELLAN. ———.

Admiral GADDIS. This is the size of ———.

Mr. ANDREWS. We have seen some before the committee.

Admiral MCCLELLAN. They have been used in other devices. I doubt if you have seen this one.

Mr. ANDREWS. How is this one deployed?

Admiral MCCLELLAN. The rocket head has a fuze in it and it opens mechanically.

Mr. ANDREWS. Are they dropped from aircraft?

Admiral MCCLELLAN. It is shot in a rocket from an aircraft. The rocket itself has ——— as compared with other rockets that were previously used. It makes it quite expensive.

Mr. ANDREWS. Has the ZAP been used in Vietnam as yet?

Admiral MCCLELLAN. No, sir, it has not.

Mr. ANDREWS. It has not even been tested?

Admiral MCCLELLAN. Not in Vietnam. It is being tested at stateside ranges.

AIRCRAFT GUN AMMUNITION

Mr. ANDREWS. You are requesting $12.4 million for aircraft gun ammunition. The fiscal 1970 program is $5.2 million more than last year's program. What is the reason for this general increase?

Admiral MCCLELLAN. The A–7E fleet introduction is June 1969, and the other, July, 1970. These aircraft have Mark–61 guns installed and use Army type ammunition. Other Navy aircraft such as the A–4, F–8 have Mark 12 guns installed or the Mark–4 gun pod and they use Mark 100 series Navy ammunition. The Navy was directed to use the Mark 61 gun in the two new aircraft for compatability with the other services. We therefore have an increased ammunition buy to support this new gun.

Mr. ANDREWS When will these two aircraft be introduced into the fleet?

Admiral MCCLELLAN. At the end of 1970 the Navy will have ——— A–7E's and ——— AH–1J's.

Admiral SHIFLEY. A7–E, June, 1969, and AH–1J, ———.

DEFENSE COMMUNICATIONS PLANNING GROUP SUPPORT

Mr. ANDREWS. Fiscal year 1970 estimate for miscellaneous ordnance and support is $77.9 million, a net increase of $101 million above the fiscal 1969 estimate. You are requesting $18.2 million for the defense communications planning group program.

This is an increase of $1.2 million over last year. What is the Navy input to this program?

Admiral MCCLELLAN. The Navy supports the DCPG by procurement of ——— for use in Southeast Asia by elements of Army, Air Force, Marines and Navy. They use ———. The Naval Air Systems Command has funded $33.3 million in fiscal year 1967, 1968, and 1969 for this procurement.

Mr. ANDREWS. How do you measure the results vis-a-vis the cost expended for this purpose?

Admiral McCLELLAN. The results versus cost are always difficult to measure in a combat environment. You have to go to the user preference of these and they have been highly popular ———.

Admiral SHIFLEY. Insofar as we are concerned they are used by the Marines ———. They are very good for ———. By the nature of the operations ——— they are becoming very popular. We expect the requirement for these to go up quite a bit.

Mr. MAHON. Admiral, would you provide for the record a tabulation of program cost for all Navy appropriations from the inception of the DCP program through fiscal year 1969.

Admiral SHIFLEY. Yes, sir.

(The information follows:)

NAVY APPROPRIATIONS TO SUPPORT DCPG PROGRAMS

[In millions of dollars]

	1967	1968	1969	Total
R.D.T. & E.N.	16.0	14.7	9.7	40.4
PAMN	24.7	2.4	1.0	28.1
OPN	19.1	11.9	12.0	43.0
O. & M.N.	5.6	11.6	1.7	18.9
Total	65.4	40.6	24.4	130.4

MUNITIONS LOST IN DANANG FIRE

Mr. MAHON. For the record, Admiral, would you provide a list showing the type and quantities of ammunition lost in the fire at Danang which destroyed over $50 million worth of ammunition.

Admiral SHIFLEY. Yes, sir.

You are speaking now to the ammunition funded under the OPN appropriation? There was some lost there funded under the Marine Corps appropriation.

Mr. MAHON. Let us include both.

(The information follows:)

Munitions lost in Danang fire of Apr. 27, 1969

[Based on initial reports]

U.S. Navy air munitions	$19,801,000
U.S. Marine Corps ground munitions	50,700,000
U.S. Air Force air munitions	[1] 14,500,000
Total	85,001,000

[1] An exact itemization of losses has not yet been obtained for U.S. Air Force munitions lost in the fire area. The estimate of $14,500,000 may vary as a result of recovery operations.

Admiral GADDIS. You don't want us to include Air Force ammunition?

Mr. MAHON. At Danang?

Admiral GADDIS. Yes, sir.

Mr. MAHON. Include it all. I understand it is about $50 million of ammunition.

Admiral GADDIS. It was more than that.

Mr. MAHON. We have been trying to find an adequate explanation for this, and we have not been very successful.

Admiral GADDIS. The best estimate I have heard, and I have heard the testimony here before sir, has tended to support the hypothesis of the spreading incinerator fire. There has been some conjecture about the possibility of something in the incinerator that blew it up and spread it into the grass, either accidentally or a planned accident. Of course, there is an investigation which will attempt to determine the cause.

Mr. MAHON. Is it at all unwise to have ammunition of this quantity and value closely stored so it can blow up?

Admiral GADDIS. The problem, sir, is one of judgment, how much you spread it out compared to how much security it takes to control and defend a large perimeter.

The utilization of security troops is immense when you start taking over more real estate. As you know, Danang has been an expanding installation ever since we moved in there.

Admiral SHIFLEY. Mr. Chairman, if you are finishing up with the ammunition, I would like to make a statement here before we leave the ammunition area.

Mr. MAHON. Very well.

ADEQUACY OF AMMUNITION FUNDING ESTIMATES

Admiral SHIFLEY. It has to do with the adequacy of our ammunition and the money for ammunition requested in 1970. I would like to say I consider this an adequate budget to support the tempo of operations on which it was based.

The air munitions procurement will support the current rate of function during 6 months of the funding period during which time production will be reduced to the minimum sustaining rate. The budget estimates were predicated on the continuation of Southeast Asia activity levels experienced during the budget formulation process last fall. Experience during September through October 1968, reflected sizable decreases in consumption as the level of combat intensity decreased. The general situation and atmosphere prevailing at that time indicated there would be a continued decrease in the level of activity. Experience during November and December tended to bear this out, and the probabilities of a continued decrease were such that budget adjustments were made.

Since there is no sure way to determine the degree of combat deescalation that will occur, projections were made based on judgment. Utilizing the apparent trend in attrition and consumption, the Southeast Asia budget adjustments were made providing for continuation of munition consumption on the levels reached in November and December: moderate reductions below the previously computed rate. Since that time there has been an increase of combat activity in Vietnam raising doubt that the anticipated reductions will occur. If this trend continues and projected reductions do not materialize, there will be a shortage of funds in fiscal 1970. The present level of funding will not be adequate for Southeast Asia operations terminated prior to the midpoint of fiscal 1970 funding. If expenditures continue as currently forecast, a decision will be required by December 1969, to continue munitions production at the necessary rates. Such action would require additional funds. There are two points, I think, I wanted to emphasize here.

One is that we deliberately asked for money to provide for expenditure of ammunition in Southeast Asia for the first 6 months only and thereafter at minimum sustaining rates. Also, it would appear at this time that we have been a little bit surprised that the tempo of operations have gone up. I want you to understand, sir, that I am not asking for additional funds. However, I think it is proper that this committee understand the basis on which this budget was made up. This was directed by the Secretary of Defense and concurred in by us.

I don't want you to think that this budget will carry necessarily through the entire fiscal year 1970 funding period at the expenditure rates we are experiencing now, sir.

Mr. LIPSCOMB. Were there any reprograming actions within the ammunition area during fiscal year 1969 to date?

Admiral GADDIS. There were some significant reductions in the ammunition area, yes, sir, as a result of——

Admiral SHIFLEY. In making up the 1970 budget, we looked this area over very carefully. We did not ask for any more money than was needed to meet our consumption in Southeast Asia and training needs in fiscal year 1970.

In making this evaluation, we found we were overfunded in fiscal '69 in that our consumption rate of gun ammunition had gone down considerably in fiscal year 1969 and what we did, we considered 1969 and 1970 all together and adjusted our production rate reducing our—going ahead and reducing our production rates in fiscal year 1969 which permitted a stretchout of the line to provide a part of our fiscal year 1970 needs. So we made an adjustment between 1969 and 1970 so if you look at the dollar figures in here, it looks like it is a little out of kilter in spots; particularly in some areas it looks as though we were over-budgeted in fiscal year 1969 and under budgeted in 1970.

Mr. LIPSCOMB. For the record, could we have an analysis of the ammunition requests and the account for 1968 and 1969 and show the turbulence that occurred in there with reprograming actions and any other actions that might have taken place?

Admiral SHIFLEY. I wouldn't call these reprograming, Mr. Lipscomb. We adjusted production rates to feather 1969 into 1970.

I don't have total actions in front of me, but I feel confident I have seen reprograming actions come through pertaining to ammunition.

Admiral GADDIS. There were a number of reprograming actions in fiscal 1968, Mr. Lipscomb. I know of only one major reprograming in aviation ordnance so far in fiscal 1969. There have been some additional reductions incorporated in the recent budget amendment.

Mr. LIPSCOMB. Admiral, the statement you just made is a little different from what appears in the justification sheets that are before us. There must have been a change between the time these were written and today.

Admiral SHIFLEY. Yes, sir; I tried to explain that in my statement. The budget was made up on certain assumptions in December of 1968. That is a very fluid situation in Southeast Asia and that is what I wanted to apprise you of here, sir. But again, I repeat, this is not a request for additional funds. We are perfectly satisfied with the moneys we are requesting. I just wanted you to be fully aware of the situation as it exists, sir.

Admiral GADDIS. With one exception. The reductions that were related to this amendment downward were all taken in 1970, as Admiral Shifley noted. Where necessary, 1969 productions would be stretched out to maintain a hotline for the 2-year period.

Mr. MAHON. All right, gentlemen. Thank you very much. We will look forward to resuming the hearing at 10 o'clock tomorrow.

TUESDAY, MAY 20, 1969.

Mr. MAHON. We will resume the hearing. I would hope that we could finish with this portion of the Navy hearing by noon today.

AIRCRAFT ELECTRONIC CONTROL EQUIPMENT

The fiscal year 1970 request for air electronic control equipment is $21.4 million, a decrease of $9.4 million compared with last year's estimate.

WEAPONS RANGE SUPPORT EQUIPMENT

Admiral Shifley, your request of $5.8 million for weapons range support equipment is $1 million more than fiscal year 1969. What kind of equipment are we buying with these funds, where will the equipment be used, and in support of what programs?

Admiral MCCLELLAN. The equipments being procured consist of data gathering equipment, and analysis and air target scoring systems in support of fleet training, and underwater evaluation equipment for weapons systems accuracy trials. These equipments support facilities located on the Atlantic Weapons Range, Naval Station, Roosevelt Roads, Puerto Rico. Also included are a post operations display and analysis system and an ambient noise and acoustical data system to support the BARSTUR underwater range located off Kauai Island, Hawaii. This installation is primarily an antisubmarine warfare tactical range for fleet training in all phases of submerged, surface and aerial activity.

Mr. MAHON. It this equipment all in support of the ASW program?

Admiral MCCLELLAN. The equipment in the Pacific is almost entirely for the ASW program. In the Atlantic it includes other weapons.

Mr. MAHON. Such as?

Admiral MCCLELLAN. Polaris, for example.

TELEMETRY CONVERSION

Mr. MAHON. You have an initial request in fiscal year 1970 of $5.2 million for telemetry conversion. Why is this conversion necessary?

Admiral MCCLELLAN. Allocation of radio frequency bands to reflect international agreements requires that air/space ground telemetering operations be conducted in the 1435–1540 Mcs band rather than the 225–260 Mcs frequency band now used. The Joint Chiefs of Staff have directed that aircraft and guided missile telemetry operations use the higher bands beginning in January 1970. Because of this, it is necessary to provide higher frequency equipment to Navy shore station activities. Total Naval Air Systems Command costs for this conversion program are $7.6 million, $2.4 million was budgeted in

1969 under the weapons ranges support line item. The $5.2 million requested in fiscal year 1970 completes the program.

ALL-WEATHER CARRIER LANDING SYSTEM

Mr. MAHON. You were funded $4 million in fiscal year 1968 for two all-weather carrier landing systems. On what carriers were these systems installed?

Captain FEARNOW. They were installed on the U.S.S. *Saratoga* and the U.S.S. *Kennedy*.

Mr. MAHON. What use was made of the $6 million provided in fiscal year 1969?

Mr. BLOOMINGBURG. The money in OPN activity 3 is for some shore station procurement.

Mr. MAHON. The first question addressed the $4 million in fiscal year 1968. There were two all-weather carrier landing systems.

Captain FEARNOW. Shore stations, I am sorry, sir.

At Oceana, and the other at Naval Air Station Lemoore.

Mr. MAHON. Is installation in progress at the present time?

Captain FEARNOW. The installation has been completed at Oceana and the installation was started at Lemoore in June.

Mr. MAHON. What use was made of $6 million provided in fiscal year 1969?

Captain FEARNOW. The 1969 funds were used to provide two SPN-42–T1s to two Naval Air Stations, Naval Air Station, Cecil Field in Florida, and Naval Air Station, Miramar, Calif.

Mr. MAHON. Does that mean there are four all-weather carrier landing systems installed at four Naval Training Centers?

Captain FEARNOW. We have an all-weather carrier landing system that is being modified to the 42 at Cecil Field and at Miramar. Then we have the 42 installation already completed at Oceana and the installation to start at Lemoore in June of this year.

Mr. MAHON. Through fiscal year 1969 these will be used for training purposes?

Captain FEARNOW. Yes, sir.

Mr. MAHON. Are any installed aboard carriers at the present time?

Captain FEARNOW. Yes, sir. Those are the 42's installed on the Kennedy, Saratoga and Forrestal.

Mr. MAHON. What fiscal year funds were used to procure those?

Captain FEARNOW. 1967 and 1968.

Mr. MAHON. Where were the 10 monitors installed for which you were provided $2.3 million in fiscal year 1969?

Captain FEARNOW. The 10 monitors are now being procured and they have not been installed as yet.

Mr. MAHON. Where will they be located? Where will they be installed?

(Discussion off the record.)

Captain FEARNOW. Naval Air Station, Miramar, Naval Air Station, Cecil Field, Naval Air Station, Lemoore, Naval Air Station, Oceana, Naval Air Station, Patuxent River, Marine Corps Air Station, El Toro and Marine Corps Air Station at Cherry Point.

There were three additional ones for Southeast Asia—Marine air traffic control units.

Mr. MAHON. Where were they located?

Capt. FEARNOW. They will be located in Vietnam.

Mr. MAHON. At what locations?

Capt. FEARNOW. I do not have the locations.

Mr. MAHON. When you get this transcript, maybe we can straighten this out. I am still not too clear on the use of the $4 million in fiscal year 1968 and the $6 million in 1969 and procurement of 10 monitors in fiscal year 1969.

Admiral GADDIS. We can lay it out in an orderly fashion for the record.

(The information follows:)

AIRCRAFT ELECTRONIC CONTROL EQUIPMENT

In fiscal year 1968 $4 million was requested under line item 48. These funds were used to buy two (2) partial (AN/SPN-42T1 systems for installation at Naval Air Station, Oceana, Va., and Naval Air Station, Lemoore, Calif.

In fiscal year 1969 $6 million was requested under line item 48. These funds are being utilized as follows:

One million six hundred thousand dollars is being used to complete the two (2) partial AN/SPN-42T1 systems procured in fiscal year 1968.

Three million nine hundred thousand dollars is being used to procure modification kits to convert two existing AN/MPN-T1 equipments, located at Naval Air Station, Cecil Field, Fla. and Naval Air Station, Miramar, Calif., to AN/SPN-42T1's.

Five hundred thousand dollars is being used to procure minor components for the AN/SPN-42T1—AN/SPN-42 system.

In fiscal year 1969 $2.3 million was requested under line item 49 to procure ten (10) AN/SPN-41 all-weather carrier landing system monitors. These funds are being used to procure and install the AN/SPN-41 at the following locations:

Naval Air Station, Patuxent River, Md.
Naval Air Station, Miramar, Calif.
Naval Air Station, Cecil Field, Fla.
Naval Air Station, Lemoore, Calif.,
Naval Air Station, Oceana, Va.
Marine Corps Air Station, El Toro, Calif.*
Marine Corps Air Station, Cherry Point, N.C.*
Marine Corps Air Traffic Control Unit *

* At these locations the AN/SPN-41 will function as the primary aircraft approach control and instrument landing system.

Mr. MAHON. How many more all weather carrier landing systems will you require and where will they be installed?

Captain FEARNOW. Are we talking now for the shore or ships?

Mr. MAHON. Total, shore and ships.

Captain FEARNOW. We have under contract now all of the necessary components for all of the CVAs, 41 and above.

Those are already under contract.

Mr. MAHON. What is being installed on the *Midway*?

Captain FEARNOW. There is one on the *Midway* now. We will need an additional kit to convert the *Midway* to bring it up to the 42. It is now AN/SPN-10. It will be changed to the SPN-42.

Mr. MAHON. You can complete your answer for the record on this last question.

(The information follows:)

ALL WEATHER CARRIER LANDING SYSTEMS

Remaining additional requirements for all weather carrier landing systems are:

Shore installations.—Marine Corps Air Station, Cherry Point, N.C.; Marine Corps Air Station, El Toro, Calif.; total remaining requirement, 2.

Ship installations.—U.S.S. *Midway* (CVA-41)—a conversion kit is required to convert the present AN/SPN-10 system to the AN/SPN-42 all weather carrier landing system; total remaining requirement, 1.

Mr. DAVIS. When you talk here as you do on page 3-2-4 about minimum interference with both severe weather or sea states, what kind of a system are we talking about here? How does it operate?

Captain FEARNOW. We are talking about a fully automatic landing system that operates in three modes. The No. 1 mode is fully automatic. The second mode is semiautomatic, in which the pilot controls the aircraft from a display in the cockpit and another mode, mode No. 3, in which the pilot follows directions from an operator on the ground or on the ship. We are talking about operating in zero-zero visibility ceiling conditions. We are talking about operating in sea states with deck motion equivalent to a pitching deck of 60 feet.

Mr. DAVIS. Speaking of the third mode, then, I assume when you have a pitching deck that you will have to have somebody there talking to him and bringing him in under those circumstances.

Captain FEARNOW. The system is designed under fully automatic conditions to handle the 60 feet with nobody talking to him at all. Fully automatic, sending commands from the ship to the aircraft, the pilot is simply monitoring the approach on the monitor.

Mr. MINSHALL. What is the biggest problem you have with this landing system to date?

Captain FEARNOW. We have no major problems with the system today. It is being deployed this year—fully automatic landing mode.

Mr. MINSHALL. Under actual conditions, what is the maximum pitch under which you have landed an aircraft?

Captain FEARNOW. We have not had the system up to that full motion that I mentioned earlier, but we have landed under conditions in the test situation easily 40-feet pitch.

Mr. MINSHALL. This is at sea?

Captain FEARNOW. Yes, sir.

Mr. MINSHALL. Do you have any knowledge of your Navy airfield and/or Marine installations in this country?

Captain FEARNOW. Yes, sir.

Mr. MINSHALL. How many are there at the present time?

Captain FEARNOW. We have in existence today four systems for training: One at Cecil Field, Fla., one at Oceana in Virginia, Naval Air Station at Miramar, and the Naval Air Station, Patuxent River. The one at Patuxent is serving, in addition to training, some computer programing work that we are doing.

The next station will be the one at Lemoore.

Mr. MINSHALL. These are training stations?

Captain FEARNOW. Yes, sir.

Mr. MINSHALL. What other stations does the Navy have?

Captain FEARNOW. These are the only ones we have.

Whidbey is the next one to get the equipment.

Mr. MINSHALL. I am not talking about training stations. Are these the only fields the Navy has?

Captain FEARNOW. No, sir.

Mr. MINSHALL. What are the others?

Captain FEARNOW. Naval Air Station at Quonset Point and ——

Mr. MINSHALL. It is quite a list. Will you supply that for the record?

(The information follows:)

The following is a list of Naval Air Stations:

NAS Alameda, Calif.
NAS Albany, Ga.
NAS Atlanta, Ga.
NAS Brunswick, Maine
NAS Cecil Field, Fla.
NAS Chase Field, Tex.
NAF China Lake, Calif.
NAS Corpus Christi, Tex.
NAS Dallas, Tex.
NAS El Centro, Calif.
NAS Ellyson, Fla.
NAAS Fallon, Nev.
NAS Glenview, Ill.
NAS Glynco, Ga.
NAS Grosse Ile, Mich.
NAS Imperial Beach, Calif.
NAS Jacksonville, Fla.
NAS Johnsville, Pa.
NAS Key West, Fla.
NAS Kingsville, Tex.
NAS Lakehurst, N.J.
NAS Lemoore, Calif.
NAS Los Alamitos, Calif.
NAVSTA Mayport, Fla.
NAS Memphis, Tenn.
NAS Meridian, Miss.
NAS Miramar, Calif.
NAS Moffett Field, Calif.
NAS New York, N.Y.
NAS New Orleans, La.
NAS Norfolk, Va.
NAS North Island, Calif.
NAS Oceana, Va.
NAS Olathe, Kans.
NAS Patuxent River, Md.
NAS Pensacola, Fla.
NAS Point Mugu, Calif.
NAS Quonset Point, R.I.
NAS Saufley Field, Fla.
NAS Seattle, Wash.
NAS South Weymouth, Mass.
NAS Twin Cities, Minn.
NAS Whidbey Island, Wash.
NAS Whiting Field, Fla.
NAS Willow Grove, Pa.
MCAS Beaufort, S.C.
MCAS Cherry Point, N.C.
MCAS El Toro, Calif.
MCAS Yuma, Ariz.
MCAS Quantico, Va.
MCAF New River, N.C.
MCAF Santa Ana, Calif.

Mr. MINSHALL. Do you have any knowledge, if any, if these are inactive at the present time?

Captain FEARNOW. I cannot answer that.

Admiral SHIFLEY. We will provide the complete list.

Mr. MINSHALL. Will you, please, Admiral, and which ones are inactive and not being used and some that are not too active but still being used.

Admiral SHIFLEY. Yes, sir.

(The information follows:)

The Navy has no continental naval air stations in the inventory which are inactive and being held for future aviation missions. All such fields have either been declared excess to Navy needs and given to GSA for disposal or converted to nonaviation missions. For example:

NAS Anacostia, Washington, D.C., is now a naval training station; NAAS Corry Field, Pensacola, Fla., is a communications training school, and so forth.

Mr. MINSHALL. This will give us some feel for the traffic into these fields, and whether it is just a training operation or what it is.

Admiral SHIFLEY. Yes, sir.

Admiral GADDIS. Just as a broad feel, sir, there are approximately 25 regular air stations and 27 reserve stations.

(Discussion off the record.)

Aircraft Support Equipment

Mr. Slack. The total request for aircraft support equipment is $103.5 million, which is $31 million less than last year's program.

AIRFIELD ARRESTING GEAR

You were funded $3.2 million in the last 2 fiscal years for 59 airfield arresting gear. This year you are requesting $1.3 million for 11 more. Where are these utilized and for what purpose?

Admiral McClellan. They will be used at Naval Air Stations for emergency arrestment of high-speed Navy aircraft. We also procure arresting gear for the Marine Corps.

SATS fields, short airfield for tactical support. The SATS system is a Marine Corps combat system that provides aircraft launching and recovery devices including aluminum landing mat to form the surface of short runways, taxiways, and parking areas. In addition to catapult, arresting gear, and matting, which were purchased under the SATS line item, we have provided in the past for mobile support equipment such as maintenance vans, air control equipment, et cetera. Procurement of SATS system hardware is complete. The fiscal year 1970 request includes under P–1 line items 72 and 73 $1.8 million to update the equipment and replace worn components.

The SATS system has been designed as a major weapon of limited war to be applied in expeditionary operations. It has the characteristics of mobility and ready transportability by sealift and overland. The system is capable of being established and made operational within approximately 3 days after equipments are delivered to the planned combat site. The SATS system is being used in SEA and at three training sites in the United States.

Mr. Slack. Why is it that Marine Corps requires arresting gear in Vietnam? Does the Air Force have a requirement for this equipment?

Admiral McClellan. Yes and no; not in the same sense. It is a very short field which requires arresting on every landing. The Air Force uses arresting on normal fields for emergency situations.

Mr. Slack. How short a runway are we talking about?

Admiral McClellan. The exact length is 2,200 feet.

Mr. Slack. Could you also provide for the record the number of Navy and Marine Corps airfields in South Vietnam and the length of their runways and how many of those are considered SATS airfields?

Admiral McClellan. There are seven Marine airfields in Southeast Asia that use either the complete package or components of these. These runways vary from 3,400 feet to 8,000 feet in length.

An eighth airfield is supported in part at Danang in the form of runway arresting gear.

Mr. Slack. Admiral, you were funded 59 in the last 2 years and 11 more is the request in fiscal year 1970.

How many do you require for each airfield?

Admiral McClellan. How many of which, sir?

Mr. Slack. The airfield arresting gear.

Admiral McClellan. You require an arresting gear in each direction. So for a given runway you require two arresting gears.

Mr. SLACK. What is the requirement for this equipment in the United States? Is it for training purposes?

Admiral MCCLELLAN. In the United States the SATS equipment is used for training purposes. The E–28 arresting gear budgeted in line item 75 is used for both training and emergency arrestments.

INSTALLATION OF ARRESTING GEAR

Mr. SLACK. When will the arresting gear requested in fiscal year 1970 actually be installed?

Admiral MCCLELLAN. I will have to supply that for the record.

(The information follows:)

The 11 arresting gear requested in fiscal year 1970 will be installed in fiscal year 1971.

Mr. SLACK. You will also advise us where these 11 pieces of equipment will be installed?

Admiral MCCLELLAN. Yes, sir.

(The information follows:)

These 11 sets will be installed at the following Naval Air Stations:

	Number of sets
Corpus Christi	1
Roosevelt Roads	2
New York	3
Patuxent River	2
Pensacola	3
Total	11

Mr. SLACK. For what purpose will the miscellaneous catapult and arresting gear be used and how does this differ from the airfield arresting gear?

Admiral MCCLELLAN. This provides training equipment such as models, cutaways and so forth, and it is for installation at the Navy training facility, Lakehurst.

Mr. SLACK. Why is this listed separately from the arresting gear line item?

Admiral SHIFLEY. You are speaking to miscellaneous aids and lighting equipment or miscellaneous catapult and arresting gear?

MISCELLANEOUS CATAPULT AND ARRESTING GEAR

Mr. SLACK. My question dealt with line item 75. Now, I am asking about line item 78, miscellaneous catapult and arresting gear and how this differs from line item 75.

Admiral MCCLELLAN. This provides training equipment, cutaways and components, for training aviation boatswains mates to operate and maintain catapults and arresting equipment. The training equipment is installed at the Naval Air Technical Training Center, Lakehurst, N.J. The program for 1970 provides funds for the procurement of the balance of the C–13 training catapult system.

Mr. SLACK. I thought we discussed some of the arresting gear in item 75 which was installed at Lakehurst.

(Discussion off the record.)

Mr. MINSHALL. We have been talking about the short field arresting gear, and so forth. I wonder if you would care to comment on the vertical takeoff and landing aircraft developed by the British known as the Harrier. Are any of you knowledgeable about this?

Admiral MCCLELLAN. I can comment in general, sir.

Mr. MINSHALL. Do you see any use the Navy might make of this particular aircraft or one similar to it?

Admiral MCCLELLAN. The Navy is quite interested in the technology and will be observing the Marine experience in great detail. We have no specific Navy use for it at this time, however.

Mr. MINSHALL. Why not?

Admiral MCCLELLAN. Basically because in order to get the vertical takeoff and landing you sacrifice something in the weight carrying and the general aerodynamic performance. The Navy takes care of this by means of the carrier catapult and arresting gear. We are able to operate at a much higher performance from the carrier than we can obtain by the V/STOL arrangement.

Mr. MINSHALL. I appreciate that, but as you look down the road do you see any possibility of having a mix of this aircraft?

Admiral MCCLELLAN. Strictly in dreaming stage I can certainly see it. You can conceive of putting this type of plane on many ships other than carriers. For example, the amphibious ships and in the far future on destroyer size ships. As the technology develops, I am sure that in the future we will have a great interest in it.

Mr. MINSHALL. There has been some conjecture that is why the Russians have developed this sort of helicopter pattern of a miniature aircraft carrier, or call it what you will, to be used primarly for V/STOL.

Admiral MCCLELLAN. Up to now we have observed only helicopters using that ship.

Mr. MINSHALL. Did you see this demonstration put on by Hawker-Siddeley?

Admiral MCCLELLAN. No, sir; I heard about it and I have seen movies of the operation.

Mr. MINSHALL. I never saw a jet fly backwards, but I did and when you see it come back over the field at 700 miles an hour and land vertically, it is a very impressive demonstration.

Admiral MCCLELLAN. I think there is no question this particular aircraft is a very advanced technology and will be very useful in the Marine mode.

Mr. MINSHALL. Thank you very much.

Mr. LIPSCOMB. Mr. Chairman, during the hearings with the Navy we have been discussing the Polaris submarine and I would like to ask a question out of context at this point, because I have to go to another committee meeting.

Mr. SLACK. Go right ahead.

INVULNERABILITY OF POLARIS SUBMARINES

Mr. LIPSCOMB. Admiral, I would like to ask Admiral Smith, who is present, a couple of questions, because of a misunderstanding that

may exist, regarding some comments that have been attributed to him, in recent days about the invulnerability of the Polaris submarine. Admiral Smith's remarks have been interpreted nationally along the lines that Russians cannot now and will not in the future be able to preempt the U.S. underwater nuclear deterrent. I would like to ask Admiral Smith if this is the intent that you wanted to put across in the interview that you had. I understood from our previous testimony that you were misinterpreted to a degree, on what you intended to say.

Admiral SMITH. I believe the various articles that have appeared in the press have misinterpreted what I said. I did give my opinion as being quite positive that the Russians are not now trailing our FBM submarines, are not now capable of trailing FBM submarines, that the generation of attack submarines that the Russians are now testing and getting ready to go operational in the very near future are not capable of trailing. I see no practical way in which the Russians will be able to carry out a coordinated, preemptive attack on the FBM submarines, provided we are able to carry out all of the precautionary measures that are now planned, and we are requesting funds for.

The interpretations that were placed on that statement really go beyond the foreseeable future and include an invulnerability for the unforeseeable future. It certainly was not my intent to cover such an unforeseeable future. With regard further to the interview I had no intent to present any picture. I answered specific questions and tried to be quite precise in the answering of these specific questions. To the best of my knowledge the precise answers that I gave are consistent with the opinions of the Department of Defense which really have to do with the unforeseeable future rather than with the foreseeable.

Mr. LIPSCOMB. You know from present facts that the Soviets cannot now do some of the things, such as trailing our undersea deterrent. But there is no way at this point to determine whether or not in the unforeseeable future that they might have this capability.

Admiral SMITH. There certainly is no way that anyone could given an assurance for such an unforeseeable, or even unforeseen future.

Mr. LIPSCOMB. In no way in your interview did you imply that there was reason why our Nation should not protect not only our undersea capability but our land and sea capability in maintaining our nuclear deterrent.

Admiral SMITH. This was an interview that the publisher of a paper, I believe, in New Bedford, Mass., and what has appeared in other papers in an abstract of that complete article.

In that complete article is my answer to a question of that sort. I certainly feel that the best way of protecting against such unforeseeable contingencies is to have two or three very different systems so that to overcome our total strategic forces requires the coincidence of two or three unforeseeable or unforeseen changes in the offensive capability of the other side.

Mr. LIPSCOMB. Mr. Chairman, for the record, could we put in the full text of Admiral Smith's interview as carried in that Massachusetts newspaper?

Mr. SLACK. Without objection, it is so ordered.

Admiral SMITH. I can provide a copy.

Mr. LIPSCOMB. Thank you, Admiral.

(The information follows:)

[From the Standard-Times Publisher]

POLARIS SUBS CALLED INVULNERABLE TO REDS

(BY JIM OTTAWAY, Jr.)

WASHINGTON.—The Navy admiral responsible for the 41-submarine Polaris missile fleet is confident the Russians cannot now and will not in the foreseeable future be able to successly attack our $13 billion underwater nuclear deterrent force.

In a rare newspaper interview, Rear Adm. Levering Smith, director of Navy strategic systems projects, gave the following reasons for his belief in the invulnerability of the nuclear-warhead intercontinental ballistic missiles carried by nuclear-powered Polaris submarines under the oceans of the globe:

1. "I am quite positive that Russian submarines cannot and are not following any of our Polaris submarines under water. I am also quite positive that the new generation of Russian submarines that are getting close to operational status, that are now being tested, will also not be able to follow our Polaris submarines."

SATELLITES CAN'T DETECT

2. The Russians have no specific new anti-submarine warfare methods we know of which would make the Polaris fleet vulnerable to attack, despite many reports of a superior Russian sonar system or satellite detection capability.

3. Neither the United States nor the Russians can or will likely ever be able to use satellites to detect submarines under the water.

"We have tried to use satellites to do that. The laws of physics will have to be changed to make it practical. The chances of a satellite going over the right spot aren't very good. It's possible, but not practical to use satellites for submarine detection," Admiral Smith explained.

4. Although only 50 percent, or 328, of our 656 Polaris intercontinental missiles are on station at one time and ready to fire within minutes of a presidential order, we know from actual test-firings that their reliability is 85 to 95 percent.

5. He is "skeptical" about reports that the nuclear attack submarine *Scorpion* (not a Polaris submarine), lost near the Azores May 21, 1968, and not found until October 29, was first found by the Russians, who supposedly gave us a friendly tip on its whereabouts.

That report, never confirmed by the Navy, was published in the Standard-Times Parade magazine March 30, 1969, and in the editorial page column of James J. Kilpatrick April 4.

Kilpatrick reported the Russians have "a superior detection system" in their submarine service, but Admiral Smith stated flatly that this is not so.

Admiral Smith's assurances on the safety of our Polaris fleet are highly significant because of recent statements by Secretary of Defense Melvin Laird and Deputy Secretary David Packard casting doubt on the safety and invulnerability of the 656 Polaris submarine missiles as an assured second-strike deterrent the Nation could count on in the 1970's.

In testimony before the Senate Armed Services Committee March 20, Laird and Packard argued the need for President Nixon's proposed Safeguard anti-ballistic-missile system to protect our 1,054 land-based Minuteman missiles.

VULNERABLE?

Senator Stuart Symington asked:

"Is there any reason to believe that our Poseidon (Polaris) force will be vulnerable to pre-emptive attack during the early 1970's? If not, need we be too much concerned even if our Minuteman force should be vulnerable?"

Laird later replied:

"If this particular question is limited to the period through 1972, I would say I believe that our force will remain very free from attack. If you go beyond that time period, I would have to seriously question that."

Packard then added:

"I concluded that even though this is a strong and capable force now, there are some things which the Soviets might do which would make it less reliable within 4 or 5 years hence and when we are given the responsibility of providing for the defense of the country, I would very much prefer to recommend a broader selection of capabilities to provide that defense rather than to rely on one only, even though that one might be a fairly good one."

Moreover, in their May 7 syndicated column Inside Washington, Robert S. Allen and John A. Goldsmith predict that "Some time in the mid-1970's, Russia will have enough high-performance 'killer' submarines to assign Soviet shadows to each of our missile-firing Polaris subs.

"This is the substance of classified intelligence estimates which are disturbing Pentagon planners. It accounts for the statement by Secretary of Defense Melvin R. Laird that the supposedly invulnerable Polaris deterrent may be subject to attack after 1972."

The Allen-Goldsmith view is in direct contradiction to that of Admiral Smith.

POLARIS RELIABILITY

Admiral Smith knows the Polaris system as well as any man in America today. He was awarded a Distinguished Service Medal January 5, 1961, for his early work on solid-propellant missiles and his direction of the research and construction which led to the whole Polaris missile system.

He had the distinction of being selected by President John F. Kennedy for appointment of the rank of rear admiral, an action "almost without precedent in Navy history," according to the Navy information office.

When the Standard-Times asked Admiral Smith about the reliability of the Polaris missile system, he gave the following details which are not generally known.

Although there are 16 Polaris A–2 or A–3 intercontinental missiles with nuclear warheads deployed in each of 41 Polaris submarines, or a total of 656 missiles, only 50 percent, or 328 of them are actually on station under the ocean and ready to fire within minutes of a command from the President of the United States.

PATROLS ROTATE

This is because the 41 Polaris submarines rotate patrols of 60 days at sea and 30 days of submarine maintenance at shore bases where they cannot be fired quickly. And their nuclear propulsion systems must be overhauled every 5 years.

Admiral Smith said the reliability percentage of successful and accurate shots is about 85 to 95 percent. The larger and twice as accurate A–3 Polaris missile has the highest percentage of success.

The Polaris A–2 missile has a range of 1,500 nautical miles while the A–3 can fly 2,500 miles to its target, making every land target accessible and giving the submarine much more freedom of movement and therefore safety.

There are 34 Polaris submarines in the Atlantic fleet, seven in the Pacific. Twenty-eight carry the large A–3 missile, with only 13 still using the older and smaller A–2 missile.

SEVERAL WARHEADS

The new Poseidon missiles can carry several warheads—the exact number is secret—called multiple independently—targeted re-entry vehicles—MIRVs—about 2,500 nautical miles also. Whatever the number of separate warheads may be, the Navy claims Poseidon is "eight times more effective" than Polaris.

The Polaris submarine U.S.S. *James Madison* was the first to go into drydock for extensive conversion work needed to carry the larger C–3 Poseidon missiles. It went into the General Dynamics Electric Boat Division yard at Groton, Conn., February 3.

Only four of the 31 Polaris submarines authorized for this expensive conversion job actually have had funds appropriated.

It will cost an additional $25 to $30 million just to convert a Polaris submarine so it can carry the larger Poseidon missiles. The job is being scheduled with the 5-year basic overhaul each sub must have anyway at a cost of about $50 million.

The average cost of the submarines in our Polaris fleet is $106 million, without the missiles. We have spent over $13 billion developing the fleet to its present state and will spend another $8 billion converting 31 of the 41 submarines to Poseidon missiles.

When asked by the Standard-Times if this highly reliable invulnerable and expensive Polaris missile system is not enough assured second-strike nuclear weapon capability for the Nation by itself, Admiral Smith smiled and said, "You tell me."

"What should we consider will deter the Russians? A Senator asked me the same question. It has been national policy for some time now to depend on several defensive systems, not one alone," the admiral said.

But the admiral and the Navy obviously want to keep the Polaris-Poseidon submarine fleet invulnerable and fully capable of defending the United States, by itself if necessary, by being able to inflict "unacceptable damage" on the Soviet Union or China, even if the enemy attacks first.

There is some evidence that the Russians regard our Polaris submarine fleet with special fear and respect.

On March 10, 1964, the Soviet Union called for the destruction of all U.S. Polaris submarine missiles as the first step toward world disarmament.

Soviet delegate to the 17-nation disarmament talks in Geneva called the Polaris missile a dangerous weapon, as difficult to control as the submarines that carry it. "The Polaris is antihumanistic and antidisarmament and must be done away with," said Semyon K. Tsarapkin.

The Navy, under Admiral Smith's direction, is working on two major projects to keep our underwater deterrent force invulnerable during the 1970's, despite official fears that the Russians may be able to cancel it by producing more submarines. They now have more than 400 subs of all types. We have only 105 attack submarines in addition to our 41 Polaris missile boats.

One Navy program called Project Sanguine would spend $1 billion to improve our land-based communications with Polaris submarines.

Another major Navy proposal would spend many billions to build a whole new generation of Polaris submarines now called "undersea long-range missile system" or ULMS.

Admiral Smith calls the ULMS "a hedge against the possibility that the Russians will put a great deal of effort into antisubmarine warfare not only in quality but in quantity."

He says the Russians do not now have a submarine which can follow our Polaris subs, "and we are not going to wait for them to develop one."

$20 MILLION REQUESTED

The Navy has requested $20 million for development of this new and bigger submarine with bigger missiles which could fly 4,000 to 5,000 miles, about twice as far as the Polaris A–3, and Poseidon C–3.

Such a quieter submarine, with much longer range missiles, could hide and fire from any spot in the whole Atlantic Ocean, the admiral pointed out. All the shores of that ocean are controlled by the free World, which makes it difficult for the Russians to use land and shore-based, or even seabed antisubmarine detection systems.

Secretary of the Navy John Chafee, former Governor of Rhode Island, told the Senate Armed Services Committee this spring that the Russians "might well mount an extensive antisubmarine warfare effort" against the United States.

"In preparation for such Soviet efforts, we are examining a longer range submarine launched missile system," Chafee testified, backing Admiral Smith's statement that the Soviets do not now have a superior antisubmarine warfare capability.

FANTASTIC PROPOSAL

Project Sanguine is a fantastic proposal to bury miles of cable 6 feet underground over almost the entire northern third of Wisconsin.

It would cost $1 billion when completed to produce extremely low-frequency radio wave transmissions which hug the earth's surface and can penetrate deeper under water than high frequency radio waves used in satellites (8,000 megacycles) and deeper than the low-frequency (15 kilocycles) land-based transmitter stations now used to contact Polaris submarines.

Admiral Smith said the Navy is spending about $8 million in fiscal 1969 for a single unit test system in Wisconsin to find ways to transmit at as low as 40 to 50 cycles without producing interferring hums on telephones and wire fences near the underground cables. All testing will not be complete until early 1972.

The purpose of such a communications system would be to make the Polaris submarine fleet even more invulnerable and keep it so in the 1970's by allowing it to run deeper, and faster, and still maintain contact.

Communication is now maintained with Polaris submarines all over the world from large land-based transmitters at Cutler, Maine; North Cape, Australia; and Oahu, Hawaii.

"We do not use satellites to communicate with Polaris submarines," Admiral Smith said. "If you want to come up to the surface, you can communicate, as we do with surface ships, but those high frequencies used by satellites won't go far under water. We can't see how it's at all practical to use satellites for detection either."

This brings the Navy to the conclusion that its Polaris becoming Poseidon submarine ballistic missile system is invulnerable to anything the Russians have or are likely to invent. It's just as hard for them as it is for us to find and destroy a Polaris submarine, the admiral argues.

All-Weather Carrier Landing System

Mr. Minshall. Mr. Chairman, reverting back for a minute to the all-weather carrier landing system, I wonder if you can tell me, Admiral—or whoever else is best qualified in the room to answer the question—how much money have we invested in this system and how much are you asking for this year?

Captain Fearnow. Yes, sir. How much money we already invested in the system? If we talk to the system, may I take a moment to explain what we mean by the system?

Mr. Minshall. Say anything you want.

Captain Fearnow. The system is composed of a landng control central, which is equipment that is on the ground or on the ship. To work with that equipment, we have to operate through the Navy tactical data system and we use a portion of that, which we call Link-4. We have about three pieces of equipment that are involved there. We get to a data link transmitter, which sends the information or the commands out in the air to the aircraft. In the aircraft we have a digital data communication set which receives the data link information or commands. This piece of equipment decodes this information or commands into analog voltages. It then goes through a coupler to the autopilot for the automatic control or to the cockpit display for the pilot to use when he is flying manually. The data link that is in the aircraft and is used by the all-weather carrier landing system is also used in the tactical environment for intercept control, for bombing control—precision bombing—with Marine Corps equipment, the TPQ-10. It is also used to vector or control the aircraft automatically around the ship or ashore for air traffic control. This is the data link box in the aircraft. We have two of these boxes, one which receives commands from ground to air, only, and then we have another box which receives commands from the ground and also sends back information from the aircraft to the ground, back into the naval tactical data system. This box also works with the air tactical data system. It works with the Marine tactical data system.

I believe I have covered the system, but with the understanding that parts of it are used in many other ways. In my budgeting I have included all of these uses: The installation in the aircraft of the intercept capability, the vectoring capability, the bombing capability. That is all carried under all-weather landing systems. We have spent, then, up to date about $225 million or roughly in that area, on the total system.

Mr. MARSHALL. What additional cost can you attribute to this automatic landing system, vis-a-vis the vectoring system, the air traffic control system and all the rest of it?

Captain FEARNOW. How much of it?

Mr. MINSHALL. Yes.

Captain FEARNOW. We are in the aircraft end? When you get into the aircraft end numbers we are talking about 3,000 to 3,500 aircraft and the costs mount considerably. That is where the great amount of the money is concerned. I would estimate about at least $100 million is in the aircraft end for the other portion.

Mr. MINSHALL. For the aircraft for 1970 in item 48 two of these items—I mean fiscal 1968—totaling $4 million. That is $2 million apiece. Does that include the entire system you are talking about?

Captain FEARNOW. No, sir. That $2 million will cover only the landing control central portion.

Mr. MINSHALL. You just finished telling me that your budget request was for the overall——

Captain FEARNOW. You asked me the total system. I understood you to mean the total aircraft, ship training, shore, monitoring the whole system. If you are talking only about the landing control central portion——

Mr. MINSHALL. How much was in last year's budget for the same item?

Admiral McCLELLAN. May I answer that?

Mr. MINSHALL. Yes.

Admiral McCLELLAN. You are speaking of line item 48 which is a shore based trailer automatic system. That was for two units in fiscal 1968 at $4 million. Two in fiscal 1969 for a total of $6 million. There is one unit in 1970 for $2.9 million.

Admiral SHIFLEY. Those are the units ashore.

Mr. MINSHALL. Why is this cost increased?

Captain FEARNOW. I think what we have done is consolidated the total pieces—say the trailer pieces. Prior to this time we bought the pieces separately and this time we put them in the total system in the training version in the trailer, which includes two computers, a data link transmitter, and it includes another piece of equipment which puts these messages in the proper format for transmission in the air.

I think we really have not had a price increase or very small possibly, but we really clarified or put the total trailer system together.

Mr. MINSHALL. What is the future requirement for this system in quantity and cost and where will these be installed, both ashore and on which carriers?

Captain FEARNOW. The contracts are all placed except for the training equipment for the Naval Air Station, Whidbey Island. The Marine Corps has a requirement for two training systems at two of their stations ashore.

Admiral McCLELLAN. Fiscal 1970 will complete Whidbey, and Cherry Point for 1971 and El Toro for 1972. That will complete the van installation ashore.

Mr. MINSHALL. I am looking at the overall system. What is the overall system going to cost? What is your total requirement going to be in numbers and dollars?

Captain FEARNOW. All of the shipboard systems have been purchased except for the Midway which will need a system at a later date.

Mr. MINSHALL. How much will the modification take in the case of the ANSPN–42 for the aircraft?

Captain FEARNOW. That involves the data link portion. The couplers and the autopilot and display are already there. That will vary by aircraft types.

TOTAL PROGRAM COST OF ALL-WEATHER CARRIER LANDING SYSTEM

Mr. MINSHALL. What do you estimate the cost will be? Have you any estimate?

Captain FEARNOW. Are we speaking now of the total?

Mr. MINSHALL. The total.

Captain FEARNOW. Aircraft types?

Mr. MINSHALL. Aircraft types and carriers, ground installations, training centers, the whole picture. What is this whole ball of wax, if I can call it such, going to cost?

Admiral MCCLELLAN. I think it might be well to supply you a complete listing for the record.

Captain FEARNOW. Yes, sir; I think it would be clearer.

Mr. MINSHALL. Thank you.

(The information follows:)

ALL-WEATHER CARRIER LANDING SYSTEM TOTAL PROGRAM COST

Total estimated cost for all present and future required components of the system: $447,795,000

Total cost to date: $205,420,000 (through fiscal year 1969).

$127,862,000 of the program cost to date and $295,583,000 of the total overall estimated cost is for the required data link equipment for more than 3,000 aircraft. These data link components serve as part of the all-weather carrier landing system only during the final 3 minutes of the aircraft mission. During all other aircraft operations these data link components provide essential automatic control and cockpit display for bombing, vectoring, intercept, and reconnaissance. Major ship and shore installations of the all-weather carrier landing system have been procured and installed. Remaining fund requirements are primarily for procurement and installation of data link equipment in new production aircraft and retrofitting fleet aircraft.

Mr. SLACK. Mr. Davis.

Mr. DAVIS. No questions at this point.

VERSATILE AVIONICS SHOP AND TEST EQUIPMENT

Mr. SLACK. You have been funded $59.7 million in the last 2 fiscal years for versatile avionics shop and test equipment (VAST). For what purpose have those funds been used?

Admiral MCCLELLAN. In fiscal year 1967 and 1968, VAST stations were procured for the self-contained navigation system to be installed in Marine helicopters. In fiscal 1968 and 1969, 11 VAST stations have been procured. Ten of these were configured for support of the A7E equipments and one configured for support of E2C equipment.

Mr. SLACK. I thought one piece was to be able to test the electronic systems of various aircraft. Isn't this the purpose for this?

Admiral MCCLELLAN. I would like to give a general answer here, and I brought the VAST program officer for more specific questions. The VAST system has a basic system which can be used to test

many equipments providing you have the proper program and proper test connection. So you can take a single VAST station properly programed and test various equipments from an airplane or from various airplanes. I think Captain Gear, who is the VAST project officer, can answer detailed questions.

Captain GEER. The VAST system is actually composed of a library of programable building blocks, a total of about 48 in the library at this time. The VAST test station to be configured is limited to a total of 42 of these building blocks in one particular test station because of the control parameters involved.

The black boxes are analyzed individually to determine which of the stimulus and measurement building blocks are required to test that particular black box. The next requirement is for what we call program design data. This includes the diagnostic flow charts for the test philosophy for that particular black box. It is then converted into English language programs and compiled automatically into an object program tape which is the test tape used by the VAST machine.

This process then involves the verification and debugging of the object test program tape, using the unit to be tested to make sure that it works. We are implementing this system by weapons system contractor furnished equipment first. The reason we are doing it in this manner is that the initial effort must be done with a small number of VAST test stations available. The first such system to be supported in our carrier is the A7E, following on this will be the E2C, F14–A, S–3A, some portions of the EA6B, and other equipments not unique to specific weapons systems.

I should like to make it clear in this regard as long as the required building blocks are present in the configuration of a station in question for a particular black box, whether it comes from an F–14, an E–2C, A–7, or what have you, the test program tape can be played on that particular test station and that black box can be tested on that test station. However, the requirements are such that we do not have the capability to have one VAST test station that will test everything. The limitations on size preclude this.

As we get more VAST equipment available, we will gradually transition from this weapons system oriented test station to functionally oriented test stations configuring them to take care of all the radars in an air wing, all of the communications navigation identification equipment in the air wing, all of the digital black boxes installed in the air wing aircraft, et cetera.

We expect that this will take on the order of 4 or 5 years to complete, commencing as of now. At about 1973 to 1974 we expect to be able to have a really truly versatile shop in that the equipments will be tested on a specific functional test station rather than on the weapon-oriented test stations that we are forced to implement at first.

Mr. SLACK. Wasn't the original plan to develop and utilize one piece of VAST equipment to test out all the avionics on several aircraft?

Captain GEER. That is not correct, not just one test station. The workload would preclude that because one test station can handle only

so many equipments per day. It is for that reason that eventually we will be required to have five or six of these test stations in each carrier.

Mr. SLACK. Was this your original concept?

Captain GEER. Yes, sir; originally we estimated six test stations per ship. We expect we will achieve this number of test stations in our ships. One of these six will be for the radars, one for the communication navigation identification, and one for the digital equipment, module test stations, et cetera, so a black box coming from an aircraft can be assigned to whichever test station is configured to handle that type of equipment.

Mr. SLACK. In fiscal year 1970, you are requesting $42.5 million for VAST. How will this money be used? Will it be for the procurement of additional VAST test stations?

Admiral MCCLELLAN. The planned procurement includes 18 VAST test stations, four for A7E, eight for F-14 equipments, and six for E2C equipments. In addition, funds are required for spares for the test stations, self-test interface devices and computer programing for self-test.

LOCATIONS OF VAST SYSTEMS

Mr. SLACK. The committee has been advised that through fiscal year 1969 the Navy has spent a total of $91.7 million on VAST. Would you provide for the record a list showing where these VAST systems will be located that have been funded thus far and what systems for which aircraft will they be able to test?

Admiral MCCLELLAN. Yes, sir.

(The information follows:)

VAST

In fiscal year 1967 and fiscal year 1968, seven VAST test stations were procured for the support of equipments of the self-contained navigation system to be installed in Marine helicopters. In fiscal year 1968 and fiscal year 1969, 11 VAST test stations have been procured; 10 configured for support of A-7E equipments and one configured for support of E-2C equipments.

Of the seven test stations for supporting Marine helicopters, three will be located at continental Marine Corps air stations, two at overseas stations, one at a depot repair activity and one at a contractor's facility to keep test programs up to date. The 10 A-7E test stations initially will be installed at contractors' facilities for the purpose of verifying computer test programs. Nine of these test stations ultimately will be installed in aircraft carriers and supporting shore facilities. The remaining test station will remain at the A-7E contractor's facility to maintain test programs up to date. The E-2C test station will be installed at the E 2 contractor's facility for test program verification.

TOTAL PROGRAM NUMBER OF TEST STATIONS

Mr. SLACK. What is the total number of VAST systems required and what is the total estimated future cost of this program?

Admiral MCCLELLAN. The latest Department of Defense 5-year plan which goes through fiscal year 1974 shows for both procurement of stations and spares a total dollar figure of $373 million. It is planned to install 254 VAST test stations. I can provide for the record a list of the locations of these.

Mr. SLACK. Very well.

(The information follows:)

LOCATION OF VAST TEST STATIONS

The total requirement of 254 VAST test stations through fiscal year 1975 will be installed at the following places:

	Number of test stations
Attack aircraft carriers	89
Antisubmarine aircraft carriers	15
Naval air rework facilities	20
Naval air stations	57
Marine Corps air stations	14
Training facilities	17
Test facilities and laboratories	29
Contractor's facilities	13
Total	254

Mr. SLACK. With the introduction of VAST into the fleet, how much of a reduction can be made in the fiscal year 1971 budget for the procurement of special support equipment?

Admiral MCCLELLAN. The anticipated savings in special support equipment, known as SSE, is not easy to calculate. However, the procurement of A-7E VAST test stations has reduced the requirement for A-7E SSE in fiscal year 1970 by about $13 million. The figure in fiscal year 1971 we estimate at about $31 million.

RELATIONSHIP WITH AIR FORCE GENERAL PURPOSE TEST SYSTEM

Mr. SLACK. The Air Force developed a similar system called general purpose automatic test system. Are you familiar with that?

Captain GEER. Yes, sir.

Mr. SLACK. Does that essentially perform the same function as VAST?

Captain GEER. It is a general purposer automatic test system that was developed by the Air Force Logistics Command at Wright-Patterson Air Force Base in Ohio. This equipment is depot level equipment only. Therefore, it does not require the amount of militarization we require in the environment we have in our aircraft carriers. As far as the function to be performed, the performance essentially is the same as the VAST performance. However, it is controlled rather than by a digital computer as is VAST, by punched paper tape system. It is a serially operated device. It operates a bit slower than does VAST. There are some plans in the Air Force for using a digital computer with the GPATS system. I do not know to what extent they have progressed in this.

Mr. SLACK. Don't they plan to utilize GPATS to test out electronics equipment in the A-7, for example?

Captain GEER. I believe there is a program for that. The software for that program is being worked out in conjunction with the VAST program at Dallas, Ling-Temco-Vought being the prime contractor for A-7D and A-7E. However, this is the depot level equipment, not field level, as the Air Force calls it, or intermediate level, as the Navy calls it. They do not intend to employ GPATS overseas for example. The GPATS installations are at their air material areas that correspond to our naval air rework facilities.

Mr. SLACK. Do you intend to have VAST system located at your same type areas that you just mentioned?

Captain GEER. It is not planned to support the A–7E aircraft at the depot level with VAST. The A–7E came in time ahead of the VAST availability. As a result of this it was required to build special support equipment for the A–7E for its initial deployment. The conversion to the VAST system is at the intermediate level maintenance only. The special support equipment, in order to utilize this equipment we have already bought, will be used at the depot level in place of VAST.

Mr. SLACK. Could you provide, Captain, for the record, the cost of the VAST system and the Air Force cost of a GPATS system?

Captain GEER. Yes, sir.

(The information follows:)

VAST

The cost of a VAST test station varies according to its configuration. The average VAST test station will cost approximately $2 million in fiscal year 1970; in fiscal year 1971, the figure should be about $1.8 million. The following information concerning the cost of GPATS equipment has been provided by Headquarters, U.S. Air Force:

The unit cost of any particular GPATS system is dependent upon the building block complement of the system (both in quantities and types). The average cost of the existing systems is $2.8 million each. This price includes the control device. The highest unit cost is $3.8 million, the lowest is $1.9 million.

Mr. DAVIS. Did you develop the significance of the additional $9 million here in terms of the overall program and in terms of 1970 procurement?

Mr. SLACK. No, sir.

Mr. DAVIS. It appears there is an increase of $9 million in this program.

Admiral GADDIS. In the budget amendment, yes, sir.

Mr. DAVIS. Can you tell us what the significance of that is?

Captain GEER. As Admiral McClellan mentioned, there were six E2C test stations that had been planned for procurement in fiscal year 1971. The $9 million was added by the Office of the Secretary of Defense to the fiscal year 1970 budget to meet the E2C schedule. The 5-year defense program that was dated 31 December has been modified by a like reduction in the fiscal 1971 OPN procurement. The overall program has not changed by this additional $9 million in fiscal 1970.

Mr. DAVIS. It is just an acceleration?

Captain GEER. An acceleration of that particular item and a reduction by a like amount in fiscal 1971.

Mr. DAVIS. Thank you.

INDUSTRIAL PLANT EQUIPMENT

Mr. SLACK. You are requesting $19.9 million in fiscal 1970 for industrial plant equipment. This is more than was requested in each of the last 2 fiscal years. Why has this increased $8.35 million from the fiscal 1969 level?

Admiral MCCLELLAN. The industrial plant equipment reflects the increased work imposed by the procurement of greater quantities of sophisticated aircraft. Corresponding increase in crash damage and modifications have combined to degrade the maintenance system per-

formance of the naval rework facilities and have caused the expansion of aircraft pipelines. Funds totaling $18.3 million will be utilized for the procurement of this industrial plant equipment, known as IPE, to improve the rework capability of the seven naval rework facilities. The effort will reduce operating costs, provide equipment needed for the increasingly sophisticated equipments, replace IPE that cannot perform its purpose, and improve our capability to react to limited or general emergencies or war situations. $.6 million is required to maintain the existing capability of the Naval Avionics Facility at Indianapolis. The remaining $1 million will be utilized for supporting equipment requirements at various intermediate level maintenance activities.

INDUSTRIAL FACILITIES FOR WHICH EQUIPMENT PROCURED, AND SAVINGS

Mr. SLACK. Admiral, would you show for the record the specific industrial facilities for which this equipment will be procured, including amounts programed for each installation?

Admiral MCCLELLAN. We will provide that for the record.

Mr. SLACK. Also provide for the record the type of equipment to be procured and the resulting savings to be realized from the procurement of this equipment.

Admiral MCCLELLAN. Yes, sir.

PLANNED ALLOCATION OF FISCAL YEAR 1970 IPE PROCUREMENT

[Dollars in thousands]

	New tools	Replacement of overage equipment	Tools in support of military construction projects	Total
Naval air rework facilities:				
Pensacola	$748	$920	.....	$1,668
Cherry Point	555	1,175	$20	1,750
Norfolk	1,114	642	1,437	3,193
Quonset Point	536	1,036	.....	1,572
Alameda	845	1,065	.....	1,910
Jacksonville	1,208	1,380	605	3,193
North Island	403	772	3,880	5,055
Aircraft maintenance departments	1,000	.....	.....	1,000
Naval avionics facility, Indianapolis	266	334	.....	600
Total	6,675	7,324	5,942	19,941

ESTIMATED SAVINGS FROM FISCAL YEAR 1970 IPE INVESTMENT

[Dollars in millions]

Type of equipment	Fiscal year 1970 invested	Annual savings
1. New tools for naval air rework facilities and naval avionics facilities	$5.7	$2.4
2. Replacement for naval air rework facilities and naval avionics facilities	7.3	1.8
3. MILCON support for naval air rework facilities	5.9	2.5
4. General IPE for aircraft maintenance departments	1.0	.5
Total	$19.9	$7.2

General Collateral Equipment

Mr. Slack. Would you also indicate what is involved in line item 101, "General collateral equipment," for the record, please?

(The information follows:)

This item represents the procurement of investment type equipment; that is, labor saving devices (for example, calculators, power files, flexowriters) and supply and miscellaneous equipment (for example, duplicators, floor scrubbers) to meet requirements for activities supported by the Naval Air Systems Command. Funds will be utilized as follows:

Activity	*Amount*
Naval Air Rework Facility:	
Alameda	$214,080
Cherry Point	31,000
Jacksonville	5,500
Norfolk	18,174
Pensacola	25,649
Quonset Point	134,076
North Island	81,521
Naval Avionics Facility, Indianapolis	10,000
Naval Weapons Systems Analysis Officer, Quantico	5,000
Naval Aviation Engineering Service Unit, Philadelphia	10,000
Naval Air Systems Command Representative, Atlantic, Norfolk	10,000
Naval Air Systems Command Representative, Pacific, North Island	10,000
Naval Air Systems Command Representative, Central, Dayton	5,000
Naval Air Systems Command Representative, Pensacola	5,000
Naval Air Technical Services Facility, Philadelphia	40,000
Naval Weapons Quality Assurance Office, Washington	5,000
Naval Photographic Center, Washington	10,000
Total	620,000

Mr. Davis. There has been a fairly sharp upturn over the past 2 years. Does that represent a trend we should anticipate in the future or is this some of this one absolute proposition?

Admiral McClellan. The Navy has, commencing approximately 2 years ago, a plan for modernization of the rework facilities with an aim toward reducing in-process time and thereby saving a considerable amount of money on aircraft. This is a planned program on an annual basis that you can expect for probably 5 more years, this kind of modernization.

Mr. Davis. On an accelerated basis?

Admiral McClellan. Not accelerated. It will be approximately this level from year to year.

Other Aviation Support Equipment

SURVIVAL RADIO—AN/PRC90

Mr. Slack. The fiscal year 1970 program of $60 million for other support equipment is $22.6 million more than the fiscal year 1969 program. You are requesting $4.2 million for the initial procurement of ——— AN/PRC90 survival radios. What have we been using for this purpose up until now?

Admiral McCLELLAN. The program is for PRC–90 survival radios. Prior to the availability of this multichannel personal survival radio, the PRC–63 single-channel radio was used. The 63 survival radio will continue to be used until all existing stocks are depleted. Forces deployed overseas are being provided the PRC–90 first. The total program for the 90 radio is ——— units for service use by the end of 1971.

Mr. MINSHALL. What is the advantage of the new equipment over the one being replaced?

Admiral McCLELLAN. Reliability.

Mr. MINSHALL. In layman's language, please.

Admiral McCLELLAN. It is more reliable in performance than its predecessor. It is dual channel, which gives considerably more flexibility and security in the rescue situation.

Mr. MINSHALL. What will you do with the old one?

Admiral McCLELLAN. We will use them until expended mostly in survival situations outside of the combat zone.

Mr. MINSHALL. Then you surplus them?

Admiral McCLELLAN. When they are expended, if any are left, we would surplus them, but in general they are expended and become unusable and are destroyed.

Mr. MINSHALL. They are not all used, though. They would only be used if a man was down?

Admiral McCLELLAN. We don't anticipate jumping and being in a survival situation with all of them, of course, but they deteriorate in use and become uneconomical to repair.

Mr. MINSHALL. How do they deteriorate in use?

Admiral McCLELLAN. Things such as battery deterioration.

Mr. MINSHALL. Can't you just replace the battery?

Admiral McCLELLAN. Yes, but if the battery deteriorates within the radio, it damages it, much as it would your flashlight.

Mr. MINSHALL. Aren't your people cautioned against this?

Admiral McCLELLAN. Yes, sir. There is a certain amount of dropping, or losses. We try to keep tight control.

Mr. MINSHALL. What is the unit cost of one of these?

Admiral SHIFLEY. 5,500 units cost $4.2 million.

Admiral GADDIS. About $700 apiece.

Admiral McCLELLAN. $764.

Mr. MINSHALL. How many manufacturers make this equipment?

Admiral McCLELLAN. It is a competitive buy. We will provide the manufacturers for the record.

Mr. MINSHALL. How many are there just off the top of your head, please, Admiral?

Admiral McCLELLAN. I am afraid it would be very much off the top of my head, sir. I would rather give you an exact figure.

UNIT COSTS AND PROCUREMENT PROGRAM

Mr. MINSHALL. What was the previous unit cost of these or similar radios?

Admiral GADDIS. Could we provide that for the record?

Mr. MINSHALL. Yes, but I would like to know what they cost.

Admiral McCLELLAN. Let us give the cost history of it for the record.

(The information follows:)

SURVIVAL RADIOS

The costs for the AN/PRC-63 and AN/PRC-90 radios including required ancillary items is provided as follows:

Fiscal year	Item	Quantity procured	Unit cost	Total cost
1966	PRC-63	5,200	$744.18	$3,869,743
1967	PRC-63	6,800	558.16	3,795,495
1967-68	PRC-90	4,790	731.86	3,505,650

The fiscal year 1970 procurement program for the PRC-90 radio will be a competitive procurement. It is estimated the average unit cost with ancillary items such as electronic testers, battery testers, and hand books will be approximately $764.

POTENTIAL SUPPLIERS OF PRC-90

The Sylvania Electronic Products, Inc. is the only current manufacturing source for the PRC-90 survival radio. The fiscal year 1970 program will be advertised for procurement on a competitive basis and it is estimated the following manufacturers will submit quotations:

1. Sylvania Electronic Products, Inc.
2. Honeywell, Inc.
3. Magnavox Corp.
4. Bendix Corp.
5. National Cash Register Co.
6. ACR Electronics Corp.

Mr. MINSHALL. What is your need for ——— did you say you would have to have ——— of these, did I understand that correctly?

Admiral MCCLELLAN. Yes, sir.

Mr. MINSHALL. How many pilots do you have?

Admiral SHIFLEY. Not only pilots use these, but all air-crewmen are furnished a survival radio.

Admiral MCCLELLAN. 20,000 pilots is approximately the figure.

BASIS FOR UNIT PRICE

Mr. MINSHALL. Off the top of my head, if I may, that is $700 a unit cost and it seems extremely high. I know electronics equipment is expensive, but $700 for a package about twice the size of a package of cigarettes seems an awful lot to me.

Admiral MCCLELLAN. Of course, this is a ruggedized micro-miniature type radio, and expenses will run considerably higher.

Mr. MINSHALL. Have you any idea how this compares with the civilian survival equipment? Radios?

Admiral MCCLELLAN. There is no known unit we could compare it with.

Mr. MINSHALL. I have seen something of the sort advertised and if my recollection serves me correctly, they are nowhere near this high and I am sure they have an impact waterproof capability such as you would need in the Navy. I don't know how many channels they have or anything like that.

Admiral MCCLELLAN. I would have to look it up. If it is anything like the one my son wanted from Sears, Roebuck, it would be about $120 for a pair.

Mr. MINSHALL. I am not talking about this citizens band type. I am talking about a survival unit. That is what this is, isn't it.

Admiral MCCLELLAN. Yes, sir.

Mr. MINSHALL. That is what I am talking about.

Admiral MCCLELLAN. I am not aware of any civilian counterpart of this.

Mr. MINSHALL. That is all I have. Thank you.

REWSON BUDGET PROGRAM

Mr. SLACK. In the last 2 fiscal years you have been funded a total of $14.4 million for REWSON. In fiscal year 1970 you are requesting another $5.7 million. What is REWSON and how are these funds to be used?

Admiral MCCLELLAN. REWSON is an acronym made up of the first letters of reconnaissance, electronic warfare, special operations, and naval intelligence systems. The fiscal year 1968 and 1969 programs are related to the improvement of tactical and intelligence processing and analysis equipment.

The Navy now has 10 operational attack carrier integrated operational intelligence centers procured at a total investment at $120 million, including development. The 10th system is a significantly improved version of the previous ones. In order to maintain a standard configuration which is required for purposes of exchanging standardized intelligence data bases and a single logistics support system, an updated program was started in 1968 to bring the original nine systems procured in 1961 to the configuration of the most modern system now in attack carrier No. 67; $4 million will be used in 1970 to procure two additional kits for installation on U.S.S. *Forrestal* and *Independence.* This will bring the number of shipboard kits purchased to six, plus part of our training command system. The remaining two ships and the balance of the training equipment will be procured in 1971, ending the retrofit program. Other engineering changes in hardware and software are procured with REWSON funds to support changing fleet requirements in intelligence systems, for example, new infrared sensors, or electronic equipment to interface with the command and control systems.

As a result of the early successes of the IOIC and utilizing the principle of automation for analysis, processing, evaluation, and dissemination of tactical intelligence data, the Navy began a program to provide mechanized intelligence centers in other combatant ships. These include the amphibious flagships, fleet flagships and ASW carriers. These, in conjunction with the attack carrier IOIC, form the NIP system, the naval intelligence processing system, and they can be operated as an integrated fleet network capable of rapidly evaluating and transmitting data to other Navy commands and to other services with equivalent systems. It must be emphasized that NIPS is a tactical system to support the Navy Tactical Commander. Also in 1970 the intelligence centers for the amphibious flagships, the fleet flagships, will become operational.

The 1969 and 1970 funds are being used to procure equipment for a training facility in Georgia, and a fleet flagship and some components for CVA IOIC compatability. Three classes of ships will receive

a newly formatted intelligence data base and begin operating with common hardware, common software and a common data base. Finally, with 1969 funds, portable vans were procured with equipment to process multisensor reconnaissance information. These vans are presently operational in Southeast Asia.

Mr. SLACK. Admiral, the first nine REWSON units procured, were they production models or prototypes?

Admiral MCCLELLAN. They are IOIC. They are production models, but I would like to emphasize again that these were procured in 1961 which is one of the great reasons for the necessity to update.

Mr. SLACK. In answering the REWSON question, you started talking about NIPS. Could you identify the items in this P–1 that are part of this REWSON system for the record, please?

Admiral MCCLELLAN. Yes, for the record.

(The information follows:)

REWSON, Naval Intelligence Processing System and Reconnaissance and Analysis, items 120, 121, and 122 respectively.

Mr. SLACK. What is your future requirement for this equipment, and what will the cost be? You can supply that for the record, Admiral.

(The information follows:)

REWSON

The approved planning requirements for the REWSON program in fiscal years 1971–74 are:

[In millions]

	1971	1972	1973	1974
REWSON	$6.3	$6.3	$6.3	$6.3
NIPS	7.4	1.7		
Recon. and analysis				

Plans for this equipment encompass updating all CVA integrated operational intelligence centers to the configuration of the CVA 67. In addition that system will be made part of, and compatible with, the total tactical intelligence systems being installed on fleet, amphibious and ASW command ships.

TRAINING EQUIPMENT AND TRAINING FILMS

Mr. SLACK. Training equipment is funded under this category. Why is training equipment procured both in this budget and in the PAMN budget?

Admiral MCCLELLAN. The PAMN budget supports training equipment associated with new production and in production weapons systems.

Mr. SLACK. The committee notes training films are funded both in OPN and O. & M. budgets. What is the reason for this?

Mr. BLOOMINGBURG. In O. & M. we fund the in-house-produced films those that are produced at the Navy Photo Center. Those that are carried in our OPN budget are the commercially produced training films.

Mr. SLACK. Why is that?

Mr. BLOOMINGBURG. O. & M. costs are considered a part of the operating cost of the photo center.

Mr. SLACK. Would you provide the amount in the 1970 budget for training films by appropriation and budget activity, please?

(The information follows:)

Training Film

(In thousands of dollars)

Appropriation/activity	*Fiscal year 1970 budget*
Other procurement, Navy	2,000
3. Aviation support equipment	1,800
7. Personnel and command support	200
Operations and maintenance, Navy	1,680
2. Logistics support	670
3. Medical support	225
4. Training and personnel support	450
6. Servicewide operations	335
Operations and maintenance, Marine Corps	300
1. Training and operations	300
Total Navy Department	3,980

SPARES AND REPLENISHMENT SUPPORT

Mr. SLACK. The largest single request in the "Other support equipment" category is $28.2 million for spares and replenishment support. This is $24.5 million more than your fiscal year 1969 request. What is the reason for this increase?

Admiral MCCLELLAN. In 1969 our program was $3.7 million. In 1970, $28.2 million. The fiscal year 1970 program is structured on a different basis, to consolidate all of the replenishment items for this budget activity into this line item.

When computing fiscal years 1968 and 1969 on a comparable basis with the 1970 program, the amounts become: 1968, $31.2 million; 1969, $27.5 million; and 1970, $28.2 million. Thus, the real increase in 1970 is only $700,000, which is attributable to handling, shop and test equipment requirements.

Mr. SLACK. Of the total request $17.4 million for handling, shop and test equipment. Is any of this test equipment to be used to test aircraft electronics?

Admiral MCCLELLAN. Approximately $5.6 million is programed for this purpose in 1970. These funds will replenish and augment general test equipment used primarily at squadron intermediate maintenance levels. This is under the Aviation Supply Office in Philadelphia. Requirements are based on historical demand and issue data. Examples of equipment to be procured under this item are oscilloscopes, fuel quantity testers, voltmeters, ammeters, and go-no-go test sets of various kinds.

Mr. SLACK. Can you show a reduction in fiscal year 1970 for test equipment as a result of your fiscal year 1970 buy of VAST equipment? You may provide that for the record.

(The information follows:)

In the general support equipment and standard support equipment categories, which are comprised of those truly general-purpose items supplying or measuring broad parameters of physical properties such as ground, electrical, pneumatic and hydraulic power units; towing, hoisting and fueling devices; signal-generating devices; voltage, amperage and phasemeasuring devices, et cetera, no reduc-

tion in the Navy's fiscal year 1970 requirements can be forecast as a result of planned fiscal year 1970 procurements of VAST systems.

The VAST system is being procured to effect, to the maximum extent possible, the replacement of the variety of intermediate/depot level avionics maintenance special support equipment now in use, or intended for future use, with a more cost-effective and technically superior automatic test system.

The procurement of A-7E/VAST test stations has reduced the requirement for A-7E SSE in fiscal year 1970 by about $13 million. The figure in fiscal year 1971 we estimate at about $31 million.

Mr. SLACK. Provide for the record the total value of the Navy inventory of replenishment end items and spares for aviation support equipment by fiscal year since 1965 fiscal year.

Admiral MCCLELLAN. Yes, sir.

(The information follows:)

TOTAL VALUE OF THE NAVY INVENTORY OF REPLENISHMENT END ITEMS AND SPARES FOR AVIATION SUPPORT EQUIPMENT, BY FISCAL YEAR

	Fiscal year				
	1965	1966	1967	1968	1969
Aviation supply office controlled inventory	854.9	880.3	916.4	940.0	972.5
NAVAIR controlled inventory in the fleet	510.0	519.4	537.5	551.3	565.3
Total	1,364.9	1,399.7	1,453.9	1,491.3	1,537.8

This data represents estimated value of items funded in both Procurement of aircraft and missiles, Navy (PAM,N), and Other procurement, Navy, Budget Activity 3. The present reporting system does not break out the above data by appropriation.

ORDNANCE SUPPORT EQUIPMENT

Mr. SLACK. The fiscal year 1970 program for ordnance support equipment is $628.8 million, which is $177.6 million less than the fiscal year 1969 program.

ITEMS BUDGETED NOT APPROVED FOR SERVICE USE

Provide a tabulation showing the items for which funds are requested in fiscal year 1970 that have not been approved for service use.

Admiral SHIFLEY. Yes, sir.

(The information follows:)

[In millions]

P-1 line item No.		Fiscal year 1970 request
10	Shipboard decoy rocket	$6.5
29	Weapons for Seabees, landing forces, auxiliary and small boats (MK 22 machinegun)	.5
32	Mine MK 55 conversion	4.3
41	ORDALT material (SMS) (Tartar digital fire control system)	7.9
49	Torpedo MK 48	110.0
53	Mobile target MK 27	8.1
	Total	137.3

SHIP-LAUNCHED ORDNANCE

Mr. SLACK. A total request for ship-launched ordnance and related equipment is $258.1 million. This request is $256.8 million below the fiscal year 1969 estimate. A total of $73.1 million is requested in fiscal year 1970 for ship gun ammunition. The request is $211.9 million less than last year.

Your statement indicates you are to stretch out the fiscal year 1969 approved production program for ship gun ammunition into the fiscal year 1970 production year. The total request in fiscal year 1970 is to replace primarily worldwide consumption. Is it possible to maintain a hot production base during fiscal year 1970 without the need for new money in fiscal year 1970?

Admiral WOODS. No, sir, it is not. To maintain a hot production base during fiscal year 1970, we would need $43,600,000. The additional money between that and $73.1 million requested is required to maintain the production base, the hot base, in a position to accelerate, as Admiral Shifley mentioned in his opening statement, to the Southeast Asia production levels attained during fiscal year 1968 as a result of the 1968 TET Offensive, and to replace worldwide consumption.

SURFACE GUN SYSTEMS SUPPORT

Mr. SLACK. The fiscal year 1970 request for surface gun systems support is $32 million or $1.5 million less than last year. According to your statement, Admiral Shifley, $17.9 million in fiscal year 1969 and $21.9 million in fiscal year 1970 will be spent on the continuing systematic program of restoration and modernization of ship gun systems.

What are we doing to modernize these gun systems?

Admiral WOODS. We currently have several projects for modernization of our ship gun systems. We are taking three-inch and five-inch gun mounts, bringing them back to our ordnance station at Louisville and installing improved components such as solid state amplifiers and improved hydraulics both of which result in improved reliability.

In addition, in our 5-inch 54 gun mount conversion program, of which we have some 144 mounts in the fleet, we have in progress a major conversion program going which incorporates components of a similar nature, which have been developed for newer gun systems. We expect, as a result of this to gain an additional 10 years of service life out of these equipments and also some ——— improvement in reliability.

GUN MOUNT MODERNIZATION PROGRAM

Mr. SLACK. How many ships of the fleet are involved in this restoration and modernization program?

Admiral WOODS. Eventually there will be 416 ships involved but, of course, we can't take care of all of these in fiscal year 1970.

Mr. SLACK. Could you provide for the record then the total cost of this program through fiscal year 1969 and your future requirements in this regard?

Admiral WOODS. Yes, sir.

(The information follows:)

Our expenditure of OPN funds through fiscal year 1969 for gun mount restoration and modernization and future requirements are shown in the following table:

	Fiscal year								
	1967	1968	1969	1970	1971	1972	1973	1974	1975
3 in./50 gun mount components			1.4	.9	1.3	1.8	1.8	1.8	1.8
Gun mount improvement				4.4	.5	.5	.5	.5	.5
5 in./54 MK 42 components			9.2						
5 in./54 MK 42 conversion				4.0	15.9	20.3	19.2	19.2	19.2
Ordalts (SGC)	1.8	13.5	5.0	7.6	4.7	4.2	4.3	4.9	5.0
Total	1.8	13.5	15.6	16.9	22.4	26.8	25.8	26.4	26.5

The total of these expenditures through fiscal year 1969 is $30.9 million and our future requirements, fiscal years 1970 through 1975, are $144.8 million. We plan $10 million in fiscal year 1976 to complete the 5"/54 conversion program but the other programs have not yet been extended beyond fiscal year 1975.

Mr. SLACK. Why do you require $4 million for the 5"/54 MK 42 conversion program?

Admiral WOODS. That is the program I just mentioned, the one for the 144 mounts, this is the beginning of a program which will take about 7 years to complete and cost about $108 million.

SHIP GUN AMMUNITION PROGRAMS RELATED TO VIETNAM

Mr. SLACK. During the period fiscal year 1966 through the first half of fiscal year 1969, you had cost increases totaling $64.5 million for 5"/54 ammunition components. You have also experienced a $30 million cost increase on 8"/55 ammunition components during the same period. Have we overprocured in these areas? What was the reason for these cost increases?

Admiral WOODS. This is directly attributable to the increased expenditures in Southeast Asia. Since February 1966, expenditures of ship gun ammunition have increased each year at a rate greater than had been anticipated. It was necessary to reprogram from other areas within available funds with the exception of fiscal year 1967 when supplemental funds were provided by Congress.

Mr. SLACK. Have we overprocured in these areas as things stand now?

Admiral WOODS. No, sir. As a matter of fact, it has been the other way. We had a certain amount of what you might call reserves, which is what carried us.

During the fiscal years 1969 and 1970 combined procurements we expect to get up to our inventory objectives, we will not have overprocured in the 5-inch and the 8-inch categories.

Admiral SHIFLEY. I might add just a little bit on that, sir. Three major events resulted in increasing SEA combat expenditure rates for ship gun ammunition (8"/55 and 5"/54). All three events occurred after submitting the budget to Congress:

1. FEBRUARY 1966

Increasing tempo of coastal operations in SVN coupled with general acceptance of naval gunfire support (NGFS) missions by the RVNAF resulted in the commitment of the *Canberra*—heavy cruiser with 8-inch guns—to NGFS for approximately 50 percent of the time commencing in April 1966. Additionally, four destroyers were maintained on station with destroyer assignments favoring those with 5″/54 guns in order to take advantage of greater range, higher sustained rate of fire and greater shock effect over 5″/38 guns.

2. MARCH 1967

Decision to conduct naval shore bombardment operations against NVN between 17° N. and 20° N. One heavy cruiser with 8-inch guns and four destroyers with 5″/54 guns were committed to this operation (Sea Dragon).

3. LATE JANUARY 1968

TET offensive by enemy forces caused a greater demand for NGFS missions and virtually doubled requirements for 8″/55 and 5″/54 ammunition.

Mr. SLACK. Then you will need the $37.5 million in fiscal year 1970 for 5″/54 and 8″/55 ammunition components, is that correct?

Admiral SHIFLEY. Yes, sir.

Mr. SLACK. Could you explain why this is so, particularly in the cruiser area? Do you anticipate a greater use of cruisers in the South Vietnamese environment during fiscal year 1970?

Admiral SHIFLEY. No greater than we have been using recently; no, sir. I would say the cruiser activity level would tend to be less in fiscal year 1970 than it was in fiscal year 1968 and fiscal year 1969.

Mr. SLACK. It would be less?

Admiral SHIFLEY. It would be less.

We plan a considerable reduction in the production of ship gun ammunition from fiscal year 1969 to fiscal year 1970. We were providing gun fire support north of the DMZ in North Vietnam and now that we are prohibited from shooting up there, or dropping bombs in North Vietnam. We are providing support only in South Vietnam along the coast so there has been quite a reduction in the amount of gunfire support. But, as I mentioned yesterday in the formulation of the fiscal year 1970 budget, we considered fiscal years 1969 and 1970 as a package, thus we are using money that has been appropriated and is available in fiscal year 1969 to provide a part of the fiscal year 1970 requirement, so when you look at our request and see the amount of money in the fiscal year 1969 column as opposed to the fiscal year 1970 column, it does not give you a true picture of what is going to be used in fiscal year 1969 and what will be used in fiscal year 1970. They have to be considered as a package. A considerable reduction is anticipated during this time period, fiscal year 1969 through fiscal year 1970, in the expenditure of gun ammunition in Southeast Asia.

ORDNANCE ALTERATION PROGRAM

Mr. SLACK. You have been funded $18.5 million in the last 2 fiscal years for ordalt material for surface gun systems. This year you are requesting another $7.6 million for this purpose. What use is being made of these funds?

Admiral WOODS. The ordalt material is basically for minor updating of all the existing equipments that are in the Fleet. Generally speaking, the ordalt program is restricted at this time to things that will provide increased safety of life, significant improvement in systems performance, major gains in reliability, or case in maintenance.

MINE PROCUREMENT

Mr. SLACK. You are requesting $29.1 million for mines. Of this total $17.9 million is for the MK56 mine. You have been funded a total of $23.3 million in the last 2 fiscal years for ——— of these mines. Why do you need an additional ——— more during fiscal year 1970?

Admiral WOODS. This is the next to the last year of our approved procurement program and the last year of a multiyear prime contract. The fiscal year 1970 buy will bring our inventory up to ——— mines, MK 56. The approved inventory objective is ———. These inventory objectives are based on the number and type of mines required ———.

Mr. SLACK. What is the inventory of this mine at the present time and how and where are they used? That question may have been answered.

Admiral WOODS. ——— will be the inventory at the end of the fiscal year 1970 buy.

Mr. SLACK. What is your inventory objective?

Admiral WOODS. Our inventory objective is ———. This is an air-dropped mine. It is a moored mine—in other words, it anchors to the bottom and stretches out on a cable and it is ———.

Mr. SLACK. What has been the consumption rate of this mine?

Admiral WOODS. Essentially we have consumed only about ——— as a practical practice operation. There is very little consumption of mines. In fact, these were inerts.

COAST GUARD ORDNANCE SUPPORT

Mr. SLACK. What is the reason for the $200,000 request for Coast Guard support?

Admiral WOODS. It will provide for the rebuilding of three 5"/38 mounts for the new construction high-endurance cutter.

Mr. MINSHALL. Why do you have to supply this and it doesn't come under the Coast Guard budget?

Admiral WOODS. We provide all ordnance equipments for the Coast Guard shipbuilding and rehabilitation program.

Admiral GADDIS. Fixed ordnance in Coast Guard ships by agreement, is provided by the Navy because it is accepted that this would only be used in the event of war when the Coast Guard comes under Navy's command, sir.

Mr. MINSHALL. We are not at war now, but they have some of these high-endurance cutters with this equipment on them, don't they?

Admiral GADDIS. Yes, sir; as a part of the mobilization requirement for these ships.

Admiral WOODS. These aren't new mounts. This is a rebuilding cost. You can't buy a new mount for that amount of money.

Mr. MINSHALL. What is this cost per mount here? What are we talking about?

Admiral WOODS. Essentially it is a total of $200,000 for three mounts, or approximately $67,000 apiece.

Mr. MINSHALL. Does that sound like a fair and reasonable price to you?

Admiral WOODS. For rebuilding of a mount?

Mr. MINSHALL. Yes.

Admiral WOODS. Yes, sir; that is a very fine price.

Admiral GADDIS. A new mount would cost you about $600,000.

Mr. MINSHALL. You say these are rebuilt. Are these off some of your old ships?

Admiral GADDIS. Yes, sir.

Admiral WOODS. Yes, sir; we have a large number of 5''/38 mounts available, not only on old ships, but also in our ammunition depots.

Mr. MINSHALL. What do you mean by "a large number"?

Admiral WOODS. Several hundred. These were bought during World War II, Mr. Minshall.

Mr. MINSHALL. How many of these have you sold to the Coast Guard?

Admiral WOODS. We will have to provide this for the record. I don't know the total number. I don't believe we have sold any to them, sir. We have provided the equipment to outfit the Coast Guard ships to be utilized by the Navy in the event of war. We have provided a total of 47 5''/38 single gun mounts to the Coast Guard through fiscal year 1969.

Mr. MINSHALL. The rebuilding is $60,000? What do you mean by rebuilding?

Admiral WOODS. Bringing it up to date with the latest ORDALT's, insuring that the entire mount is workable. Generally we make sure that it is an operational mount which is able to use current ammunition. There is a continuous ORDALT program on existing equipment in the fleet. When we make even small modifications, be they for safety purposes or for improvements in performance then, of course, we must install this capability in the existing Fleet equipment and this includes the Coast Guard also.

Mr. MINSHALL. I am not an expert on gun mounts, but I wish you would supply for the record a little bit more detail, so the committee will know just how much work is entailed, where it is done and so forth.

Admiral WOODS. Yes, sir, we will be happy to.

(The information follows:)

The following work is performed at the Naval Ordnance Station, Louisville, Ky., during rebuilding of 5''/38 single gun mounts for the Coast Guard:

Complete disassembly of mount.
Inspection of each component.
Replacement of parts as required.
Repair of components as required.
Test of components to new equipment specifications.
Reassembly of components to subassemblies.

Test of subassembly to new equipment specifications.
Installation of applicable ORDALTS.
Reassembly of gun mount.
Complete rewiring of gun mount.
Test of complete gun mount to new specifications.

Mr. SLACK. You are not reimbursed by the Coast Guard for this work?

Admiral GADDIS. No, sir, we are not reimbursed.

Mr. MINSHALL. What other work like this do you do for the Coast Guard aside from the gun mounts?

Admiral WOODS. That is all that I know of, sir, in this OPN appropriation, and I don't know of any in any other appropriation.

Admiral SHIFLEY. I think Admiral Gaddis gave the correct answer. We provide the military features to Coast Guard ships, because they would come under the Navy in time of war, and so by agreement we provide the additional equipment that makes that equipment suitable as naval vessels.

Admiral GADDIS. This is a matter of agreement between the Defense and Treasury Departments, sir. We have numerous agreements in this area. For instance, the Navy provided complete support of the Coast Guard effort in Vietnam, supporting their operational capability overseas, because the overseas capability was not considered a part of their mission under the Treasury Department.

Starting in 1967 the Coast Guard budgeted for overseas capability. Each time a question of relative operation between Coast Guard and Navy units arises, it is developed as a matter of agreement, so that it is clear who will fund what portion of their mission equipment.

Mr. MINSHALL. In time of war is the gun crew Coast Guard or Navy on one of these?

Admiral GADDIS. Coast Guard, sir.

Admiral SHIFLEY. You asked for something specific. I believe all the ASW features, for example, are paid for by the Navy, that go into their cutters, sonars and so forth.

Mr. MINSHALL. Thank you.

SURFACE MISSILE SYSTEM SUPPORT

Mr. SLACK. For fiscal year 1970, $37.3 million is programed for surface missile systems support. How much of this request will be used for the support of the 3T's which reportedly are still on about 80 operating ships?

IMPROVEMENTS AND MODIFICATIONS TO 3T'S

Admiral WOODS. $30.9 million of the SMS support is for the 3T's.

Mr. SLACK. What type support are we providing to the 3T's program?

Admiral WOODS. $22.6 million is for improvements, modification, ORDALTS for the 3T weapons systems. Modification will provide for improvement primarily in perfromance but also in availability, reliability and maintainability of the 78 ships in the fleet. Approximately two-thirds of the $22.6 million is required for modification of the missile fire control system, MK74, Tartar, by replacing the present analog system with digital equipment to provide standard missile capability.

This year's procurement will provide increased missile range capability for eight ships. That is from ———; $5.7 million of the request is for conversion of surface missile systems shipboard telemetry equipment from the VHF band to the UHF band, and $2.6 million is required for maintenance training material, service, and equipment to conduct the training of naval personnel in the maintenance and operation of the missile systems on these 78 ships.

Mr. SLACK. How many of these 78 ships equipped with 3T's will be replaced with Standard missiles during fiscal year 1970?

Admiral WOODS. Could I call on the project officer, Captain Sappington, to answer that question?

Captain SAPPINGTON. I am Captain Sappington.

The ships will not be replaced. The Standard missile is a replacement or follow-on weapon for the Terrier and for the Tartar. The existing Terrier and Tartar missiles will be fired in the normal course of events either in combat or in training or in exercises at sea. The number of ships are being converted on a routine and a methodical basis.

For the extended-range missiles, at the end of fiscal year 1970 we will have a total of 18 ships. Fiscal 1970's program includes seven of those.

For the medium-range ships, the fiscal year 1970 program will include four for a total of 14 at the end of fiscal 1970. The following years will include the modification of the remaining ships. A total of ——— DLG's will be converted and a total of ——— DDG's and ——— DEG's will be converted. There will also ——— CG's converted to enable the Tartar system to fire the Standard missile.

Mr. SLACK. Captain, why do we continue to spend large sums of money on the 3 T's if we are going to phase them out in favor of the Standard MR and ER missiles?

Captain SAPPINGTON. The term "phaseout," I believe, should be explained, sir. We intend to continue to use these Terrier and Tartar missiles which are very good missiles. We are speaking now only of the expendables, not the systems on board ship. The last procurement of the Terrior and Tartar missiles were in fiscal 1966. We have now entered into a multiyear competitive production of the Standard missile, which is a follow-on rather than a replacement of the existing inventory. It is a better missile which gives us increased performance capabilities in the electronics environment, against low altitude manner aircraft, against antishipping missiles, against all low altitude and surface targets. It enhances the capability against maneuvering targets and targets flying in formation. It is a step forward in total performance in antiwarefare.

Mr. SLACK. As a ship receives a Standard MR or ER missile, is there any modification required to the launcher, or to the fire control system?

Captain SAPPINGTON. Yes, sir, there are modifications both to the launcher and to the fire control systems. The fire control systems, of course, consist of the radar, the computer, and the first control switchboard. For each system, we have to modify these subsystems to handle the improvements of the system. For example, the new missiles have ——— channels for guidance instead of ———. This gives us more flexible in the use of these missiles. The new missiles have a warmup

time of less than ——— where the other missiles had ———. This improves the reaction time of the system. Each of the conversions does require changes in the radar, computers, the switchboard, and in the launchers.

SHIPS HAVING 3T SYSTEM—PHASEOUT SCHEDULE

Mr. SLACK. You may have to provide this for the record, Captain, but how many ships in the fleet will always have the 3T system and when are these ships scheduled to be phased out of the fleet?

Captain SAPPINGTON. I will provide that for the record, sir.

(The information follows:)

Navy currently has 78 ships configured with 3T systems, two (Topeka, CLG-8 and Canberra, CA-70) have dropped out during this fiscal year. ——— as did Canberra this year. ———. The vast majority of SMS ships, however, are new construction hulls commissioned in 1959 and later and have anticipated hull life in excess of 20 years. These ships, then, will constitute the Navy's principal AAW and antiship missile capability until well into ——— when the ASMS system becomes available in sufficient numbers of DXGN/DXG's. During that time frame decisions will have to be made regarding the total number of ships required and any resultant phaseout plans. Until they are phased out, Navy plans to update and improve the 3T fleet capability. This is inherently possible within the basic design of the 3T weapon systems and is accomplished through the Ordalt program. These improvements are primarily in areas of target detection, reduction in reaction time, and performance in electronic countermeasures environments.

Admiral GADDIS. Could I emphasize for the record, sir, that the modified, or altered missile fire control system, after alteration, will fire either the parent 3T missile or the Standard missile. In other words, the Standard missile is as much a part of the 3Ts as the original missile.

Mr. SLACK. But does not the Standard MR and ER missile provide greater reliability?

Admiral GADDIS. Yes, sir.

Admiral WOODS. Yes, sir.

Mr. SLACK. Well, why would you want to still utilize an inferior missile?

Admiral WOODS. We have a considerable stockpile of the other missiles and we would, as time goes by, eventually phase those out with training firing and so on.

Admiral GADDIS. They are available to use in action. This precludes us trying to build up a tremendous inventory of Standard missiles to completely replace the older missile.

Mr. SLACK. How large is your inventory of the 3T missiles by the category of Tartar, Terrier and Talos? You can provide that for the record, Captain.

(The information is classified and has been supplied to the committee.)

POINT DEFENSE SURFACE MISSILE SYSTEMS

Mr. SLACK. Why did you decide to forgo budgeting for additional basic point defense surface missile systems? Do we have a problem here?

Admiral WOODS. No, it is not a matter of a problem. The basic reason is we expect an Improved Point Defense System will be developed, tested, and ready by the time we have installed the last of the basic point defense systems.

Mr. SLACK. What will the Improved Point Defense System provide you with?

Admiral WOODS. The Improved Point Defense System is the one that we are developing, partly in conjunction with three NATO countries: Italy, Denmark, and Norway. It will provide us an integrated system of a much faster reaction time. Also, all weather. The fire control radar, for instance, on the Basic Point Defense System, is a hand-operated affair. This will be an improved system, a completely integrated, automated digital-type system. It will also be lighter in weight, which is very important from the point of the European countries who intend to put this on smaller ships.

Mr. SLACK. When do you forecast the IOC for the improved missile?

Admiral WOODS. Probably about ———. We are not yet in contract on the basic elements of the improved system all the basic elements of the improved system.

TOTAL 1970 BUDGET FOR 3T PROGRAM

Mr. SLACK. Admiral, would you provide for the record how much is in the total Navy budget for fiscal year 1970, all appropriations related in any manner to the 3T program?

Admiral WOODS. Yes, sir.

(The information follows:)

$258.9 million is requested in the Navy budget to support the Terrier, Tartar and Talos missiles and missile systems in 78 combatant ships. These ships were built starting in the early 1950's and extending to the present. Since they will be our principal AAW asset until well ——— they must be maintained as viable weapons systems for current and projected threats.

Of this amount ——— million is in the research and development budget to support improvements and modifications to 3-T weapon systems. Primary emphasis is being placed on providing increased ———.

$44.5 million is in the SCN budget, of which $20.0 million is for procurement of the launcher and fire control systems for DXGN; $9.0 million is for advanced procurement for the fiscal year 1971 DXGN; and $14.6 million is for procurement for the DLG modernization program.

$85.7 million is in the PAMN budget, of which $23.7 million is for support of existing Terrier, Tartar, and Talos missiles in the fleet and in inventory; $62 million is for procurement of ——— Standard missiles.

$45.3 million is in the OPN budget, of which $22.6 million is for improvements to Terrier, Tartar, and Talos weapons systems in the fleet. Training, spare parts, and UHF telemetry program are also included.

$53.8 million is in the O and MN budget. This provides inservice engineering support to Terrier, Tartar, Talos and Standard weapon systems and missiles. This program funds the labor and material required for maintenance, overhaul, repair and checkout of guided missiles, launchers, fire control systems, weapon direction equipment and related equipment.

$10.1 million is in the NAVSHIPS budget to provide for installation of Ordalts and Shipalts in 3-T weapon systems in the fleet.

Mr. SLACK. What is involved in the request of $6.9 million for the fleet mine support?

Admiral WOODS. This is support which is required on a continuing basis to keep our mines updated. Essentially it will maintain for us our stockpile of about ——— mines of all types. It funds the operations of assembly, disassembly, and operational testing of stockpile mines by the fleet.

Mr. SLACK. Does this relate in any way to an R. & D. development?

Admiral WOODS. No, sir. Could I ask Captain Buell to elaborate on this?

Captain BUELL. It is not an R. & D. effort. It provides for primarily the updating and the maintenance of the fleet stockpile of mines.

In general these mines are checked on the test rack once every 2 years to insure they are operable and the fleet mine support provides for that.

SWIMMER WEAPONS SYSTEMS

Mr. SLACK. You are requesting $3.5 million for swimmer weapons systems. Is this at all involved with the swimmer delivery system we discussed last year?

Admiral WOODS. I am not aware of what the swimmer delivery vehicle was. The swimmer system is an all-inclusive term we use for the various types of underwater guns, underwater explosive devices, and equipment which our swimmers require.

Mr. SLACK. Such as scuba diving gear?

Admiral WOODS. No, actually the scuba diving gear itself isn't included. It is the armament equipment. I have a tremendous list here. It is underwater defense gun, cable cutters, distress signals, practice limpet mines, a type of sack they carry on their back for zero buoyancy, antiboobytrap devices; buoyant body armor; underwater grenades; everything that they use in their work.

SWIMMER DELIVERY VEHICLES

Mr. SLACK. Last year we discussed six swimmer delivery vehicles in the fiscal year 1968 program and the negotiation of a contract for four research and development prototype vehicles. Where do we stand today on this procurement?

Admiral WOODS. These are not in this appropriation.

Admiral GADDIS. I am advised the swimmer delivery vehicles are in budget activity one, which was covered earlier. This line item speaks only to the ordnance-oriented equipment carried by the swimmer, or available to be carried by the swimmer.

Mr. SLACK. Could you provide something for the record in answer to this question?

Admiral GADDIS. Yes, sir.

(The information follows:)

The fiscal year 1968 OPN procurement of six MK-7 (formerly Modified TRASS) Swimmer Delivery Vehicles and fiscal year 1969 OPN procurement of 11 Vehicles were combined into a single multiyear contract for 17 vehicles. This contract was awarded to Convair Division of General Dynamics on 31 May 1968 with the second increment being executed on 25 September 1968 (13 of the 17 MK 7 vehicles have been delivered to date and the remainder are scheduled for delivery by June 30, 1969). Total cost of the 17 vehicles is $918,000 or $54,000 per vehicle.

The contract for development of prototypes of the next generation swimmer delivery vehicles was awarded to Aerojet General Corp., Azusa, Calif. on May 10, 1968. This development contract is incrementally funded under the R. & D. appropriation in fiscal years 1967, 1968, 1969, 1970, and 1971 at a target price of $4.2 million. Two of these vehicles are scheduled to be delivered in June and July 1970. The other two are being designed to interface with the various components of the swimmer weapons system.

Mr. SLACK. In the last two fiscal years you have been funded a total of $39.1 million for ORDALT material for surface missile system. For fiscal year 1970, you are requesting another $23.7 million for this

purpose. How are these funds being used and what missile systems are being altered?

Admiral WOODS. I spoke earlier to the 23—to the essentially 23 million, I believe. Captain Sappington, would you like to answer this one?

Captain SAPPINGTON. Your previous answer, I believe, was correct, Admiral. The surface missile system ORDALTS is being provided to provide modifications for the Terrier, Tartar, and Talos and basic Point Defense Weapons System.

It is required for the improvement in availability, reliability, and performance and the maintainability of the systems we have in the fleet at the present time.

UNMANNED SEABORNE TARGET BOATS

Mr. SLACK. You are requesting $4.4 million for ——— unmanned seaborne targets, a significant increase over last year. Is this request related to the procurement of KOMAR configured surface targets?

Admiral WOODS. Exactly. We are procuring ——— of a medium-sized boat which is to be configured very much like the KOMAR and will be used not only in training firings, but in development firings.

Mr. SLACK. What is the unit cost of these boats?

Admiral WOODS. I think we get ——— boats for $3.9 million, as I recall. ——— per boat for ——— boats, for a total of $3,920,000. We are also buying ——— of the smaller, already developed MK33 boats at a unit price of ——— thousand for a total cost of $350,000. Then we have $150,000 in costs for the droning of these boats and instrumentation for a total $4.4 million.

Mr. SLACK. Your P–1 indicates ——— boats.

Admiral WOODS. I think that is incorrect. I think ——— is the latest corrected figure.

Mr. SLACK. What was the reason for this decrease from ——— to ———. Is it because the price was more ———?

Admiral WOODS. I believe that is how many we figured we finally needed.

Excuse me, sir. I understand we lost four boats in the President's adjustment of the budget. The April amendments.

MARK 48 TORPEDO

Mr. SLACK. The fiscal year 1970 request for ASW launched ordnance and related equipment totaled $225 million. This is an increase of $100 million over last year. You were funded a total of $72.9 million in fiscal year 1968 for the procurement of ——— MK48 torpedoes. The committee understands that the fiscal year 1968 procurement is being deferred pending satisfactory in-water demonstration of every aspect of the torpedo. Is this why there was no fiscal year 1969 request for this weapon?

Admiral ABHAU. That is correct.

Mr. SLACK. Admiral, how do you arrive at a cost of $72.9 million for ——— torpedoes?

Admiral ABHAU. The $72.9 million of fiscal year 1968 funds involves 6 areas of endeavor. The torpedo Warshot, $19.1 million. This includes the —— main assemblies, the tanks, warheads, and exploders.

For proofing support, $5.4 million. This includes exercise sections, half-range tanks, workshop test handling equipment and proofing labor.

For fleet support, $14.7 million, which includes exercise sections, half-range tanks, workshop test, and handling equipment and expendables.

Operation evaluation support, $22.9 million. This includes laboratory and contractor services, test shop hardware and handling equipment, training, data reduction, engine testing.

For production engineering support, $5.3 million. This includes laboratory efforts by ORL-Penn State and NUWRES, the Naval Underseas Weapons Research and Engineering Station, and for training support $5.5 million, which includes 6 inert main assemblies, tanks and workshop test handling equipment.

It is significant that, of the above, $28.2 million was obligated during fiscal year 1968 and fiscal year 1969 for the support of an operational evaluation and product engineering. The remaining $44.7 million is being held pending a completion of the in-water test program.

It is intended that these funds will procure the hardware items required for the torpedo Warshot, proofing and fleet and training support.

It should be noted that these costs are estimated from our production cost information system and were made without benefit of a formal quotation from the prospective contractor.

Mr. SLACK. How many torpedoes do you think you will be able to buy with the remaining funds? Will it be as many as ——— or less?

Admiral ABHAU. We are not sure and we will not be sure until we can get a formal quotation from the contractor and negotiate it.

We are hoping that we will have completed the tests that we consider necessary to demonstrate that we are ready to go into production by June, and if we achieve that objective, we will enter into negotiation next month.

Mr. SLACK. Why are you requesting $110 million in fiscal year 1970 for ——— MK48 torpedoes when it is still under test and has not been approved for service use?

Admiral ABHAU. The requirement for fiscal years 1968 and 1970 funding is to support ——— MK 48–0 and ——— MK 48–1, production prototype torpedoes.

I would like to address the MOD–0 first. If we achieve the first production contract as anticipated in June, we will have deliveries over the period from ——— allowing for ——— months manufacturing leadtime at a slow startup of ——— per month to which we will build up to ——— a month until the ——— month of delivery. This schedule will permit execution of the fiscal year 1971 planned program in ——— with deliveries to follow-on starting in ———.

We have withheld the initial procurement pending a satisfactory completion of a very intensive in-water test program.

Since the inception of the program, we have made ——— test runs and we now believe that we are on the threshold of a release to production. It is noteworthy that ——— of the last ——— runs have accurately completed their entire run program and we believe that we are within ——— runs of completion.

The remaining $23 million of the request is for the procurement of ——— MOD–1 production prototype torpedoes. These production prototypes are expected to commence delivery in ——— and will be used for the operational evaluation.

Mr. SLACK. Admiral, if you are unable to determine how many torpedoes you will be able to purchase with the remaining fiscal year 1968 funds, how are you able to arrive at an estimate of $110 million in fiscal year 1970 for ——— such torpedoes?

Admiral ABHAU. In both cases we have estimated the cost of the torpedoes on the basis of our production cost information system which is a Department of Defense-authorized technique for estimating costs. These are based on the experience that we have had with the production prototypes that are now being delivered, but we cannot be assured that we can negotiate a contract for any fixed amount of torpedoes for any fixed amount of money until we have actually entered into the negotiations.

SURVIVAL RADIO AN/PRC–90

Mr. MINSHALL. Earlier today I asked some questions about the AN/PRC–90 survival radio. I would like to ask further, is that a beacon-type transmitter or is it a receiver as well?

Admiral MCCLELLAN. Both, sir.

Mr. MINSHALL. What is the range of it, do you know?

Admiral MCCLELLAN. Line of sight for the UHF band. A downed aviator could communicate with an aircraft flying at 10,000 feet 100 miles away.

Mr. MINSHALL. You mentioned something earlier, Admiral, about the batteries deteriorating and spoiling the equipment. Would that be the case with mercury-type batteries as well?

Admiral MCCLELLAN. I can't answer that, sir. May I provide the answer?

Mr. MINSHALL. Yes.

(The information follows:)

BATTERY SHELF LIFE

The PRC–63 and the PRC–90 survival radios currently use mercury-type batteries. These batteries provide better performance than the carbon zinc batteries used in flashlights; however, they are also susceptible to corrosion and deterioration.

Two new batteries are currently in development (a magnesium type and a lithium copper fluoride type) that will solve the problems of corrosion and deterioration and provide an increase in overall performance and shelf life.

Mr. MINSHALL. Item 117. Survival equipment replenishment. No. 118. Miscellaneous survival equipment. $2.4 million in this budget. Can you detail some of that?

Admiral MCCLELLAN. This provides miscellaneous personal and survival equipment items with associated data, such as antiexposure suits, microphones, protective helmets, life rafts and so forth.

For example, in 1970, it includes production support testing services, survival equipment modification material, operation Deep-Freeze equipment, infrared survivor-locating device, oxygen breathing masks, fire resistant antiblackout suits, intermediate antiexposure suits, a fluoride battery and so forth.

Mr. MINSHALL. Why has it gone up from $900,000 last year to $2.4 million this year? In 1968 it was $5 million but last year it was only $900,000.

Admiral GADDIS. We reduced this item last year in response to Project 693, sir.

Mr. MINSHALL. What was that project?

Admiral GADDIS. This was the response to the Expenditure and Revenue Control Act, sir; a case of deferring that.

Mr. MINSHALL. Do you feel this item is absolutely necessary?

Admiral GADDIS. It is for the safety of pilots.

Mr. MINSHALL. You have back here an item of 116—as long as I am looking at this page—ANURT-33 Beacon Seat Radio—last year you asked for ——— of these. Have these all been procured and if so how are they being used?

Admiral MCCLELLAN. That buy completed the total outfitting requirement of ——— beacons. This beacon is an integrated package with battery, antenna, and so forth. It is automatically actuated when a pilot ejects. It is installed in a seat pack. From the moment he ejects, this puts out a beacon tone and enables much quicker rescue.

Mr. MINSHALL. Would he also have one of these AN/PRC-90 survivals with him as well?

Admiral MCCLELLAN. Yes, sir. These PRC-90 radios are for use after you land. They provide for a beacon tone transmittal and also for two-way voice.

Mr. MINSHALL. But there is a necessity for both of them?

Admiral MCCLELLAN. Yes, sir. It has been highly successful in Southeast Asia where you have jungle rescues and the pilot has to hide and come out only at the last minute.

Mr. MINSHALL. You have asked this year for ——— and your total buy is going to be what, again?

Admiral MCCLELLAN. You are referring to the 90?

Mr. MINSHALL. Yes, item 112.

Admiral MCCLELLAN. We are going for ———, sir. I am sorry, wait a minute.

Mr. MINSHALL. What is your anticipated total buy? It is ——— in this coming fiscal year. What is your anticipated total buy, Admiral?

Admiral MCCLELLAN. It is approximately ——— through 1971.

Mr. MINSHALL. Thank you.

TORPEDO SUPPORT

Mr. SLACK. What is the $15.2 million for torpedo support?

Admiral ABHAU. This program is set up to provide support for those torpedoes and targets for which funds for production are no longer budgeted. These funds are required for the support of fleet exercise firings, proof and test, associated support equipment, support of 3D range at Keyport, Wash., and replacement of expended and overage items such as batteries, exercise heads, wire coils, cables, dummy torpedoes and hoses.

This program supports in-service torpedoes MK-14, MK-16, MK-37, MK-44 and MK-45.

TORPEDO ALTERATIONS

Mr. SLACK. What torpedoes will be altered with the $6 million for torpedo Ordalts? How many and what type torpedoes were altered in the last 2 fiscal years?

Admiral ABHAU. This program supports modifications and alterations of all fleet inventory torpedoes such as MK–14, MK–16, MK–37, MK–44, MK–45, and MK–46. There has been a modest increase in this program area over the past few years with the growth in torpedo population and sophistication. Principal alterations planned in fiscal year 1970 include modifications to the MK–14 torpedo———.

Ordalting of torpedoes is accomplished at the component level rather than the torpedo level. Ordalt kits are procured on a component basis to support the total quantity of torpedoes in the fleet plus components in the supply system. The FIR—functional item replacement—program permits component interchangeability at the intermediate maintenance level. Fiscal year 1968 and fiscal year 1969 funds procured various types of components for the total population of torpedoes. These are ——— MK–14's, ——— MK–16's, ——— MK–37's, ——— MK–44's, ——— MK–45's, and ———.

MK–37 TORPEDO

Mr. SLACK. Why have we spent $9.6 million converting and modifying the MK–37 torpedo if they are being replaced by the MK–48 torpedo?

(The information is classified and has been supplied to the committee.)

MK–46 TORPEDO

Mr. SLACK. In the last 2 years, Congress has funded a total of ——— MK–46 torpedoes. This year, you are requesting $64.2 million for ——— more. What is the inventory objective for this torpedo?

Admiral ABHAU. The inventory objective for lightweight torpedoes is ———.

Mr. SLACK. How many MK–46 torpedoes will we have in inventory through the fiscal year 1969 buy?

Admiral ABHAU. At the end of the fiscal year 1969 buy we expect to have ——— MK–44's and ——— MK–46's the combination being equivalent to ——— MK–46's or ——— of the objective.

MK–27 MOBILE TARGET

Mr. SLACK. You have been buying MK–27 mobile targets in quantities in the last 2 fiscal years, and in fiscal year 1970 you are requesting $8.1 million for ——— more. This target has not been approved for service use. What is the status of testing of this target?

Admiral ABHAU. The MK–27 production torpedo target has passed preliminary factory acceptance tests and was shipped to Keyport on May 14, 1969. ———.

MK–30 MOBILE TARGET

Mr. SLACK. You are requesting $4.4 million for ——— MK–30 mobile targets. What is the status of testing of this target?

Admiral ABHAU. Two ASW mobile targets MK–30 were developed and built by Northrup-Ventura with R.D.T. & E.N. funds. These two targets were shipped to Keyport in March 1969 for testing. One unit is undergoing preliminary tests in preparation for evaluation runs. Due to the heavy workload at the range, completion of the in-water tests is now scheduled for September 1969. Upon successful completion of the evaluation of the MK–30 mobile target, release to production is planned for in fiscal year 1970.

Mr. SLACK. When will the MK–30 be approved for service use, and is this the initial procurement of this target?

Admiral ABHAU. The MK–30 mobile targets planned for procurement in fiscal year 1970 are to be used as test vehicles on fleet ranges and will not require approval for service use.

Fiscal year 1970 is the initial procurement of this target.

MK–78 ANALYZER

Mr. SLACK. What is the MK–78 analyzer and how is it used? Is this the initial procurement of this equipment? Has it been tested and approved for service use?

Admiral ABHAU. The MK–78 analyzer is a ———. This is the initial procurement in OPN; however, units are currently being procured with SCN funds under a ——— multiyear contract. This equipment does not require service approval since it is an improvement to existing equipment (FCS MK–113).

ASW WEAPON SYSTEM ORDALT MATERIAL

Mr. SLACK. In fiscal year 1970, you are requesting $4.2 million for ASW weapon system ORDALT material.

Provide a breakdown for the record showing the use of these funds.

(The information follows:)

The ASW weapon system ORDALT funds provide modifications and improvements to fleet ASW fire control equipments on surface ships and submarines which are no longer within the funding responsibility of the SCN appropriation. Requirements are for ordnance alterations to correct deficiencies which become known as a result of evaluation, test and fleet use, and introduction of new or modified weapons to insure reliable compatibility with the weapon systems. The fiscal year 1970 funding will provide: $600,000 for surface ship fire control to modify ——— $1,800,000 for submarine fire control to modify ———. $900,000 for technical and engineering services for fire control alterations required to insure system effectiveness after the changes are made. $700,000 to revise the manuals and drawings to accommodate the changes; $170,000 for alterations to ———.

OTHER ORDNANCE SUPPORT EQUIPMENT

Mr. SLACK. The request in fiscal year 1970 for "Other support equipment" is $90.8 million, an increase of $4.2 million over fiscal year 1969.

PRODUCTION FACILITIES AND EQUIPMENT

Provide a tabulation showing the type and amount of the equipment in the $11.9 million program for "Production facilities and equipment," showing the facilities involved and the savings to be realized.

(The information follows:)

Of the $11.9 million program, $10.7 million is required for procurement of approximately 800 items of equipment and $1.2 million is for capital maintenance of Naval Industrial reserve ordnance plants. Approximately 500 items of equipment will replace old and worn-out equipment with an average age of 14 years and will provide for pay-back to the Government in less than 5 years. A listing of activities and amount required for each is as follows:

Production equipment—activity:	*Amount*
NAVORDSTA Louisville	$1,590,500
NAVORDSTA Indian Head	450,000
NAVORDSTA Forest Park	1,262,700
NIROP Minneapolis (FMC)	1,562,724
NIROP Pittsfield (General Electric)	280,000
NIROP Sacramento (Aerojet)	415,000
Aerojet, Azusa	200,000
NAD Bangor	214,800
NAD Crane	536,893
NAD Earle	288,740
NAD Hawthorne	535,500
NAD McAlester	310,800
NAD Oahu	12,600
NAD St. Juliens Creek	34,500
NAVWPNSTA Charleston	40,000
NAVWPNSTA Concord	132,200
NAVWPNSTA Seal Beach	171,000
NAVWPNSTA Yorktown	503,000
NAVTORPSTA Keyport	433,300
Air conditioning (shop)	500,000
Ground electronics	300,000
Package equipment	883,000
Total	10,657,257
Capital maintenance:	
NIROP Minneapolis	750,000
NIROP Pittsfield	350,000
NIROP Rochester	120,000
NAVFAC Fee	37,000
Total	1,257,000
Grand total	11,914,257

Types of equipment and savings to be realized are as follows:

Equipment	Present equipment operating costs	Proposed equipment operating costs	First year net operating cost savings
Milling machine	$68,855	$21,149	$47,706
Hardness testing machine	14,979	12,081	2,898
Turret lathe	96,192	29,705	66,487
Numerical control machining center	202,702	36,888	165,814
Boring drill, mill machine	125,688	38,052	87,636
Grinder	40,395	18,431	21,964
Total savings on above random samples			392,505

SPARES AND REPAIR PARTS

Mr. SLACK. Provide a breakdown of the $72.7 million for spares and repair parts, showing the weapons for which initial spares are being requested, and those for which replenishment spares are requested.

(The information follows:)

Initial spares:	*In millions*
Mine Mark 56	$1.0
5 inch/54 Mark 42 conversion program	.2
Gun mount improvement program	.3
Surface gun systems training equipment	.1
Surface gun systems fire control equipment	.1
ORDALT material surface gun systems	.1
ORDALT material fire control switchboards	.1
Weapons for Seabees, landing forces, auxiliary, and small boats	.2
Strategic Systems Project Office	6.0
Surface missile system UHF telemetry equipment	.5
Surface missile system ORDALTS	1.9
Surface missile system equipment spares	.5
ASROC	.1
Antisubmarine warfare ordnance equipment	.8
Torpedo Mark 46	1.7
Torpedo Mark 48	10.7
Torpedo support	.3
Torpedo Mark 37 modernization/conversion	.3
Mobile target Mark 27	.6
Total, initial spare parts	25.5
Replenishment spares, total	47.2
Grand total, spares and repair parts	72.7

The following end items are supported by replenishment spares:

5 inches/54 guns, mounts, radars and fire control systems (all Marks and modernizations).

5 inches/38 guns, mounts, radars and fire control systems (all Marks and modernizations).

3 inches/50 guns, mounts, radars and fire control systems (all Marks and modernizations).

Miscellaneous major caliber guns, mounts, radars, and fire control systems (6 inches/47, 8 inches/55, 16 inches/50—all Marks and modernizations).

Small arms support (40 mm, 20 mm).

Terrier missiles, fire control systems, radars and launchers.

Tartar missiles, fire control systems, radars and launchers.

Talos missiles, fire control systems, radars and launchers.

Anti-submarine warfare sonar and fire control systems (SUBROC, ASROC, conventional—all Marks and modernizations).

Torpedoes and torpedo tubes.

Mines and depth charges.

Ancillary test, support and handling equipment (surface warfare systems, anti-air warfare systems, undersea warfare systems).

It should be noted that many of the above weapons systems are not being used in active warfare at the present time. However, these systems are subject to daily/weekly operability tests to assure readiness.

Mr. SLACK. Provide a table showing the total value of spares and repair parts for each fiscal year since fiscal year 1965.

(The information follows:)

[Dollars in millions]

	Fiscal year 1965	Fiscal year 1966	Fiscal year 1967	Fiscal year 1968	Fiscal year 1969	Total
Initial spares	$8.1	$14.1	$19.1	$15.4	$27.8	$84.5
Replenishment spares	7.5	17.9	15.0	21.8	21.1	83.3
FBM spares	9.2	6.0	7.2	10.1	20.4	52.9
Total	24.8	38.0	41.3	47.3	69.3	220.7

FBM SUPPORT EQUIPMENT

Mr. SLACK. The fiscal year 1970 program for FBM support equipment totals $46.9 million, which is $25 million less than last year.

You are requesting $13.3 million in fiscal year 1970 for initial training. Is all this related to Poseidon?

Admiral SMITH. Yes, sir.

Mr. SLACK. Is the requirement for initial training dependent upon the number of ships being converted to the Poseidon missile?

Admiral SMITH. No. The $13.3 million included in the fiscal year 1970 budget for Poseidon initial training requirements is not dependent upon the number of ships being converted. Four and four-tenths million dollars is required for installation and checkout of refresher maintenance training equipment procured in fiscal year 1969, which is essential to the training of crews of SSBNs now approved for conversion. Three and seven-tenths million dollars will procure a Navigation Technical Trainer (NAVTECH-6) for the Guided Missile School, Dam Neck. This equipment is configured in keeping with navigation subsystem equipments to be installed aboard SSBNs whether converted or overhauled, and is therefore required to support navigational training. The remainder of the funds, $9.6 million, will procure a MK-88 Mod 1 Fire Control System Laboratory (D/N-1), which will support training for crews of the 640-class hulls in the fiscal year 1971 and fiscal year 1972 conversion programs. It is required to support initial training on the MK-88 Mod 1 fire control system in the period beginning July 1971. Since this equipment supports hulls of a different configuration from those in the fiscal year 1970 program, these funds will be required without regard to the number of hulls approved for conversion.

Mr. SLACK. Provide for the record a tabulation showing the use to be made of the $13.8 million for maintenance and support equipment.

(The information follows:)

FBM maintenance and support equipment

Polaris	$4,245,000
Missile checkout	366,000
Guidance and fire control	254,000
Navigation support equipment	1,860,000
Navigation shore equipment	1,500,000
Weapon system support and checkout	265,000
Poseidon	9,484,000
Missile checkout	4,541,000
Guidance and fire control	1,364,000
Navigation support equipment	2,691,000
Launching and handling	888,000
Total	13,729,000

Mr. SLACK. You are requesting funds in fiscal year 1970 for 6 Poseidon SSBN conversions. Provide for the record a tabulation showing how much would be required in fiscal year 1970 for FBM support equipment to support one Poseidon conversion, two Poseidon conversions, and so forth, through five conversions.

(The information follows:)

To respond completely and fully with complete confidence in the validity of estimates of the dollar value of FBM support equipment required to support five alternative programs as requested would require the development of five independent budgets for this subhead. An alternative approach, which may not be as accurate has been used in order to provide information for the record.

The fiscal year 1970 request for FBM support equipment totals $46.9 million. Of this total $32.6 million is required in support of the Poseidon program. Less than 10 percent of this latter amount or approximately $2.5 million is a function of the fiscal year 1970 SSBN proposed conversion program. The remaining $30.1 million for Poseidon represents the amount required to support the previously approved number of SSBN's to be converted, including navigation support equipment which is required whether the fiscal year 1970 SSBN's are overhauled or converted, and to establish initial related capabilities for training, maintenance, test operations, and repairs.

The details of this $30.1 million are as follows: $18.3 million is required for initial and refresher training in support of the approved SSBN conversion programs; $3 million is required for navigation support equipment; $3.9 million is required for surface support equipment and portable test instrumentation to support demonstration and shakedown exercises and operational testing; $2.7 million for replenishment of expendables, replacement of attrition losses and procurement of test equipment for repair facilities; $2.2 million for backfit equipment for SSBN's and tenders and alterations to delivered shore based equipment.

In addition to the $32.6 million requested for Poseidon $14.3 million is requested for Polaris. This latter amount is required independent of the number of Poseidon SSBN's approved for conversion.

The conversion schedule for the six SSBN's proposed for fiscal year 1970 is based upon arrivals of the SSBN's in the yard, and coincides with core depletion. Each of these six SSBN's would require an overhaul if not converted. Therefore, additional funds would be required in this appropriation and in the operation and maintenance appropriation for each hull not approved for conversion. The OPN amounts are shown in the tabel below. Adjustments would be also required in the SCN and PAMN appropriations.

SUMMARY OF OPN DOLLARS REQUIRED FOR CONVERSION OF ALTERNATE NUMBERS OF SSBN's IN FISCAL YEAR 1970

[In millions of dollars]

	Number of conversions				
	(1)	(2)	(3)	(4)	(5)
Poseidon fixed costs	30.1	30.1	30.1	30.1	30.1
Poseidon variable			1.6	2.3	2.5
Polaris costs in budget request	14.3	14.3	14.3	14.3	14.3
Subtotal	44.4	44.4	46.0	46.7	46.9
Additional OPN required for overhaul	73.8	58.3	43.2	26.7	14.2
Total	118.2	102.7	99.2	7.24	61.1

Mr. SLACK. How much of the $23.6 million in fiscal year 1969 and the $4.6 million in fiscal year 1970 for refresher training is associated with Poseidon?

Admiral SMITH. In fiscal year 1969 the Poseidon portion is $23.4 million and in fiscal year 1970 it is $4.4 million.

Mr. SLACK. How can you, at this early date, associate refresher training with the Poseidon program?

Admiral SMITH. Refresher training is provided at fleet training facilities in the area of the squadron home port. The purpose is to maintain proficiency of SSBN crews by operational and maintenance training between patrols. For example, the Blue crew of a Polaris submarine will receive refresher training while the Gold crew is on patrol.

The Charleston Fleet Ballistic Missile Fleet Training Center will maintain training of crews of SSBN's in the first operational Poseidon squadron. Refresher training on Poseidon equipment will begin when the first SSBN is deployed in ———. This equipment has a leadtime from contract award to readiness for training of approximately ——— which is the reason for its procurement in fiscal year 1969. The fiscal year 1970 funds for refresher training are required for installation and checkout of that equipment.

Correction of Design Errors

Mr. Slack. The committee understands that $274,000 of the $3.9 million for alteration equipment is to be used to correct design problems of equipment procured in fiscal year 1967 and fiscal year 1968 and now installed and in use at the Ashore Navigation Center. Why is the contractor not responsible for correction of these design errors?

Admiral Smith. The contractor is responsible for meeting all of the characteristics of the equipment specified in the contract. He is also responsible for latent defects in workmanship.

The cost of changes made necessary due to the failure of the Government to define in adequate detail the equipment which is contracted for is a Government rather than a contractor responsibility.

The $274,000 requested is based on past experience as to the number of such design changes found necessary during the early phases of service testing.

Mr. Slack. How much of the FBM support equipment budget category is in support of Poseidon; provide a tabulation showing the items and amount for Poseidon.

(The information follows:)

FBM support equipment

Poseidon	$32,584,000
Initial training	13,275,000
Refresher training	4,382,000
Training equipment alterations	648,000
Alteration equipment	274,000
Maintenance and support equipment	9,484,000
Test instrumentation equipment	3,186,000
Expendable test equipment	1,335,000
Polaris	14,273,000
Total, FBM support equipment	46,857,000

Modernization and Improvement of Vietnamese Forces

Provide for the record a tabulation identifying the quantity and cost of all equipment in the "Other Procurement, Navy," appropriation to be procured for modernization and improvement of South Vietnamese Armed Forces for fiscal year 1969 and fiscal year 1970.

(The information follows:)

EQUIPMENT PROCURED IN FISCAL YEAR 1969 AND FISCAL YEAR 1970 FOR MODERNIZATION AND IMPROVEMENT OF SOUTH VIETNAMESE ARMED FORCES

Description	Fiscal year 1969		Fiscal year 1970	
	Quantity	Amount	Quantity	Amount
Utility (Jeep) 4x4 3,500 gvw, M606	——	——	——	——
Trk Amb 4x4 ¼T M170	——	——	——	——
Trk Utility 4x4 3,500 gvw M151A1	——	——	——	——
Trk Cargo 4x4 5,800 gvw M715	——	——	——	——
Trk Amb 4x4 5,800 gvw M615	——	——	——	——
Trk Dump 6x6 19,000 gvw M342A2	——	——	——	——
Trk Cargo:				
6x6 19,000 gvw M35A2	——	——	——	——
6x6 10T M125	——	——	——	——
Trk Wrecker M543A2	——	——	——	——
Trk Tank 1,000 G gen purp M610	——	——	——	——
Trlr Cargo:				
2 whl 500 lbs PL M100	——	——	——	——
2 whl 1,500 lbs PL M101A1	——	——	——	——
2 whl 3,000 lbs PL M105A2C	——	——	——	——
Trlr Utility 2½T	——	——	——	——
Trlr Tank 400 G M149	——	——	——	——
Crane, crlr mtd, 35T	——	——	——	——
Tractor, crlr mtd, 16-24M PDBP	——	——	——	——
Generator Set:				
0.5 kw., dc, 28V, GED	——	——	——	——
2 kw., dc, 12V, GED	——	——	——	——
3 kw., ac, 60 hz, GED	——	——	——	——
5 kw., ac, 60 hz, GED	——	——	——	——
10–15 kw., ac, 60 hz, GED	——	——	——	——
30 kw., ac, 60 hz, DED	——	——	——	——
60 kw., ac, 60 hz, DED	——	——	——	——
Welder, arc, GED, 300 amp, trlr mtd	——	——	——	——
Crane, truck mtd, 10T	——	——	——	——
Crane, whl trctr mtd, 5T, telescop boom	——	——	——	——
Total	——	$2,051,000	——	$404,000

Civil Engineering Support Equipment

Mr. Slack. In fiscal year 1970, your program for "Civil engineering support equipment" totals $121.3 million, a decrease of $41.4 million from last year.

Of the total requested in this budget category, $68.1 million is for transportation and construction equipment.

PASSENGER MOTOR VEHICLES

For fiscal year 1970 you are requesting funds for the purchase of 1,336 passenger motor vehicles including metropolitan ambulances. What is the reason for the increased requirement this year for passenger motor vehicles?

Captain Krickenberger. A greater number of sedans (767) at an average unit cost of $1,500 are budgeted for in fiscal year 1970 in comparison with fiscal year 1969 purchase (354), which accounts primarily for the total quantitative increase in passenger-carrying vehicles. Approximately 50 percent of the funds available for passenger vehicles in fiscal year 1969 was for bus replacements, which resulted in a lesser quantitative total procurement of passenger-carrying vehicles because of the higher unit cost of buses.

Mr. Slack. Page 34 of your P–1 lists a quantity of 776 light sedans, and 302 station wagons, both of which are increases over last year. This, together with 58 ambulances, totals only 1,126 vehicles. Where are the other vehicles making up the total request of 1,336?

Captain Krickenberger. There are also 209 buses and one medium sedan which make up the total request of 1,336 passenger-carrying vehicles. One hundred and eighty-six of the buses are shown on line No. 1 of the P–1 list and 23 other type buses are included in the total of the "Under $500,000" items, on line No. 71 of the P–1 list. The one medium is also included on line No. 71.

Mr. SLACK. What is your authorized allowance for passenger cars, exclusive of buses and ambulances, and when was the authorized allowance objective last increased and by how much?

Captain KRICKENBERGER. The authorized passenger vehicle allowance, with buses and ambulances excluded, is 5,985. The last approved allowance increase (211) resulted from a functional transfer of MAP program vehicles, as authorized under the provisions of Public Law 89-374 (March 25, 1966).

LEASING OF AUTOMOBILES

Mr. SLACK. The fiscal year 1969 report on the passenger vehicle fleet of the various Federal agencies indicates the Navy leased commercially 378 automobiles during fiscal year 1969, which is far in excess of the 29 and 33 leased commercially by the Army and Air Force, respectively. What is the explanation for this leasing practice?

Captain KRICKENBERGER. The Navy leases approximately 375 automobiles annually from commercial sources where it has been determined to be economically advantageous to the Government. These rented vehicles are subject to rigid allowance, assignment, and economic controls. All rented automobiles are applied against the passenger-carrying vehicle allowance ceilings authorized by the Chief of Naval Operations. The number of leased automobiles is further limited by assignments to high mileage billets where annual mileages range between 20,000 and 30,000 per vehicle. The decision to lease an automobile in lieu of assigning a Navy-owned automobile to a particular billet is predicated on the economic cost comparison of the commercial leasing cost against the annual Navy ownership cost. Automobile leases can only be justified where the contractor's annual leasing cost is lower than the annual Navy-owned vehicle cost (depreciation, maintenance, accident damage, and insurance) in relationship to the mileage to be traveled during the year.

Mr. SLACK. The aforementioned report indicates that in fiscal year 1970 the Navy will lease commercially 377 passenger cars and obtain another 38 from the GSA Interagency Motor Pool. Does this mean your authorized allowance objective for automobiles is insufficient to meet your passenger car requirements?

Captain KRICKENBERGER. The Navy's plan to continue to lease passenger cars in fiscal year 1970 from commercial sources and to rent cars from the GSA Interagency Motor Pools is an integral part of the Navy's total authorized allowance objective. Upon approval by the Congress of the 42 passenger-carrying vehicles functional inventory transfer from MAP being requested on exhibit 10A to the fiscal year 1970 OPN budget, there will be sufficient vehicles authorized to meet the Navy's fiscal year 1970 passenger car requirements. Motor vehicle hires are being undertaken for economic reasons which are considered to be advantageous to the Government, as explained in the answer to the preceding question. The determination made to rent vehicles from GSA Interagency Motor Pools is in conformance with the Government-wide practice of utilizing GSA Interagency Motor Pool vehicles wherever transportation savings may be achieved.

NON-PASSENGER-CARRYING VEHICLES

Mr. SLACK. You are requesting $15.7 million for the procurement of 4,166 trucks, trailers, and other automotive equipment for naval shore activities. The justification book indicates 28 percent of the total inventory is eligible for replacement and the fiscal year 1970 funds will provide for the replacement of 34 percent of the vehicles eligible for replacement. Why is this?

Captain KRICKENBERGER. The dollar limitations of the overall fiscal year 1970 budget submission for the procurement of non-passenger-carrying vehicles will only permit the replacement of 4,166 of the total 12,534 vehicles eligible for replacement.

Mr. SLACK. You are requesting $11.2 million for the procurement of trucks, trailers, and special purpose automotive equipment for naval construction forces.

According to your justification, just prior to the "Tet" offensive there was a shift from MILCON-funded base construction to a primarily horizontal construction effort in direct support of tactical operations. Will you please explain this statement in greater detail?

Captain KRICKENBERGER. Just prior to the "Tet" offensive in February 1968 there was a change in emphasis in the type of construction work assigned to the Seabees deployed in RVN by III Marine Amphibious Force and Commander Naval Forces Vietnam. Generally through calendar year 1967 the greater portion of work (approximately 65 percent) assigned was MILCON funded work. This involved work of which a large portion (about 70 percent) was vertical construction, described as erection of all types of structures within the confines of major combat bases and normally in the proximity of NMCB deployment sites. The shift to direct support of combat operations required larger horizontal efforts, basically road construction, which were generally at remote sites at greater distances from base support areas. This has generated the requirement to move men and construction materials longer distances more frequently. This has resulted in a greater number of replacement vehicles required in fiscal year 1970.

Mr. SLACK. You have been funded over 1,300 pickup cargo trucks in each of the last 2 fiscal years. For fiscal year 1970, you are requesting $1.9 million for 1,131 more. How are these trucks used and why does the requirement remain relatively high?

Captain KRICKENBERGER. The pickup truck is the "workhorse" of the automotive fleet. This truck has a gross vehicle weight rating of 4,800 pounds and a payload capacity of approximately 1,100 pounds. Almost all Navy activities use pickup trucks to transport small work details, tools, materials and light cargo. The pickup truck's life expecancy is 6 years or 72,000 miles. Based on a one-sixth annual replacement of the total authorized inventory of 9,558, 1,593 trucks wear out annually. The fiscal year 1968 and fiscal year 1969 procurements of these trucks were 1,322 and 1,346 respectively. Funding limitations in the fiscal year 1970 budget will only permit the replacement of 1,131 of the total replacement eligibility of 2,980 trucks. A backlog of 1,849 units eligible for replacement will, therefore, be carried forward into fiscal year 1971.

AIRCRAFT CRASH CRANES

Mr. SLACK. You have a request of $1.9 million for an initial procurement of 19 aircraft crash cranes. How will these be used and what have you been utilizing until now for that purpose?

Captain KRICKENBERGER. The aircraft crash crane is not a new item of equipment. The Navy is operating a total of 75 of these units at Naval and Marine Corps Air Stations. Sixty-three of the aircraft crash cranes now in use are overage, uneconomical to maintain, and in need of replacement. Overall budget limitations, however, preclude requesting replacement of more than the 19 units represented in the fiscal year 1970 budget. These crash cranes are used to remove crashed aircraft from runways so that flight operations will not be disrupted.

AUTOMOTIVE SPARES AND REPAIR PARTS

Mr. SLACK. Your requirement for fiscal year 1970 in the area of spares and repair parts totals $2.4 million, an increase over each of the last 2 fiscal years.

What is the explanation for the increase?

Provide for the record a tabulation of the total value of spare and repair parts by fiscal year since fiscal year 1965.

(The information follows:)

Experience in SEA has dictated an increase in spares and repair parts support for automotive and construction equipment in order to maintain equipment availability to meet mission requirements. All units in RVN have encountered long leadtimes for ordering parts when not available in country. The increase of initial outfitting of spare parts from 6 percent to approximately 8 percent of the equipment value will provide for a significant decrease in the equipment deadline rate. The need for additional spare parts support is also due to a greater dispersing of battalion detachments at remote deployment sites, particularly in III and IV Corps. In addition, experience has proven that to maintain the sophisticated equipment to crush rock and manufacture roadbuilding materials requires a higher percentage of spares and repair parts. Purchases by year commencing in fiscal year 1965 are as follows:

	Millions
Fiscal year 1965	$0.3
Fiscal year 1966	1.0
Fiscal year 1967	3.0
Fiscal year 1968	1.8
Fiscal year 1969	1.9
Fiscal year 1970 (budget)	2.4

OTHER CIVIL ENGINEERING SUPPORT EQUIPMENT

Mr. SLACK. The fiscal year 1970 program for other support equipment totals $53.2 million, compared with $93 million last year.

COMBAT CONSTRUCTION SUPPORT EQUIPMENT

The largest single program under the other support equipment category is $30.5 million for combat construction support equipment.

A portion of these funds will be used for construction support of ground operations where the urgency precludes MILCON programing or reprograming action. Will you provide for the record a tabulation of the projects and costs related thereto for this purpose during fiscal years 1968 and 1969?

(The information follows:)

Combat construction support projects, fiscal year 1968

[Dollars in millions]

Project and location:	Cost
Combat base and airfield, Quang Tri	$2.5
Helo facility (USMC), Red Beach, Danang	1.6
Ammo storage points, Danang, Chu Lai and Phu Bai	.5
PBR base No. II, Mekong Delta	2.7
ROK troop cantonment, Hoi An	.5
Ammi revetment, bridges and pontoons, various such as Nam Hoa and Red Beach	.8
Route No. 1 upgrading, Danang to Dong Ha Route No. 9 upgrading, Dong Ha to Ca Lu	10.0
Bridges (other than Ammi), various on routes No. 1 and No. 2	2.9
Culvert, Routes No. 1 and No. 9 and various cantonments and airfields	.2
250-man cantonments, various such as Camp Evans and Camp Carroll	1.9
Bunkers and towers, various such as Khe Sanh and DMZ outposts	1.2
Aircraft revetment (other than ammi), various airfields	1.0
AM–2 matting, various airfields such as Khe Sanh	8.2
M8–A1 matting, various airfields and storage areas	3.1
T–17 membrane, various airfields	2.6
Other miscellaneous projects and freight, northern I corps	5.7
	45.4

FISCAL YEAR 1969

Minimum essential requirements program, various such as Phu Bai, Dong Hai, Quang Tri and Camp Evans	5.7
Ammo storage point recovery, Danang	2.0
POL distribution system, Tan My to Camp Evans and Phu Bai	2.2
Route No. 1 upgrading, Danang to Dong Ha Route No. 9 upgrading, Dong Ha to Ca Lu	6.0
Bridges, various on routes No. 1 and No. 9	1.1
Bunkers and towers, various such as Cau Viet and Gia Lai	4.7
Airfield matting, various such as An Hoa	2.2
T–17 membrane, various airfields	.5
Various projects underway, other miscellaneous projects and freight, various	36.7
Total	61.1

NUCLEAR, BIOLOGICAL, AND CHEMICAL WARFARE DEFENSE EQUIPMENT

Mr. SLACK. What is included in the request of $900,000 for nuclear, biological, and chemical—NBC—warfare defense equipment?

Captain KRICKENBERGER. The $922,000 request for NBC warfare defense equipment includes $665,000 for the replacement of the 14-year-old M–9–A–1 protective masks with M–17–A–1 masks and component accessories at selected overseas activities, and $257,000 for the replacement of 15-year-old G agent chemical warfare alarms with the portable M–8 alarms at the 57 naval activities in the Norad warning and detection network and the three disaster recovery training departments at the naval construction battalion centers.

CONSTRUCTION COLLATERAL EQUIPMENT

Mr. SLACK. What is involved in the $3.6 million request for construction collateral equipment?

Captain KRICKENBERGER. The construction collateral equipment program provides for the first provision of equipment and furnishings generated by new construction or expansion of a facility resulting from a change in function or operation or an improvement in the physical condition of the facility, which is implemented by the Naval Facilities Engineering Command in conjunction with a MCON/MCNR line item. The purchases under the construction collateral equipment program consist of items costing over $1,000 such as dock equipment, shop equipment, dispensary and dental equipment, medical equipment, and so forth. Included are individual items such as portable air compressors, dental operating chairs; nitrogen pump assemblies; pressure gage calibration panels, hydraulic; woodplaners; magnaflux machines; and so forth.

SUPPLY SUPPORT EQUIPMENT

Mr. SLACK. The fiscal year 1970 program for supply support equipment totals $12.9 million.

MATERIALS HANDLING EQUIPMENT

Why has the fiscal year 1970 requirement for forklift trucks and pallet trucks increased over last year's request?

Please describe the use to be made of the $900,000 for automated materials handling systems.

(The information follows:)

Requirements for replacement of vehicles are determined on the basis of certain criteria with respect to usage, deterioration, obsolescence, damage, etc. The objective is to replace equipment when maximum economic life has been reached. The increased requirement in fiscal year 1970 for forklift and pallet trucks reflects a higher number of these vehicles meeting the criteria for replacement than was the case in fiscal year 1969.

The $939,000 requested for automated materials handling systems is required to finance procurement and installation of automated materials handling systems at certain major supply activities. These funds will provide for two initial systems; extensions to three existing systems; and automation of a bulk fuel handling system.

PERSONNEL AND COMMAND SUPPORT EQUIPMENT

Mr. SLACK. The fiscal year 1970 program for "Personnel and command support equipment" totals $31.2 million.

PERSONNEL SUPPORT EQUIPMENT

Proposed funding for personnel support equipment is $9.7 million, primarily for the ASW training program.

Identify for the record the equipment for which $1 million worth of initial spare parts is requested.

Captain LOTTERHOS. Yes, sir.

(The information follows:)

INITIAL SPARE PARTS

Major training devices, currently under procurement, will require initial parts provisioning in fiscal year 1970. These devices represent a total investment of approximately $17.6 million. The $1 million requested will provide a 90-day supply of parts support which coincides with the delivery of these training devices; also, an initial stock of parts peculiar will be furnished the supply system to assure

availability until the normal supply procedures can begin. The following is a list of training devices requiring parts support:

Fiscal year 1970 initial spares cost

	In thousands
Device 8A8, communication trainer	$2
Device 14A2 series, surface ship ASW attack trainers	375
Device 15E15, ECCM shipboard trainers	20
.50-caliber gun firing trainer	2
Device 1DA5E, ships characteristics trainers	10
Device 3K41C, servomechanism training aids	2
Device 6B19, basic electronics student trainers	9
Device 11H55, table top tutor trainers	10
Device X14A6, ASW coordinated tactics trainer	104
Device 14E12, modification AN/SQS-26 sonar trainers	5
Device 15E13, electronics warfare trainers	145
Device 15G10, carrier air traffic control trainers	29
Device 20A62, emergency shiphandling trainer	50
Device 20C9, weapon system simulation equipment	68
Device 20E13, shadowgraph operator trainer	8
Device 21A37/3, casualty recovery for submarine control trainer	25
Device 21A37/4, Mk-48 torpedo capability for attack center No. 3	56
Device 21A37/4, Mk-48 torpedo capability for attack center No. 1 and No. 2	35
Device 21A38, Mk-48 torpedo capability for attack center No. 1 and No. 2	20
Device 21A39/1, Submarine attack center trainer	25
Total	1,000

MEDICAL SUPPORT EQUIPMENT

Mr. SLACK. Why is there an increase in medical support equipment for fiscal year 1970?

Admiral ETTER. Yes, sir; we can provide that for the record.

(The information follows:)

It has been necessary to make equipment purchase only on a breakdown/urgent basis during this year to date. This has meant that the Navy Medical Department has not kept pace on a programed basis with the rapidly advancing state of the medical art by being able to capitalize on the many advantages of recently developed medical equipment, including that required for modern laboratory techniques, X-ray diagnostic and therapeutic procedures, coronary care capabilities, organ transplant advances, et cetera. Further, many young medical officers accustomed to the advantages of the newer types of equipment used in their civilian careers and training, have frequently cited as a major reason for their leaving the naval service the fact that they do not have available the most modern equipment with which to practice and realize the benefits of current medical technology.

The 5-year dental replacement program approved and first funded in fiscal year 1967 on an annual basis of approximately $500,000, had to be deferred in fiscal year 1969 because of lack of funds. Even with the constraint of breakdown replacement only, and deferment of the dental replacement program, it has been necessary for Navy to reprogram $700,000 to the medical program in order to meet minimal needs for the remainder of fiscal year 1969.

If we are not provided greater funding than was experienced in fiscal year 1969, we will be unable to meet minimum requirements for establishment of up-to-date coronary care units in 30 of our naval hospitals. These units are planned to meet the current standards required by modern medical practice. They cost approximately $50,000 each for our major hospitals, and $25,000 each for the smaller ones. Further, our urgently required X-ray replacement program will be seriously curtailed. The Navy Medical Department now has a validated radiology equipment requirement alone of approximately $850,000 for new X-ray units. These new units are necessary to replace 28 X-ray machines now over 10 years old, the useful life of this type of equipment under average workload conditions. However, the heavy workload in our radiology departments, greatly strained by the requirements generated by the casualties from Vietnam, has resulted in accelerated deterioration of our X-ray equipment. A major further attribute

of the newer machines is the advantage to the patient that he is exposed to only 10 to 30 percent of the potentially hazardous ionizing radiation that is absorbed now from the equipment over 10 years old. There are over 300 X-ray machines in the naval hospital system that must be replaced over the next 8 to 10 years at a cost ranging from about $12,500 to about $160,000.

This request for $3½ million represents only 42 percent of the total of $8,014,000 certified by our commanding officers as necessary for their equipment requirements for fiscal year 1970 and represents an absolute minimum for the level of care required if the practice of modern medicine is to be maintained in our 38 naval hospitals.

COMMAND SUPPORT EQUIPMENT

Mr. SLACK. The fiscal year 1970 program for command support equipment totals $18.2 million.

OCEANOGRAPHICAL SUPPORT EQUIPMENT

Most of the funds requested for oceanographic support equipment is contained in the $7.4 million for items less than $500,000 each.

Provide a breakdown of this request for the record.

(The information follows:)

The following is a breakdown of oceanographic support equipment line items less than $500,000 each.

[Dollar amounts in thousands]

Line item description	Quantity	Total cost
MAPPING, CHARTING, AND GEODESY PROGRAM		
Photographic:		
Film viewer, table	2	$2.4
Film viewer, w/track	2	4.0
Frame, vacuum 60 in. × 75 in.	1	2.5
Printer, mark III Color	1	16.0
Projector, camera	1	15.0
Projector, Saltzman	1	5.0
Sink, 45 in. × 68 in. × 8 in.	1	1.3
Sink, S.S. 46 in. × 52 in. × 8 in.	1	1.3
Stereoscope, zoom 95	1	2.0
Total, photographic	(11)	(49.5)
Printing: Dampening system, total	(4)	(4.8)
Survey:		
Accelerometer, horizontal integr.	2	60.0
Cable, 20,000 ft. drum	6	30.0
Computer, coordinate	1	20.0
Distance measuring device	12	78.0
Echo sounder, portable	3	24.0
Echo sounder, shallow towed	2	6.0
Filter, variable low frequency	1	4.0
Generator, portable	5	7.5
Gravity meter, shipboard	1	180.0
Gyro, gravity meter stable platform	8	40.0
Hydrodist, master unit	3	27.0
Hydrodist, remote unit	3	18.0
Magnetic detector, head test set	1	5.0
Magnetic temperature var. monitor	2	20.0
Magnetic temperature var. telemetry system	2	15.0
Magnetometer, marine	1	21.0
Magnetometer, portable fluxgate	1	55.0
Magnetometer, recording system	1	16.0
Meter, gravity underwater	1	38.0
Meter, gravity underwater, auxiliary equipment.	1	10.0
Profiler, subbottom	1	60.0
Receiver digital f/portable sounder.	1	24.0
Survey—Continued		
Receiver, hi-fix	3	$33.0
Receiver, omega VLF	2	30.0
Recorder, Gifft	2	14.0
Recorder, sawtooth	4	8.0
Repeater, servo	4	10.0
Scaler, X-Y digital depth	1	16.0
Scaler, X-Y digital chart	1	29.5
Sonar, scanner, portable	2	40.0
Sonar, scanning, long rage	1	50.0
System, autotape calibration	4	300.0
System, raydist positioning	3	360.0
System, drag wire	2	30.0
System, data reduction	2	10.8
Theodolite, T-2	7	8.4
Tow system, magnetometer air	2	140.0
Tow system, magnetometer, marine.	3	9.6
Tracker, digitizer	1	50.0
Transceiver echo sounder	3	12.9
Modification sponsor		442.0
Total, survey	(106)	(2,352.7)
Other:		
Accounting machine	1	10.0
Calculator, electronic	1	2.2
Cardwriter	1	2.2
Cases, map	6	9.0
Collator, automatic	1	12.5
Files, storage	4	14.8
Justowriter	2	8.3
Do	1	3.7
Plotter attachments, auto. data	1	10.0
Plotter, calcomp	1	70.0
Varitype composing machine	1	3.5
Total, other	(20)	(146.2)
Freight	(1)	67.8
Installation of equipment		175.0
Total, mapping, charting and geodesy items under $500,000	(141)	(2,796.0)

[1] Not available.

Line item description	Quantity	Total cost
OCEANOGRAPHY PROGRAM		
Survey:		
Acoustic release mechanism	10	$33.0
Analyzer, nutrient	1	11.0
Buoys, current array, surface	10	35.0
Buoys, subsurface	8	14.0
Buoys, surface	6	12.0
Cable, 4-HO, 10,000 ft	1	4.0
Cable, 4-HO, 30,000 ft	2	12.0
Cable, 4-HO, 30,000 ft high strength	2	20.0
Cable, buoy sensor	2	40.0
Cable, coaxial, SSS	4	60.0
Cable, electrical conductor 30,000 ft	6	120.0
Calculator	5	13.5
Calculator, w/memory unit	1	4.0
Camera, underwater	1	1.8
Do	2	18.0
Computer, PDP-8	2	40.0
Control unit f/SVTP probe	2	8.4
Corer, Ewing w/liner 600 lb	13	18.0
Corer, mod. Ewing 2,000 lb	4	20.0
Crane, hydraulic	1	15.0
Discriminator	3	5.3
Dredge, bottom	6	7.2
Driver unit, pinger	1	1.4
Fish and cable, magnetic	10	22.7
Fish, on station, VTSD	9	249.2
Fish, wide beam, towed w/transd.	5	21.2
Fish, S/T/D	1	13.0
Generator	2	4.0
Hydrophone, acoustic, w/cable	6	45.0
Instrument, hut	1	15.0
Launcher-recorder, XB7, w/probes	2	30.0
Light source, U/w camera	1	1.8
Magnetometer, w/2 fish	4	88.0
Meter, current	40	87.0
Meter, current, 10/array	65	130.0
Meter, water clarity	2	18.0
Mixer, electronic	1	1.9
Mount, F/underwater sensors	1	2.0
Oscilloscope	1	2.3
Pinger, acoustic	8	28.8
Pinger, sonar	6	10.8
Printer, SVTD	1	2.6
Probe, heat flow	6	30.0
Probe, SVTP	12	192.0
Profiler, air gun	5	60.0
Profiler, hydro streamer	2	14.0
Rack, Nansen bottle	2	2.0
Recorder, chart, XBT	1	2.2
Recorder, fathometer	2	24.0
Recorder, PFR	2	30.0
Recorder, XYY	1	3.5
Release mechanism, acoustic consoler and tr	5	85.8
Release mechanism, timed	12	12.0
Salinometer, inductive	6	16.9
Salinometer, in situ	6	96.0
Sampler, carbon 14	2	10.0
Sampler, demand water	10	50.0
Sample, plankton underway	8	17.0
Seismic hydrophone, w/cable	6	84.0
Seismic profiler, w/energy source	9	242.6
Seismic source, w/cable	10	83.6
Seismic sparker, w/cable	6	19.2
Sensor, depth	1	3.6
Sensor, sound velocity	1	3.6
Sensor, temperature	6	12.9
Set, cable and wiring, SVTD	1	1.1
Sound velocimeter, shallow water	2	60.0
System:		
Acoustic record and monitor	2	30.0
Acoustic, towed	2	90.0
Camera/pinger	6	137.1
Camera, underwater stereo	2	40.4
Current meter, shipboard	2	8.0
Survey—Continued		
System—Continued		
Dark room	2	$16.0
Drafting room	2	16.0
Navigation	2	115.0
Pinger	2	8.0
Salinity, temperature, depth	1	75.0
Sea surface S/T/D	1	7.0
SSTC	2	14.0
Visibility	1	9.0
XBT w/recorder, deck unit, probes	3	38.0
Tackle, mooring	1	15.0
Tensiometer	2	2.4
Tester, dead weight	2	2.0
System, S/T/D in situ	20	100.0
Thermistor array	2	70.0
Transceiver, sonar	2	20.0
Transducer, 3 5 KC	8	195.6
Transducer, pinger	2	3.4
Transducer, sonar	4	6.8
Velocimeter, sediment, in situ	4	60.0
Winch:		
Cable reel, w/boom	1	30.0
Cable reel	1	10.0
Electric, 10,000 ft	2	40.0
Electric, 30,000 ft	1	30.0
Portable, wire boom	2	40.0
w/Boom wire	1	40.0
Total, survey	(458)	(3,731.6)
Other:		
Acoustic test and measuring instrument	1	6.0
Amplifier, power generator	1	1.4
Analyzer, spectrum	1	7.1
Analyzer, wave	3	6.0
Attenuator, prec	4	14.0
Balance, analytical	2	2.4
Bath, temperature	3	6.8
Bridge	2	4.8
Bridge, impedence	1	1.5
Calculator, electronic	1	11.5
Calibrator, frequency voltage	4	5.8
Centrifuge	1	1.0
Compensator, impedence	1	1.0
Counter	2	3.6
Counter, electronic	4	14.6
Counter, frequency	3	6.0
Counter, preset	2	3.0
Display unit	1	2.4
Flow tank	1	60.0
Frequency changer	2	12.0
Generator, 20KW, for mobile unit	1	6.0
Generator, digital delay	1	2.5
Generator, signal	16	24.4
Generator, time code	2	2.4
Impedence meter	2	5.0
Inverter	1	2.0
Meter, distortion	2	2.6
Microfilmer, Recordak	1	5.0
Multimeter calibrator	1	3.9
Oscillator, F/mark	4	4.2
Oscillograph	1	3.0
Oscilloscope, 50 MHZ plug in	10	27.1
Potentiometer	4	5.1
Power supply	1	1.1
Pressure tester	4	15.4
Punch, paper tape	1	3.0
Receiver, general purpose	2	3.2
Recorder, digital	4	9.2
Recorder, magnetic tape	2	4.4
Reference standard	2	6.4
Salinometer	2	3.7
Synthesizor	1	15.3
Thermometer, crystal	3	7.2
Transceiver, HF	1	2.3
Varityper, headliner	1	2.7

Line item description	Quantity	Total cost
Other—Continued		
Voltmeter, differential	7	$16.1
Washer, glassware, lab	1	1.8
Working standard, A.C	1	7.3
Working standard, D.C	12	12.2
Total, other	(136)	(375.4)
Freight	(1)	46.0
Other—Continued		
Installation of equipment		$438.0
Total, oceanography	(604)	(4,591.0)
Grand total, items under $500,000	(745)	7,387.0

[1] Not applicable.

Mr. SLACK. For what purpose was the $2,800,000 for data processing system used in fiscal year 1968?

Captain AYRES. The $2.8 million in fiscal year 1968 was for the procurement of six hydrographic data acquisition systems to be installed aboard hydrographic survey ships and their associated sound boats. These systems will be used in the collection and automatic processing of hydrographic data while ships are underway and will reduce the manual processing now required to make data usable for the production of nautical charts.

Intelligence Command Support Equipment

Mr. SLACK. Provide a tabulation for the record showing how the $5.2 million for intelligence command support equipment will be utilized.

Describe Project Prairie Schooner and Project Underdog being funded under intelligence command support equipment.

(The information follows:)

1. Technical sensor collection ($3,056,000):

Project Underdog	$2,066,000
Project Prairie Schooner	1,890,000
Total	3,956,000

Project Underdog appears in the Naval Intelligence Command's OPN budget for the first time in fiscal year 1970. Project Prairie Schooner was contained in the fiscal year 1968 and fiscal year 1969 budgets, at $2,000,000 each year. The Naval Intelligence Command is prepared to brief the committee in full concerning these very sensitive projects.

2. Intelligence production ($100,000):

Fleet Intelligence Center Atlantic, Norfolk, Va.	
2 split-stage tables with optics	10,000
1 film splicer/editing machine	9,000
2 photo interpreter's desk/light table with optics	6,000
1 set of stereo optics	2,000
1 vertical copy easel	1,000
1 35mm photo enlarger	1,000
1 automatic aperture card printer	22,000
1 photo print dryer	2,000
Total	53,000
Fleet Intelligence Center Europe, Jacksonville, Fla. (supporting Sixth Fleet)	
1 offset printing press	$36,000
1 paper folder	8,000
1 paper drill	1,000
1 offset plate marker	2,000
Total	$47,000

Preliminary analysis of imagery at fleet intelligence centers requires the above equipment for photo interpretation and for printing. Light tables are used with stereo optics in performing 3-dimensional measurements on target images provided by aerial photography. High-intensity light tables will accommodate microscopic stereoscopes that will adapt from 8 to 60 power, some up to 120 power magnification. The higher magnification powers provide resolution and more detailed interpretation of photographs taken at almost any altitude, scale, or height, vertical or oblique.

3. Naval Scientific and Technical Intelligence Center ($296,000):

2 MINCOM model 32 tape recorders	$120,000
1 BHQ-2E sonar recorder	50,000
1 DADS Reader (digital system used to record variables in a data collector's log)	45,000
2 time code readers for pulse analysis	30,000
1 comb filter (a bank of special filters used in parallel to separate data into frequency bands for independent analysis)	20,000
1 PRF synthesizer (an adjustable frequency source used to align analysis systems)	16,000
3 wave analyzers	7,000
1 Tektronix 565 oscilloscope	2,000
3 SKL filters (to remove unwanted frequencies so that frequencies of interest may be analyzed)	3,000
2 PRF/PRI counters (for accurate measurement of frequencies found on electronic intelligence recordings)	3,000
	296,000

The Naval Scientific and Technical Intelligence Center is charged with analyzing and assessing the naval aspects of foreign science and technology. It is the Navy's sole activity engaged in monitoring foreign research and development and reporting developing threats to the national interest in the scientific and technical area. Tasking to meet this responsibility falls into five general functional categories: (a) countering anti-ship missile threat, (b) Ocean Surveillance support, (c) electronic warfare support, (d) undersea warfare support, (e) monitoring basic foreign research and development efforts and technologies applicable to maritime and naval systems. Products from this tasking support national planners, assist in determining future force levels and characteristics, and support fleet operating forces. The electronic instruments and test equipment listed above are required for the Naval Scientific and Technical Intelligence Center to meet laboratory standards for technical data and to thoroughly exploit raw recorded data. Additional details on each item in the procurement list can be furnished if desired.

4. Naval Investigative Service ($352,000):

_____	100,000
_____	80,000
_____	60,000
_____	50,000
_____	28,000
_____	18,000
_____	10,000
_____	6,000
	352,000

The Naval Investigative Service is the Navy's counterintelligence and criminal investigation arm. It is directly concerned with potential sabotage, espionage, and subversive threats to the Navy, and for investigating all major violations of the Uniform Code of Military Justice, such as defection, narcotics, fraud, theft, crimes of violence, personnel security, compromise and security leaks; it assists the Secret Service in protective service. The Naval Investigative Service also provides security and counterintelligence support, information, and analytical production to the Department of Defense and other agencies. The equipment listed above is needed for the ——— supporting Navy commands throughout the world. Additional

5. Intelligence data handling system ($453,000):

Naval Reconnaissance and Technical Support Center:	
1 disk storage device (for on-line resident storage of computer programs and data files)	$300,000
1 card reader (for on-line capability to read cards directly into computer)	51,000
1 card punch (for on-line capability to punchcards directly from computer)	52,000
Total	403,000

The intelligence data handling system is name applied to the totality of the intelligence data processing capabilities and associated communications operated by the Department of Defense and centrally managed by the Defense Intelligence Agency. Navy activities in this area come under Defense Intelligence Agency guidance in accordance with the terms of a Defense Intelligence Agency-Navy plan for management of intelligence data handling systems. Computer facilities at the Naval Reconnaissance and Technical Support Center (NRTSC) are included in the intelligence data handling system facilities operated by the Naval Intelligence Command. NRTSC provides intelligence derived from photographic images to support fleet operations, as well as national and Navy Department decisionmakers. It provides hundreds of thousands of microfilm images, IBM index cards, and hundreds of magnetic tapes to aircraft carriers and other naval commands in support of automated shipboard intelligence centers. At present, these shipboard intelligence centers use magnetic tape storage; card readers are modified card collators; and cards are punched on standard keypunch machines. Disk storage and automatic on-line card readers and punches will provide the capability of storing a larger quantity of data and retrieving data more rapidly. The equipment listed above will be tested and evaluated by the Naval Reconnaissance and Technical Support Center prior to procurement and installation of such equipment by the fleet.

Communications equipment for other intelligence data handling system facilities:	
Fleet Intelligence Center, Pacific:	
2 modulator-demodulators (modems)	14,000
2 cryptographic control units	7,000
Total	21,000

Commander in Chief, Pacific Fleet: 2 teletypewriter terminals	16,000
Naval Scientific and Technical Intelligence Center:	
1 modulator-demodulator (modem)	7,000
1 teletypewriter	6,000
Total	13,000

The devices listed above will equip three intelligence data handling system communications terminals, supporting the ocean surveillance information system. The teletypewriters will consist of both keyboard and printer. Modems control the flow tof the signals across telephone lines and allow for the timing pulses to be recognized by the cryptographic devices and terminal equipment. The crytographic control unit is used with the modems to maintain data flow.

OPERATING FORCES SUPPORT EQUIPMENT

Mr. SLACK. Provide a tabulation for the record showing how the $2.4 million for operating forces support equipment will be used.

(The information follows:)

The amount requested is to provide for the procurement of items of equipment that have an acquisition cost of $1,000 or more and which are not otherwise provided by funds from other budget activities of "Other procurement, Navy." Individually the items number in the hundreds. The general categories of these items by commands are as follows:

	Administration/office	Medical/dental	Shop/test	Other	Total
Commander in chief, Atlantic Fleet	$220,200	$192,500	$249,000	$226,300	$888,000
Commander in chief, Pacific Fleet	161,700	281,600	192,000	248,700	884,000
Chief of Naval Air Training	247,000	59,900	7,700	22,400	337,000
Commander in chief, U.S. Naval Forces Europe	17,900	32,100	.....	2,000	52,000
Commander, Naval Reserve Training Command	11,000	0	0	0	11,000
Commandant of Marine Corps	66,042	53,778	87,788	38,392	246,000
Total	723,842	619,878	536,488	537,792	2,418,000

SPARES AND REPAIR PARTS STOCKS IN SOUTHEAST ASIA

Mr. SLACK. What is the total value of spares and repair parts stocks in Southeast Asia by fiscal year since fiscal year 1965?

(The information follows:)

The table below reflects the value of Navy inventories of spare and repair parts positioned in-country in South Vietnam at Saigon and Danang. The amounts shown are the investment in hull, mechanical, electrical, electronic, and ordnance parts. The increased inventory investment depicted in the table manifests Navy's increased material requirement over time to support, for example, Market Time and Riverine Warfare Forces; an expanded and heavily used inventory of materials handling equipment; increased numbers of small craft of all types; and expanded electronic installation support requirements. The amounts shown exclude the value of ammunition, provisions and other consumables, and construction supply inventories.

Inventory value at end fiscal year

Fiscal year:	*In thousands*
1965	$92.0
1966	217.1
1967	2,618.6
1968	4,109.4

AUTOMATIC DATA PROCESSING EQUIPMENT

Mr. SLACK. Provide a list showing by budget activity, and category within budget activities, the amount requested in fiscal year 1970 for procurement of automatic data processing equipment, as well as the requirement for such equipment.

(The information follows:)

[Dollar amounts in thousands]

OPN budget activity and category	Amount	Requirement
Budget activity 2—Communications and electronics equipment. Category—Cryptologic. Line item 157-AN/6UK(V) equipment.	$800	2 medium-sized computers are required for linking communications equipment associated with the cryptological communications system. Because of their special design for this purpose, they cannot be leased.
Budget Activity 3—Aviation support equipment..... Category—Other support equipment. Line item 103—Meteorological data link computers.	380	3 medium-sized computers are required to tie together various communications components of the meteorological data system supporting naval aviation. Because of their special design for this purpose, they cannot be leased.
Budget activity 7—Personnel and command support equipment. Category—Command support equipment. Line item 16—Items of less than $500,000 each.	40	4 small computer orientation trainers are required for training Defense personnel in programing and systems analysis techniques at the DOD Computer Institute. Because the computers are special purpose equipment, they cannot be leased.
Total.....	1,220	

Mr. SLACK. If there are no further questions, we thank you, gentlemen.

The committee will stand adjourned until 10 a.m. tomorrow morning.

WEDNESDAY, MAY 21, 1969.

AIRCRAFT PROCUREMENT, AIR FORCE

WITNESSES

LT. GEN. MARVIN L. McNICKLE, DEPUTY CHIEF OF STAFF, RESEARCH AND DEVELOPMENT
MAJ. GEN. GEORGE S. BOYLAN, DIRECTOR OF AEROSPACE PROGRAMS, DEPUTY CHIEF OF STAFF, PROGRAMS AND RESOURCES
MAJ. GEN. T. S. JEFFREY, JR., DIRECTOR OF PRODUCTION AND PROGRAMING, DEPUTY CHIEF OF STAFF, RESEARCH AND DEVELOPMENT
MAJ. GEN. L. F. TANBERG, DIRECTOR OF MAINTENANCE ENGINEERING, DEPUTY CHIEF OF STAFF, SUPPLY AND SERVICES
BRIG. GEN. WILLIAM F. PITTS, DIRECTOR OF BUDGET, COMPTROLLER OF THE AIR FORCE
BRIG. GEN. A. A. RIEMONDY, DIRECTOR OF PRODUCTION AND PROGRAMING, DEPUTY CHIEF OF STAFF, SYSTEMS AND LOGISTICS
COL. C. E. BUCKINGHAM, DIRECTORATE OF PRODUCTION AND PROGRAMING, DEPUTY CHIEF OF STAFF, RESEARCH AND DEVELOPMENT
COL. RUBY E. DAVIS, JR., DIRECTORATE OF PRODUCTION AND PROGRAMING, DEPUTY CHIEF OF STAFF, RESEARCH AND DEVELOPMENT
COL. WILLIAM J. GROSSMILLER, DIRECTORATE OF AEROSPACE PROGRAMS, DEPUTY CHIEF OF STAFF, PROGRAMS AND RESOURCES
D. N. P. PRITCHETT, CHIEF, AIRCRAFT AND LOGISTICS DIVISION, DIRECTORATE OF BUDGET, U.S. AIR FORCE
R. M. COFFELT, CHIEF, AIRCRAFT PROCUREMENT BRANCH, DIRECTORATE OF BUDGET, U.S. AIR FORCE

AIRCRAFT PROCUREMENT, AIR FORCE

"For construction, procurement, and modification of aircraft, and equipment, including armor and armament, specialized ground handling equipment, and training devices, spare parts, and accessories therefor; specialized equipment; expansion of public and private plants, Government-owned equipment and installation thereof in such plants, erection of structures, and acquisition of land without regard to section 9774 of title 10, United States Code, for the foregoing purposes, and such land, and interests therein, may be acquired and construction prosecuted thereon prior to the approval of title by the Attorney General as required by section 355, Revised Statutes, as amended; reserve plant and equipment layaway; and other expenses necessary for the foregoing purposes, including rents and transportation of things; [and $55,000,000 of the funds available under this head shall be available only for the F–12 aircraft program; $3,860,000,000], *$3,775,200,000* and, in addition, [$600,000,000], *$325,000,000* of which [$525,000,000], *$300,000,000* shall be derived by transfer from the Air Force stock fund and [$75,000,000] *$25,000,000* shall be derived by transfer from the Defense stock fund, to remain available until expended. *(5 U.S.C. 3109; 10 U.S.C. 2271–79, 2352–54, 2386, 2663, 2672, 8012, 8062, 9501–02, 9505, 9531–32, 9741–42; 31 U.S.C. 649c, 718; 40 U.S.C. 523; 50 U.S.C. 451–62; Department of Defense Appropriation Act, 1969; additional authorizing legislation to be proposed.)*"

Explanation of proposed change.—To delete language which is only applicable to Department of Defense Appropriation Act, 1969, Public Law 90–580; and to

add language which would permit the use of $325,000,000 toward financing the fiscal year 1970 program by transfer of $300,000,000 from the Air Force stock fund and $25,000,000 from the Defense fund.

Justification for requested change.—The language in the 1968 Appropriation Act restricted the use of $55,000,000 of the total availability only for the F–12 aircraft program. Since it is considered permanent legislation and the $55,000,000 is available only for the F–12, the language has been deleted.

The transfer from the Air Force stock fund will be possible because of cash accumulation resulting from capitalization of stock financed from other appropriation accounts. The transfer from the Defense stock fund will be possible because of stock drawdown.

PROGRAM AND FINANCING (IN THOUSANDS OF DOLLARS)

	Budget plan			Obligations		
	1968 actual	1969 estimate	1970 estimate	1968 actual	1969 estimate	1970 estimate
Program by activities:						
Direct:						
1. Combat aircraft	1,958,800	1,897,800	1,225,000	2,223,500	1,672,500	1,265,000
2. Airlift aircraft	510,200	550,300	809,700	493,700	497,000	715,500
3. Trainer aircraft	99,800	19,600	65,000	100,500	25,700	55,300
4. Other aircraft	123,048	173,100	86,600	77,800	145,200	100,200
5. Modification of inservice aircraft	650,800	654,000	550,200	599,200	484,700	452,500
6. Aircraft spares and repair parts	1,306,300	921,600	935,600	1,319,819	1,004,100	1,049,900
7. Aircrart support equipment and facilities	778,600	682,100	665,500	770,000	703,300	728,700
Total direct	5,527,548	4,898,500	4,337,600	5,584,519	4,532,500	4,367,100
Reimbursable:						
1. Combat aircraft	240,832	448,300	316,000	264,868	380,600	327,400
2. Airlift aircraft	21,888	31,000	40,000	14,778	40,500	37,300
3. Trainer aircraft	547	1,000	3,000	1,464	2,400	2,400
4. Other aircraft	8,629	6,000	7,000	5,629	16,400	6,900
5. Modification of inservice aircraft	7,987	27,000	4,000	10,573	17,900	12,300
6. Aircraft spares and repair parts	46,749	35,000	20,000	86,519	51,400	24,300
Total reimbursable	326,632	548,300	390,000	383,831	509,200	410,600
Total	5,754,180	5,446,800	4,727,600	5,968,350	5,041,700	4,777,700
Financing:						
Receipts and reimbursements from:						
Federal funds	−224,316	−140,600	−171,000	−199,739	−181,778	−171,000
Trust funds	−263,777	−457,200	−268,500	−129,292	−332,836	−268,500
Non-Federal sources	−453	−500	−500	−799	−500	−500
Unobligated balance available, start of year:						
For completion of prior year budget plans				−1,988,366	−1,827,222	−1,728,236
Available to finance new budget plans		−55,000	−87,400		−55,000	−87,400
Unobligated balance transferred from other accounts		−600,000	−325,000	−21,876	−600,000	−325,000
Reprograming from prior year budget plans	189,866	−420,900	−100,000			
Unobligated balance available, end of year:						
For completion of prior year budget plans				1,827,222	1,728,236	1,578,136
Available to finance subsequent year budget plans	55,000	87,400		55,000	87,400	
Budget authority	5,510,500	3,860,000	3,775,200	5,510,500	3,860,000	3,775,200
Budget authority:						
Appropriation	5,493,400	3,860,000	3,775,200	5,493,400	3,860,000	3,775,200
Transferred from other accounts	17,100			17,100		
Appropriation (adjusted)	5,510,500	3,860,000	3,775,200	5,510,500	3,860,000	3,775,200
Relation of obligations to outlays:						
Obligations incurred, net				5,638,520	4,526,586	4,337,700
Obligated balance, start of year				3,402,688	3,962,672	3,189,258
Obligated balance, end of year				−3,962,672	−3,189,258	−2,873,958
Outlays				5,078,535	5,300,000	4,653,000

OBJECT CLASSIFICATION (IN THOUSANDS OF DOLLARS)

	1968 actual	1969 estimate	1970 estimate
Direct obligations:			
Transportation of things	$42,200	$36,000	$35,000
Supplies and materials	659,908	486,250	474,200
Equipment	4,882,411	4,010,250	3,857,900
Total direct obligations	5,584,519	4,532,500	4,367,100
Reimbursable obligations:			
Supplies and materials	86,519	51,400	24,300
Equipment	297,312	457,800	386,300
Total reimbursable obligations	383,831	509,200	410,600
Total obligations	5,968,350	5,041,700	4,777,700

SUMMARY OF REQUIREMENTS

(Thousands of dollars)

Activity	1968 actual	1969 estimate	1970 estimate
Combat craft	$1,958,800	$1,897,800	$1,225,000
Airlift aircraft	510,200	550,300	809,700
Trainer aircraft	99,800	19,600	65,000
Other aircraft	123,048	173,100	86,600
Modification of inservice aircraft	650,800	654,000	550,200
Aircraft spares and repair parts	1,306,300	921,600	935,600
Aircraft support equipment and facilities	778,600	682,100	665,500
Total direct program requirements	5,427,548	4,898,500	4,337,600
Reimbursable program	326,632	548,300	390,000
Total program requirements	5,754,180	5,446,800	4,727,600
Less: Portion of program to be obligated in subsequent fiscal years	845,580	1,199,700	1,073,400
Plus: Obligations incurred against prior year program funds	1,059,750	794,600	1,123,500
Total obligations	5,968,350	5,041,700	4,777,700

SOURCES OF FINANCING OF PROGRAM YEAR REQUIREMENTS

	1968	1969	1970
Program requirements	$5,754,180	$5,446,800	$4,727,600
Less:			
Military assistance program common item order reimbursements	102,996	40,600	41,000
Other reimbursements	385,550	557,700	399,000
Reprograming from prior year budget plans		333,500	187,400
Unobligated balance available to finance new budget plans		55,000	
Unobligated balance transferred from other accounts		600,000	325,000
Add:			
Unobligated balance available to finance subsequent year budget plans	55,000		
Reprograming to subsequent year budget plan	189,866		
Appropriation	5,510,500	3,860,000	3,775,200

Mr. MAHON. We begin the hearings this morning on aircraft procurement for the Air Force. The appropriation requested for fiscal year 1970 for "Aircraft procurement, Air Force," totals $3,775,200,000. In addition, authority is requested to transfer $300 million to this appropriation from the Air Force stock fund and $25 million from the Defense stock fund. Thus a total of $4.1 billion in new money is requested. This compares with an appropriation of $3,860 million and transfer authority from stock funds of $600 million in fiscal 1969 for a total of $4.4 billion.

MANAGEMENT CHANGE

General McNickle, we welcome you to the committee. This is the first time the Deputy Chief of Staff for Research and Development has been the principal witness in support of procurement programs. Does this reflect a management change within the Air Force?

General McNICKLE. Mr. Chairman, it does recognize a change in management. I now have the acquisition function which used to be with the Deputy Chief of Staff, Systems and Logistics. The Air Force decided it was more proper to tie research and development to procurement than to have procurement tied to logistics. So now my function runs through research and development and acquisition.

Mr. MAHON. Is this probably a good thing?

General McNICKLE. Yes, sir. It was studied—and it was this way at one time in the Air Force—and we are now back to it.

Mr. MAHON. Do you think this is a highly meaningful forward step or is it of minimal value, probably?

General McNICKLE. If I can explain it this way, it used to be that a program would be managed by one organization until the decision was made to produce it. Then that program management was transferred to another organization. This has now been changed so that the program stays with one organization until the production is completed, and then it goes to another organization.

EFFECT OF DELAY OF LEGISLATION

Mr. MAHON. Indications are that we will not have a defense appropriation bill ready for signature by the President prior to July 1. That is the understatement of the morning. Indications are that we won't have the necessary legislative authorizations. The authorization bill is handled by the Armed Services Committees of the House and Senate and their action must precede that in the Appropriations Committee.

What impact, if any, will that have on your research and development and procurement programs?

General McNICKLE. It would prevent us from proceeding with any new programs. I believe, however, that programs that have previously been authorized and appropriated, we would continue at the prior-year rate. I believe that would be the basic limitation. But the new programs would be held in abeyance until we had authority to go ahead.

Mr. MAHON. What are the major new programs of highest priority in research and development and procurement in the Air Force, which you are asking to be funded in this bill which is now being considered by the Appropriations Committee.

General McNICKLE. AMSA or B–1, the advanced manned strategic aircraft.

Mr. MAHON. You have been proceeding with AMSA for some time. I would suspect it could be continued at that level.

General McNICKLE. Our problem for those new programs entering engineering development such as the F–15 tactical air superiority fighter, B–1 or AMSA and the A–X could be that we would be held to a fiscal year 1969 rate.

Mr. MAHON. When you use these abbreviations and so forth the record doesn't come out too well. For instance, what is the "AX?"

General MCNICKLE. The AX is the new close air support airplane with two turboprop engines. It would be relatively inexpensive and is being designed to take the place of the old A–1 Skyraider attack aircraft and the early models of the A–37 attack version of the T–37 twin-jet trainer.

Mr. LIPSCOMB. General, what we would like you to do for the record is to give us a detailed statement as to what the situation would be in the Air Force if you are required to proceed under a continuing resolution such as we have been passing in recent years; what it would do to the programs that you had anticipated accelerating?

General MCNICKLE. I will be happy to do that.

(The information follows:)

EFFECT OF CONTINUING RESOLUTION FISCAL YEAR 1970 PROGRAM

First, I would like to cover the programs that would not be started under provisions of the continuing resolution. These major new programs by appropriation are:

3600—R.D.T. & E. appropriation

The CONUS air defense interceptor, $18.5 million; AX (close support aircraft), $12 million; and AGM–X3 tactical air-to-ground missile, $3 million.

However, the above funding levels and program activity were not necessarily based on having fiscal year 1970 funds available on July 1, 1969. The initial date for the fiscal year 1970 funding requirement during the year would depend on program status in each instance.

3010 aircraft procurement:

HH–X local base rescue helicopter, $14.5 million; and T–X navigation trainer, $28.1 million.

The delay in the HH–X helicopter buy will cause further extension of the period of time that inadequate helicopter fire fighting and rescue capability exists on some bases. For the T–X navigation trainer, the delay would result in a later start in obtaining the many advantages of a modernized navigator training program. Under present planning a delay of up to 3 months would cause little impact and only in areas where adjustments are possible. After this period a month-to-month delay in delivery schedule can be expected.

3020 missile procurement

The missile procurement program has no new starts in fiscal year 1970.

Continuing resolutions would have a greater impact on our programs in the R.D.T. & E. appropriation which require increased level of funding in fiscal year 1970 over fiscal year 1969. These include:

F–15 air superiority fighter

The F–15 will be completing the initial phase of contract definition in calendar year 1969 and this will require funds at the fiscal year 1969 rate. Beginning in January 1970, after the winning contractor has been selected, the requirement for funds will be above the fiscal year 1969 rate.

AMSA (B–1)

The 1970 funds will incrementally fund the competitive design programs for the systems, the avionics and the engine of the AMSA, but the rate of these efforts should be increased in July in order to stay on a schedule which will permit the first test aircraft by April 1973. This will require funding at the requested fiscal year 1970 level, rather than the fiscal year 1969 level permitted by the continuing resolution.

SCAD

The subsonic cruise armed decoy missile should enter the initial development phase in November 1969. At that time fiscal year 1970 resources will be required to award the contract and maintain a schedule that will achieve IOC in ———.

Short-range air-to-air missile

The Air Force development work on a close-in hard maneuvering missile is entering the competitive advanced development phase and will require funds at a higher rate than fiscal year 1969. The program can be sustained through competitive subsystem definition with the fiscal year 1969 level funds, but if we are to proceed with the prototype system in August, we will require the higher fiscal year 1970 funding level at that time.

Hard rock silo

This program has begun the engineering development phase of the prototype silo and the command and control system so that a full-scale prototype test can be completed to provide an option for an IOC with Minuteman III. In order to meet this objective, the program will require the fiscal year 1970 increased funding rate at the beginning of the fiscal year.

Defense satellite communications

Increased design effort on this worldwide defense satellite communications system will be needed to meet the fiscal year 1971 military communications requirements. In order to meet the objectives of this program, the funding rate must be increased at the beginning of fiscal year 1970.

Airborne warning and control aircraft

The development and acquisition contractor should be selected in the second quarter of fiscal year 1970 if this system is to meet its initial operating capability date. In order to sign this contract, funds over the fiscal year 1969 level will be required at that time.

Minuteman integrated command and control system (MICCS)

This program was previously a part of the Minuteman program, and was funded at $4 million in fiscal year 1969. This program should now be accelerated in order to meet the more sophisticated targeting requirements of the Minuteman system.

Improved aircraft gun system

The separate gun programs that were formely pursued in the aircraft support areas have now been consolidated under this one program. Included in this program are guns for the A–X and the X–15 aircraft and improved 20-millimeter rounds for existing guns. While each of these efforts would be slowed down by the resolution, the major impact would be on the gun for the F–15 aircraft which will need the major portion of its $8 million by the second quarter of fiscal year 1970.

General Statement

Mr. Lipscomb. General, you may proceed with the reading of your formal statement. Please read only the aircraft statement, first.

(Biographical sketch of General McNickle follows:)

Biographical Sketch of Lt. Gen. Marvin L. McNickle

Lt. Gen. Marvin Leonard McNickle was born in Doland, S. Dak., in 1914, and graduated from University of South Dakota in June 1936. He was commissioned in the Army as a second lieutenant and later transferred to the Army Air Corps flying training program, receiving his pilot wings in October 1937.

During World War II, his principal assignments included duty with fighter units in the European theater from June 1942 to June 1944. He was then assigned to Headquarters, Army Air Forces, Washington, D.C., as a member of the Joint War Plans Committee.

In January 1946, General McNickle was transferred to what is now Wright-Patterson Air Force Base, Ohio, where he held various positions in the Air Materiel Command. From August 1951 to July 1953, he was assigned to Headquarters, U.S. Air Forces, Europe. He then returned to the United States and attended the Air War College at Maxwell Air Force Base, Ala.

General McNickle commanded the 314th Troop Carrier Wing at Stewart Air Force Base, Tenn., from July 1954 to July 1956. He was then assigned as Deputy for Materiel, Tactical Air Command, Langley Air Force Base, Va. From June 1961 to June 1963, he was Director of Supply at Headquarters, Air Force Logis-

tics Command, and, in June 1963, became Director of Operations for the Air Force Logistics Command. In January 1964, General McNickle became the Commander of the Ninth Air Force at Shaw Air Force Base, S.C. In August 1966, he returned to Washington to become the Deputy Director of Research and Engineering for Administration, Evaluation, and Management in the Office of the Secretary of Defense.

In February 1969, General McNickle became the Deputy Chief of Staff for Research and Development, Headquarters, U.S. Air Force.

His decorations include the Legion of Merit, Distinguished Flying Cross, Air Medal, Army Commendation Ribbon, Distinguished Flying Cross (Britain) and the Croix de Guerre with Palm (France).

General Statement

General McNickle. Mr. Chairman and members of the committee, I am pleased to have this opportunity to present the proposed Air Force aircraft and missile procurement program for fiscal year 1970. My procedure in presenting this Air Force requests will be to indicate briefly the general approach used in arriving at this request, to describe each of the proposed procurement programs, and then to highlight some of the progress we have made in managing our procurements.

The development of the fiscal year 1970 budget request, and the adjustment of the fiscal year 1969 program, is based upon certain assumptions as to the course of the Southeast Asia conflict. For procurement planning purposes, the hostilities are presumed to continue through June 30, 1970; that is, the end of fiscal year 1970. The procurement program provides for consumption at combat rates, attrition replacement aircraft through December 1971, and advance buys for those aircraft items having a leadtime in excess of 18 months. In this way the re-order leadtime for the fiscal year 1971 procurement program is fully protected. Further, the most recent attrition experience and expenditure data has been considered in determining the requirements for aircraft and consumption-type items. All Southeast Asia requirements are supported while at the same time providing for a production base which can be adjusted to meet various eventualities.

In addition to our normal review process, the procurement programs were examined in detail by the new administration. As a result, further adjustments have been made to the Air Force procurement requests originally submitted to the Congress in January of this year. The adjustments include such things as: the elimination of the FB–111 buy in fiscal year 1970, in favor of full-scale development of the Advanced Manned Strategic Aircraft—the AMSA; an increase in the F–111D buy; a new buy of C–130's; and reduced Minuteman and SRAM production programs. The Air Force is now requesting $4.1002 billion of new authorization for aircraft procurement and $3.7752 billion in new obligational authority. We are requesting $1.4864 billion for missile procurement. I will now proceed to the proposed Air Force aircraft procurement program for fiscal year 1970.

AIRCRAFT PROCUREMENT

The aircraft procurement program includes 662 aircraft, of 14 different types. These—together with the funds requested for modifications, spare parts, and support—are shown in table I. Each aircraft

type in the aircraft procurement program is listed under one of the following four categories—combat, airlift, trainer and other. The table indicates how many aircraft of each type are to be procured and the funds required.

The total cost of the proposed fiscal year 1970 aircraft procurement program of 662 aircraft is estimated at $4.3376 billion and the reimbursable program is estimated at $390 million for a total procurement of $4.7276 billion. Included in the total direct program are aircraft and related support items for the forces of South Vietnam, Thailand, and Laos provided through military assistance service funding. Our request for new obligational authority required to support the fiscal year 1970 procurement amounts to $3.7752 billion. The balance will be obtained through transfer of $325 million from the Air Force and defense stock funds, reimbursements from the military assistance program, foreign military sales and from other customers, in the amount of $440 million—and through recoupment action from prior years' programs of $187.4 million.

TABLE I.—*Fiscal year 1970 aircraft procurement estimates*

[In millions of dollars]

	Estimate
Combat aircraft:	
A-7D, attack fighter	374.7
F-4E, advance procurement	25.7
F/RF-5A/B, fighter-reconnaissance	11.2
F-111D, advanced fighter	655.8
F-111 A/E, fiscal year 1969 and prior over target	71.4
RF-4C, reconnaissance fighter	45.1
O-2A, observation	2.6
A-37B, attack fighter	38.5
Subtotal	1,225.0
Airlift aircraft:	
C-5A, cargo-transport	533.0
C-5A, fiscal year 1969 and prior over target	225.0
C-130E, cargo-transport	51.7
Subtotal	809.7
Trainer aircraft:	
T-38A, trainer	36.6
T-41C/D, trainer	.3
T-X, navigational trainer	28.1
Subtotal	65.0
Other aircraft (helicopters):	
UH-1H/N, utility	53.7
HH-X, search-rescue	14.5
CH-53C, cargo-transport	18.4
Subtotal	86.6
Modifications	550.2
Spare and repair parts	935.6
Other support:	
Common ground equipment	84.5
Component improvement	42.0
Industrial facilities	38.5
War consumables	27.8
Other charges	472.7
Total direct program	4,337.6

	Estimates
Reimbursable program	$390.0
Total program	4,727.6
Less estimated available financing:	
Reimbursable orders	440.0
Estimated recoupments	187.4
New authorization required	4,100.2
Less proposed transfers	325.0
New obligational authority required	3,775.2

COMBAT AIRCRAFT

FB–111A

Next, I will describe each of the aircraft systems and the number we plan to procure with fiscal year 1970 funds. I will begin with the combat aircraft.

While the FB–111 is not in the fiscal year 1970 procurement program, I would like to bring you up to date on this program. The FB–111A is a replacement for some of the B–52C through F strategic bombers. It is designed to perform low altitude penetrations in attacking strategic targets. Its smaller size, together with its higher penetration speed and low altitude capability—using automatic terrain-following radar—gives it a higher probability of survival than that of the B–52.

The FB–111 program is transitioning from development to production. The first production FB–111A was delivered in August 1968, and it has been undergoing extensive Air Force testing at Edwards Air Force Base, Calif. The second FB–111 has also been delivered and is at the contractor's facility as an engine test vehicle. The third FB–111 is on schedule for delivery in June. The performance of the FB–111 in recent testing of bombing accuracy and low-level, high-speed navigation and penetration is confirming our confidence in the advanced capabilities of this aircraft. The FB–111A is scheduled to start entering the strategic inventory in September 1969.

The scope of the FB–111 program has been changed appreciably by budgetary decisions of November 1968 and March 1969. These have had a significant impact on the program. The total planned procurement has been reduced from the original 263 aircraft to 76. This cutback results in a combat force of 60 aircraft in four squadrons instead of the previously approved 210 aircraft in 14 squadrons.

A–7D

The A–7D is an adaptation of the Navy's A–7. It is a single-place, tactical strike fighter being procured for use during the 1970's. Its role will be close air support and it will also have a secondary role of interdiction. To accomplish these missions, survivability features have been incorporated into the design to reduce vulnerability to ground fire and the avionics system has been designed for increased accuracy in visual weapon delivery. It uses the TF–41 engine in place of the TF–30 engine used in the Navy A–7A. The Air Force is also procuring the TF–41 engine for the Navy's A–7E.

Through 1968, five aircraft were delivered and contractor flight testing is currently in progress. Flight testing of the TF–41 engine began in September 1968, and the engine has performed very well

throughout the A–7's speed and altitude performance envelope. Flight testing of the avionics system began in November 1968, and the system gives every indication of meeting Air Force goals for accuracy and reliability.

An integrated weapon support management committee has been established with the Navy to determine the most economical method of performing depot maintenance and providing repair support.

We are requesting $348.2 million to procure A–7D aircraft and $26.5 million for advance procurement to support the fiscal year 1971 buy of aircraft. The total planned procurement for the A–7D aircraft is required to support the approved force.

F–4E

The F–4E is the latest Air Force version of the F–4. It is a tactical fighter which performs in the roles of close air support, interdiction, and air superiority. Its avionics permit all-weather navigation and provide for air-to-air and air-to-ground missile attacks and nuclear and conventional weapon delivery. Its miniaturized radar and extended nose permit installation of an internal 20-millimeter Gatling gun. The initial squadron of F–4E aircraft deployed to Southeast Asia in November 1968.

In calendar year 1968, 256 F–4E aircraft were delivered and production reached a monthly rate of 26 in November 1968. Planned production, including Navy and foreign military sales, is about the same through calendar year 1970.

As a result of the bombing halt in North Vietnam, attrition loss estimates through December 1971, have been reduced. Consequently, procurement of attrition aircraft in fiscal year 1970 is not planned at this time. A hedge, in the event the Vietnam conflict escalates beyond current levels, is provided by not directing a reduction in the fiscal year 1969 procurement deliveries at this time. If a stretch is effected, Air Force and Navy production deliveries, combined with foreign military sales, will result in a gradual reduction of monthly total plant production in 1971.

We are requesting $25.7 million for advance procurement in fiscal year 1970 to support the fiscal year 1971 procurement of F–4E aircraft.

R/RF–5

The F–5A is a small tactical fighter being procured for the military assistance service funded (MASF) program. The RF–5A is an F–5A with four cameras installed in a reconnaissance nose section. Through fiscal year 1969 we procured a total of 54 F/RF–5 aircraft for free world forces. In fiscal year 1970, we are requesting $11.2 million to procure these aircraft.

F–111D

The F–111D, with its effective all-weather capability, will be a marked improvement over the earlier A and E models. The Mark II avionics in the D model improve on accuracy, increase the ability to detect fixed targets, add all-weather air-to-air attack capabilities and provide for detecting, tracking, and attacking moving vehicles through the use of radar. The latter capability is expected to be particularly valuable in stopping or destroying enemy supply movements around

the clock. In addition, the large payload and fuel capacity of the F–111 gives it an extended combat radius for greater armed reconnaissance coverage and the ability to deliver many bombs on a single target, or attack several different targets. The airplane's speed, electronic countermeasures, and terrain-following radar are expected to increase survivability substantially, whether on a nuclear or nonnuclear mission.

The development effort has uncovered problems but generally these have been of a less serious nature than those of other new fighter aircraft. The structural failure encountered during ground testing was cause for some concern, but that situation is now in hand. The F–111 continues to rank among all modern Air Force tactical airplanes as one of the safest.

For fiscal year 1970, we are requesting $727.2 million to procure F–111D aircraft. The $727.2 million includes $56 million for advance procurement of aircraft planned for fiscal year 1971, and in addition, $71.4 million for over-target costs applicable for fiscal year 1968, and prior year procurements.

RF–4C

The RF–4C is a reconnaissance version of the F–4 and is used for tactical reconnaissance in support of air and ground forces. It has both a day and a night photographic capability as well as side-looking radar and infrared sensors. In calender year 1968, 43 RF–4C aircraft were delivered.

As previously mentioned, the bombing halt in North Vietnam has reduced our attrition loss forecast. As a result, the fiscal year 1970 program is limited to $37.1 million for the procurement of RF–4C's and $8 million of advance procurement funds to support the fiscal year 1971 procurement of aircraft.

O–2A

The O–2A is the designation for the forward air control (FAC) aircraft currently in use. We plan to procure FAC aircraft in fiscal year 1970 to replace attrition losses in the present FAC inventory. We are requesting $2.6 million for this purpose in fiscal year 1970.

A–37B

The A–37B is a lightweight aircraft that provides attack capabalities for close air support of ground forces. It also has a limited interdiction capability. The A–37B is being procured for our Special Operations Forces, and to modernize the Vietnamese Air Force. We are also replacing some F–100's with A–37B's procured through the fiscal year 1969 program.

Production deliveries began in May 1968, and 48 aircraft were delivered through December 1968. Authorization to procure some of these aircraft has been requested in a fiscal year 1969 reprograming. In fiscal year 1970 we are requesting $38.5 million to procure A–37B aircraft.

AIRLIFT AIRCRAFT

C–5A

The C–5A is a subsonic fan-jet transport designed to perform both the Military Airlift Commands (MAC) normal peacetime mission and, in conjunction with the C–141 to deploy contingency forces

and their equipment to any global location. The C–5A will provide the Air Force with the capability to airlift most combat equipment of an Army division and to deliver to austere support area airfields.

The first C–5A was rolled out in March 1968, and the first flight took place in June 1968, both on a schedule established over 3 years earlier. There are currently four aircraft in the flight test program. Data obtained to date indicate that the aircraft will meet or exceed its performance guarantees. Flight handling characteristics have been excellent. Delivery of the first operational aircraft to MAC is now scheduled for December 1969, a slip of 6 months.

In fiscal year 1970 we are requesting $533 million for procurement of 23 aircraft, and advance buy funding. In addition, we are requesting $225 million to cover over target costs for prior years. The total planned C–5A aircraft procurement is 120 (including five development aircraft) to support a six squadron force, however, in light of increased costs, this number will be reexamined before committing to the fifth and sixth squadrons.

C–130E

The C–130E is a medium sized turboprop cargo/transport aircraft. It is in use worldwide supporting airlift and assault operations. As many of you know, the C–130 has seen extensive service in Southeast Asia.

In fiscal year 1970 we are requesting $51.7 million to procure C–130E aircraft to provide replacements for attrition. This buy, together with foreign military and commercial sales and prior year Air Force buys of 18 in fiscal year 1968 and 18 in fiscal year 1969, will maintain production continuity.

TRAINER AIRCRAFT

T–38A

The T–38A is a small supersonic jet trainer used for flight instruction in the basic phase of undergraduate pilot training. It is similar to the F–5. The Air Force has been the primary user of the T–38, but we expect the Navy to procure some of these aircraft in fiscal year 1970.

In fiscal year 1970 we are requesting $36.6 million to procure T–38 trainers to provide for attrition in support of pilot training through fiscal year 1974. Through fiscal year 1969 we have procured 1,065 T–38 trainers.

T–41D

The T–41D is an "off-the-shelf" trainer aircraft used in support of the military assistance service funded program. In fiscal year 1970 we are requesting $300,000 to procure T–41D aircraft.

T–X

The T–X navigator trainer will be a medium-sized, twin engine jet transport to provide simultaneous training for 12 students in the essential skills, techniques and procedures of air navigation. The trainer will provide an environment that more closely resembles the operational environment of our modern strategic, tactical and transport aircraft. These aircraft, supplemented with ground navigator training simulators, will provide a modernized undergraduate navigator training program for the Air Force.

In fiscal year 1970, we are requesting $28.1 million to start the modernization of our undergraduate navigator training program. This will procure two jet aircraft of the DC–9 or 737 category modified during production to integrate and install the navigation training equipment at 12 stations at a total cost of $19.7 million. Of the remaining $8.4 million, $1.8 million is for peculiar support and $6.6 million is for four ground based simulators.

UH–1H

The UH–1H helicopter is being procured primarily in support of the military assistance service funded (MASF) program for the modernization of free world forces in Southeast Asia. This helicopter will enhance the capability of the Vietnamese and Thai Air Forces to cope with insurgency and it will also improve their overall defense posture through modernization and expansion.

We plan to procure UH–1 type helicopters through fiscal year 1969. This includes deliveries to Vietnam, Thailand and our Special Operations Forces. In fiscal year 1970, we are requesting $53.7 million to procure additional UH–1H helicopters.

HH–X

The HH–X is the present designation for a helicopter required to satisfy a unit equipage deficiency, in our local base rescue units. This deficiency was caused by diversion of HH–43 model helicopters to Southeast Asia. We are evaluating available vehicles and will select—on a competitive basis—the best helicopter for this mission. The selection process should be completed in time to award a contract early in fiscal year 1970. Production of the new helicopter is planned to begin approximately 20 months after the contract is placed. In fiscal year 1970, we are requesting $14.5 million to procure HH–X helicopters. Production is planned at a rate of 3 per month.

CH–53C

The CH–53C is a cargo version of the HH–53C rescue helicopter for use by our Special Operations Forces in the conduct of vertical lift missions. It combines high speed with a payload more than three times that attainable by the currently assigned CH–3. The larger and more capable CH–53 will be used with the smaller CH–3 and UH–1 helicopters to provide a wider degree of mission capabilities.

Through fiscal year 1969 we procured a total of 12 CH–53 helicopters. In fiscal year 1970, we are requesting $18.4 million to procure CH–53C helicopters.

MODIFICATIONS

The modification program provides funds to improve operational capabilities and to create new capabilities in our present aircraft systems. These funds also permit us to make changes related to "safety of flight," to improve maintainability and to extend aircraft service life.

Modifications initiated or accomplished during fiscal year 1969, will improve the overall operational effectiveness of our inventory aircraft. Examples include: the stability augmentation modification on the B–52G's and H's to extend their service life; and improved survivability features on our F–4 fleet for Southeast Asia. In addi-

tion, C–130's, B–57's, C–119's and various other aircraft were modified to perform new and additional missions. In this latter category, the new C–130 and C–119 gunship aircraft have proved to be very effective.

In fiscal year 1970 we are planning several major modification programs. This includes starting work on modifying B–52's to carry the short range attack missile (SRAM); continuation of the F–111 force modernization program; F–4 reconnaissance and electronic countermeasure improvements; and continuation of the adverse weather aerial delivery system (AWADS) on the C–130 aircraft. In fiscal year 1970 we are requesting $550.2 million to continue to update and improve our inventory aircraft.

AIRCRAFT SPARE AND REPAIR PARTS

This program includes initial and replenishment recoverable spare parts and repair parts (including spare engines) to support the planned activities of our aircraft inventory. It includes parts support for aerospace ground equipment, aircraft modification and programmed aircraft procurement through fiscal year 1970.

The fiscal year 1969 program was characterized by efforts to get greater effectiveness out of the available funds. These efforts included compressing pipeline levels to reduce inventories, reduction of procurement lead times to conserve funds, and deferring the replenishment of depot stocks whenever possible. At the same time, we have been able to support more complex weapon systems and increased numbers of flying hours with a relatively constant inventory level of spare parts. I should point out, however, that these inventory levels do place some limitations on our capability to respond to surge demands for spare parts.

In fiscal year 1970 we are requesting $935.6 million for this program. Of this amount, $450.6 million is for initial aircraft spare parts, including $91.3 million for spare parts to support aircraft modifications and aerospace ground equipment. The other $485 million is for replenishment spare parts to support the operational inventory.

COMMON AEROSPACE GROUND EQUIPMENT

This program provides common aerospace ground equipment for new aircraft, aircraft being modified, and as replacement equipment for inventory items. Common aerospace ground equipment includes that used on the flight line for armament and electronics repair work, and for field maintenance on more than one type of aircraft. Updating and modernization of this equipment has been deferred except where absolutely necessary or to support Southeast Asia activities.

Our fiscal year 1969 program of $91.7 million is providing support for new aircraft, Southeast Asia needs, and limited replacement of equipment which cannot be economically repaired. The fiscal year 1970 program contains $84.5 million to provide the same type of common ground equipment support.

COMPONENT IMPROVEMENT

The component improvement program provides funds to improve Government Furnished Aeronautical Equipment (GFAE)—primar-

ily aircraft engines. The objective of this program is to correct problems which develop after qualification, and to improve the engine's durability, maintainability and reliability thereby extending its service life. As an example, we have found that the time between overhauls (TBO) on the J–79 engine for the F–4 Navy and Air Force aircraft could be increased from 600 to 1,200 hours. In terms of labor cost only, this can result in a savings of $100 million during the service life of these engines. The savings in spare parts and other related items will add additional savings. For fiscal year 1970, we are requesting $42 million to continue the component improvement program.

INDUSTRIAL FACILITIES

The industrial facilities program provides for the rehabilitation of Air Force industrial real property and equipment, the costs of shipping industrial equipment to the Defense Industrial Plant Equipment Center or to other users, and the replacement of obsolete Government-owned machine tools. This program also provides for the Air Force industrial readiness and mobilization planning program, which has the basic objective of maintaining a modern industrial base which can assure the delivery of systems and equipment in peacetime as well as being able to respond to wartime needs. The manufacturing methods program, previously funded under the Component Improvement Program, is now funded here.

In fiscal year 1970, we are requesting a total of $38.5 million for the industrial facilities program. This includes $17 millon for the rehabilitation of plant facilities, $10 million for replacement of obsolete machine tools, and $11.5 million for mobilization planning and the manufacturing methods program.

WAR CONSUMABLES

This program provides for the procurement of necessary war readiness materiel (WRM) levels in aircraft auxiliary fuel tanks, pylons, ejector racks, and gun pods, any of which can be jettisoned under combat or emergency conditions. The 1970 program will support our activities in Southeast Asia, and the war reserve, at approximately the same level as in fiscal year 1969 and prior years. New procurement is primarily related to weapons and weapon delivery systems for new aircraft such as the F–4E, F–111, and A–7. The program also provides for maintaining a production base for these equipments which could be expanded wherever circumstances warrant.

In fiscal year 1970 we are requesting $27.8 million for this program.

OTHER CHARGES

The other charges program provides primarily for electronic countermeasure (ECM) pods, classified projects and quick reaction capability (QRC) projects. This latter category has enabled us to respond to urgent or unforeseen operational requirements that have resulted from improvements in techniques or capabilities of enemy aircraft and equipment.

The ECM pylon mounted pods developed for tactical aircraft, special antennas and improved avionics for B–66 and B–52 operations are

examples of projects for which QRC funds are being used in fiscal year 1969.

In fiscal year 1970 we are requesting $472.7 million for other charges. Included in this amount is $11.8 million for quick reaction capability projects and $50.1 million for ECM pods.

REIMBURSABLE PROGRAM

The reimbursable program of $390 million is for aircraft, modifications, and associated equipment which the Air Force will procure on a reimbursable basis to satisfy customer orders.

SUMMARY

In summary, the aircraft procurement program request for fiscal year 1970 totals $4.7276 billion for aircraft and aircraft support. It is planned to finance this total program from the request for new obligational authority amounting to $3.7752 billion, $325 million to be obtained by transfer from the Air Force and Defense stock funds, estimated reimbursement from sales to customers amounting to $440 million, and recoupment from prior years of $187.4 million.

REPROGRAMING REQUEST

Mr. ANDREWS. Before questioning you on the General's statement, we would like to hear from General Pitts with reference to three pending reprograming requests. I wish you would explain the requests.

General PITTS. This first reprograming, serial No. 69–8, for the most part, is a procedural reprograming to provide for the adjustments to the 1969 column of the fiscal year 1970 budget by the Johnson administration and following this is a reprograming action appropriation serial No. 69–9, which is required to adjust the 1969 column of the 1970 budget to incorporate the Nixon administration changes.

I will take up serial No. 69–8 first.

F/FB–111 PROGRAM CHANGES

To begin with, there is a series of four items here that have to do with readjustments to the F/FB–111 programs. For ease of following, I have some fact sheets or talking papers for each member of the committee and the staff.

(The document follows:)

REPROGRAMING ACTION FISCAL YEAR 1968–69

F/FB–111

1. No additional funds in the fiscal year 1969 program for F/FB–111 programs.
2. Only a remix within the same total.

RECAP FB-111A AND F-111E/D

[In millions of dollars]

	Congressional approval	Current
FB-111A	$534.0	$583.7
Advance procurement		3.5
F-111E/D	681.0	593.0
Advance procurement	3.5	38.3
Total	1,218.5	1,218.5

3. Amounts shown as congressionally approved were developed under an extremely short deadline without SPO or contractor assistance.
   (a) Developed from production schedule, price, and configuration base line changed substantially because of canceled Navy/UK programs. (All programs under a single contract.)
4. Difficult to allocate costs among systems having large decree of commonality.

General PITTS. Basically this shows that on these items no additional funds are being put into these programs. It is a remix within the same total of $1,218.5 million which is the congressionally approved amount. The remix derives from a reallocation of the cost between the FB and F–111 aircraft. It develops from a production schedule, pricing configuraton base line, which changes substantially because of canceled Navy and United Kingdom programs.

Mr. ANDREWS. Does that mean your F–111A is going up in price because of scratching the "B" program and the British program.

General PITTS. Yes, sir, but in this particular programing without changing the total amount of the combined program we are reallocating the costs between the F–111 and the FB–111 to more accurately show where the costs are being incurred.

That little table shows you that the totals remain the same. We just reprogramed $49,700,000 on to the FB–111, and added advance procurement money for $3,500,000. We took $88 million off the F–111 E/D program and increased the advance procurement by $34.8 million—it is a procedural reprograming to reallocate costs to more accurately describe where the costs are being incurred. These planes are built in the same factory under the same roof and it is just a reallocation of costs, sir.

Mr. EVANS. Is there any change in the buy?

General PITTS. No change in totals whatsoever.

INCREASE IN UNIT COST OF F–111 AIRCRAFT

Mr. ANDREWS. Let me ask my question again. In view of the fact that the Navy scratched theirs and the British cancelled their request, doesn't that increase the unit cost for your F–111's?

General PITTS. Yes, sir; it does, and that will show up in the next reprograming that we will discuss.

Mr. ANDREWS. Tell us a little something about the increased unit cost of the planes due to those two cancellations.

General PITTS. I might call on Colonel Buckingham at this point, sir. He is in the directorate of production and programing.

Colonel BUCKINGHAM. I don't have a detailed breakout between each of the categories but the combination of the United Kingdom cancellation, the Navy cancellation, and the rate changes that took place as a result of reducing Air Force programs down to what will now turn out to be a ——— per month rate with the 1970 buy, it will be over $1 million per unit.

Mr. LIPSCOMB. Mr. Chairman.

Mr. ANDREWS. Yes.

Mr. LIPSCOMB. What do you estimate the unit cost to be now?

Colonel BUCKINGHAM. Sir, the unit cost for the buy of 76 FB–111 aircraft is $11.6 million each.

Mr. LIPSCOMB. That includes the $1 million additional?

Colonel BUCKINGHAM. Yes, sir.

Mr. LIPSCOMB. That is the unit cost on your buy?

Colonel BUCKINGHAM. Yes, sir.

Mr. ANDREWS. What is that $11.6, Colonel? Is that the F–111A?

Colonel BUCKINGHAM. That is the FB–111A. It includes the flyaway and the peculiar support.

Mr. ANDREWS. How about the F–111E/D?

Colonel BUCKINGHAM. For a total planned program of 574 aircraft, through fiscal year 1973, 24 of which are F–111C's for Australia, the unit weapon systems cost is $8.88 million per copy.

Mr. ANDREWS. Is that including the increase?

Colonel BUCKINGHAM. Yes, sir.

Mr. ANDREWS. So the F–111E and D will be cheaper than the FB–111A?

Colonel BUCKINGHAM. The FB, of course, is a different airplane. It is larger and it is being produced in a smaller quantity.

Mr. ANDREWS. What was your original estimated cost as against this $11.6 for the FB–111A?

Colonel BUCKINGHAM. The original production contract on that, sir, was one contract for all types of aircraft, as you know. It would include the FB's, the A's, the E's, and the D's, which have since been shredded out. The unit weapon system original cost of the FB itself was $7.3 million. However, that was based on a quantity of 263 FB–111A aircraft and 1,165 other F–111 type aircraft.

Mr. ANDREWS. It was about $7.3 million per unit cost.

Mr. LIPSCOMB. What was the date of that estimate?

Colonel BUCKINGHAM. That was a year ago, sir.

Mr. LIPSCOMB. Mr. Chairman, didn't you request the originally estimated cost?

Mr. ANDREWS. That is what I asked for.

Colonel BUCKINGHAM. The original estimated cost included all types of aircraft and it would be like comparing apples with oranges.

Mr. ANDREWS. Colonel, you must have a breakdown somewhere.

Colonel BUCKINGHAM. Yes, sir. I don't have it with me. I will supply it for the record.

(The information follows:)

F–111 ORIGINAL ESTIMATED COST

The $11.6 million is the current estimate for the FB–111A unit gross weapon system cost which includes flyaway and peculiar support. The comparable figure for the 1965 originally approved estimate was $5.9 million. The 1965 estimate was based upon a total planned procurement of 263 FB–111A, 721 F–111A, and 244 F–111B aircraft for a total of 1,228. The current estimate is based upon a total planned procurement of 76 FB–111A, 550 F–111A, E, D, 24 F–111C, and 60 RF–111's, for a total of 710. The overall reduction in quantities causes the unit cost to be derived from a higher cost position on the learning curve. Further, the production span has been lengthened due to a reduced production rate causing an increased increment of fixed burden to be applied to the unit cost. Configuration changes since the beginning of the program have increased costs. These factors, coupled with the contractors' original underestimations of cost, have been the primary contributors to the cost change depicted by the direct comparison of today's program estimates with those of approximately 4 years ago.

Mr. ANDREWS. This plane has gone up in cost $4.3 million in a year's time. What is that attributed to?

Colonel BUCKINGHAM. Primarily the reduced quantity from 263 production down to 76 production aircraft and the impact of other F–111 quantity reductions.

Mr. ANDREWS. You are talking now about the "B?"

Colonel BUCKINGHAM. Yes, sir, the FB–111A. Reduced plant rates which went from a maximum planned quantity a little over a year ago of around, 35 per month down to what we are now heading toward, ——— per month total plant rate. That, in itself, accounts for over $1 million in the fixed overhead that each plane incurs.

Mr. ANDREWS. When did you revise your estimated number down from 263 to 76?

Colonel BUCKINGHAM. That was done in two steps as General Pitts, I believe, mentioned. That was done first of all in the review last fall of the fiscal year 1970 budget. It was reduced first from a 263 figure to 126. From 14 squadrons down to a total of six squadrons. It was subsequently reduced by the review undertaken by the Nixon administration from the 126 down to the current approved program of 76, or four squadrons of FB–111A's.

Mr. ANDREWS. Is that all you are thinking about or do you see more beyond the 76?

General JEFFREY. That will be all that will be bought.

Mr. ANDREWS. It will be the end of the line?

General JEFFREY. Yes.

General PITTS. The program has been terminated with the 1969 buy, sir. That is, the FB–111.

Mr. ANDREWS. Let's talk about the F–111E/D. Your unit cost today, you say, is $8.88 million.

Colonel BUCKINGHAM. Yes, sir, that includes all models of the fighter version.

Mr. ANDREWS. What was your original estimated cost per unit for that plane?

Colonel BUCKINGHAM. The first estimate in 1963, I believe—these were all A models. It was on the order of $4 million and I will have to provide the exact figure for the record.

(The information follows:)

ORIGINAL UNIT COST OF F–111E/D

The $8.88 million is the current estimate of the unit gross weapon system cost for the fighter version of the F–111. The comparable figure estimated in 1963 at the time of the first program change proposal after development go-ahead was $3 million. This number was based upon a total planned procurement of 1,370 F–111A and 995 other F–111 aircraft for a total of 2,365. The Air Force and DOD recognized the preliminary nature of the early estimate, and it was not until 1965 that production go-ahead was given based upon more reliable estimates. At that time, the unit gross weapon system cost was estimated to be $5.5 million and was based upon a total planned procurement of 721 F–111A, 263 FB–111 and 244 F–111B aircraft for a total of 1,228. The current estimate is based upon a total planned procurement of 550 F–111A/E/D, 76 F–111, 24 F–111C and 60 RF–111 for a total of 710. The overall reduction in quantities causes the unit cost to be derived from a higher cost position on the learning curve.

In addition, the production span has been lengthened because of a reduced production rate causing an increased increment of fixed burden to be applied to the unit cost. Of major significance are the many configuration changes since the beginning of the program including the addition of other series aircraft, the F–111E and D. Further, there was higher than anticipated inflation during the early and mid-1960's. These factors, plus technical difficulties and the contractor's

original underestimations of cost, have been primary contributors to the cost change depicted by the direct comparison of today's program estimates with those of over 6 years ago.

Mr. ANDREWS. That plane is up $4.88 million per unit.

Colonel BUCKINGHAM. A year ago the average unit cost was $6.5 million.

Mr. ANDREWS. I understood one of your witnesses to say that the increased unit cost due to scratching the Navy version and the Great Britain proposed buy added $10 million each to the planes.

General PITTS. That plus some other factors, sir, as Colonel Buckingham has brought out.

Mr. ANDREWS. So the true picture is that your F–111–E/D cost has more than doubled since your original estimate; $8.88 million now, up from $4 million for an increase in cost per unit of $4.88 million.

Colonel BUCKINGHAM. Approximately, sir. I will have to check the exact figure.

Mr. ANDREWS. I wish you would and correct the record.

Colonel BUCKINGHAM. Yes, sir.

Mr. ANDREWS. And the increased cost of the FB–111 is up from $7.3 million to $11.6 million in a year's time. They are the figures you gave me.

Colonel BUCKINGHAM. Yes, sir.

Mr. ANDREWS. Do you anticipate any additional increases in the cost of these planes?

Colonel BUCKINGHAM. Not at this time, sir.

General PITTS. I would qualify that by saying we don't anticipate any further increases due to fluctuations in the FB–111A program because that program has been terminated.

Mr. ANDREWS. That is the number you are going to buy?

General PITTS. Yes, sir.

Now, if you want to talk about the cost-of-living increases, the inflation in the economy, I don't think I can answer that at this point in time, sir.

Mr. ANDREWS. Does the contract have a cost escalation clause in it?

General PITTS. I will have to defer to Colonel Buckingham for that, sir.

Colonel BUCKINGHAM. The contract does not have provisions for escalation, sir.

Mr. ANDREWS. We can't say these figures that you gave us for the current cost then are too firm at this time?

Colonel BUCKINGHAM. They are the best estimates we have at this time and we have projected in the figures I have given you for a normal economic growth in the economy through the production-planned period of time. If the economy escalates above that, that would obviously raise the cost.

If it stays where we hope it will stay, it should just about even out.

Sir, if I may, I have the original planned quantities here on another sheet of paper I found that relates itself to the question we were just addressing. These figures I have are on flyaway.

The original plan in November 1965 when the FB was first shredded out provides for 721 F-type aircraft at an average flyaway of $5.1 million, which compares with the current average flyaway of 574 aircraft at $8 million. The difference between the $8 and the $8.9 mil-

lion is peculiar support. In the original estimate they had peculiar support of $321.9 million total. It is $440,000 per aircraft.

Mr. ANDREWS. When you talk about the 721 of the original estimate of the number to be purchased, you are talking about the F–111 E/D and the FB–111?

Colonel BUCKINGHAM. No, sir, only the F-type.

Mr. ANDREWS. When you give us this figure of 574 that you have planned in the program, does that include the 76 FB's?

Colonel BUCKINGHAM. It does not.

Mr. ANDREWS. You have revised your estimate of the FB's from 263 down to 76, which is a reduction of 187.

Colonel BUCKINGHAM. That is correct.

Mr. ANDREWS. Why such a drastic reduction?

Colonel BUCKINGHAM. A change in the authorized unit force equippage.

General MCNICKLE. Part of the reduction was for budgetary reasons, and approving the research and development of the AMSA or the B–1 was connected with the decision.

Mr. EVANS. Does this represent a decision on the part of the Air Force to phase out beyond six squadrons of the FB series and then go into AMSA?

General MCNICKLE. Yes, sir. Six down to four squadrons, actually.

Mr. EVANS. Fourteen down to six, wasn't it?

General PITTS. Fourteen originally, then down to six and now down to four, and the six-to-four adjustment was taking into consideration the go-ahead on the development and ultimately the production of the B–1 or the AMSA.

Mr. LIPSCOMB. Mr. Chairman, perhaps at the close of this colloquy we could request a draft of the F–111A through D, and the FB–111A, which would show the original estimates, the change in the program, and come up to where we are at this moment.

General PITTS. A historical trace of the program. We will provide that for the record.

Mr. ANDREWS. And put your reasoning in the statement that you furnish for the record. Why you reduced your original request.

(The information follows:)

FINANCIAL INFORMATION

The early F–111 program envisioned total production of 2,411 aircraft including 1,370 USAF tactical fighters, 300 USAF reconnaissance fighters, 705 Navy fighters, 18 Australian fighters and 18 R.D.T. & E. aircraft. Although the November 1963 cost estimate (PCP 63–159) contained cost for only the 1,370 USAF tactical fighters, the costs were premised on a total production of 2,411 aircraft, with a peak production rate of 51 aircraft per month, and deliveries ending in early calendar year 1974.

The current F–111 program contains a total of 728 aircraft, including 574 F–111A/E/C/D's, 76 FB–111's, 60 RF–111D's and 18 R.D.T. & E. aircraft. The total sustained prodution rate has been reduced to ——— aircraft per month. Although many configuration changes have occurred since 1963, a major portion of the increase in the unit cost of the F–111 aircraft is due to the changes in total quantity and production rate.

F-111A/E/D/C

The early USAF production program for the tactical aircraft consisted of 1,370 aircraft at a total cost of $4,643 million. This program was for one model and was to be delivered over a 6-year period with a sustained production rate of 30 aircraft per month. The current program consists of 574 aircraft at a total cost of $5,631 million for a total increase of $988 million. This program includes four separate models; F-111A, F-111E, F-111C (RAAF) and F-111D, and extends over an 8-year period at a sustained rate of ——— aircraft per month. The effect of this severe stretchout of the program in a period of unusually high economic escalation resulted in a major cost increase to the program. Figure 1 shows the cost changes that have occurred since 1963.

During the development program and the early phase of the production program numerous changes were made to the configuration for improved effectivenes, the result of enemy threats, the increased emphasis on conventional warfare and refinements of the original specifications. Many of the specification refinements were to correct design difficulties and were accomplished by the contractor and with his sharing of the cost, for example, the SWIP (super weight improvement program) and the air inlet engine matching problem and the wing-box modification.

The transition from the F-111A/E program to the F-111D program required an almost duplicate test program due to the major change in avionics and the development of the more powerful engines. New AGE development was also required for the improved avionics. The impact of these changes on program costs is detailed in figure 2 using the 1963 baseline as a point of departure.

FB-111A

Figure 3 summarizes the changes in FB-111 funding from 1965 to the current budget submission. The FB-111 production program was originally estimated in December 1965 at $1,697 million for 263 aircraft. This program has been reduced to $993 million for 76 aircraft for a net reduction of $704 million. The effect of the quantity reduction applied against the original estimate is $923 million plus $75 million in support costs, but this is offset by increases in other areas amounting to $295 million. (See fig. 4.) The principal reasons for these increases are the engine increases, due to the improved engine and price increases, the incorporation of Mark IIB avionics and the impact of the F-111K and Navy program cancellation which had a high commonality with the FB-111. In addition to these items, the FB-111 has been impacted by the schedule slip of the F-111A/D/E program and the high economic growth of the recent years. The effect of the changes required for the correction of the wing-box failure and air inlet-engine matching problem are also applicable to the FB-111.

The R.D.T. & E. program increase of $149 million from the original estimate of $85 million is due primarily to the SRAM incorporation, Mark II support requirements, and the development of the P-7 engine. These new developments required an expanded test program.

The changes made to the FB-111 program and the resulting cost impacts are detailed in figure 4.

F-111 A/E/D/C—SUMMARY OF CHANGES

[Dollar amounts in millions]

Production	November 1963	April 1969	Delta
Quantity	1,370	574	796
Air vehicle	$2,846	$3,748	$902
Engines	962	853	(109)
Flyaway	3,808	4,601	793
Age, training, data	274	497	223
Initial spares	561	533	(28)
Total production	4,643	5,631	988
Total R.D.T. & E.	863	1,569	706
Total program	5,506	7,200	1,694

F-111 A/E/D/C—MAJOR CHANGES, TOTAL PROGRAM

[Dollar amounts in millions]

	R.D.T. & E.	Production	Total
Quantity November 1963	18	1,370	1,388
Quantity April 1969	17	574	591
Delta quantity	[1] −1	−796	−797
November 1963 baseline	$863	$4,643	$5,506
Quantity reduction	(10)	(1,916)	(1,926)
F-111D MK II	297	540	837
Harvest reaper	9	21	30
Pen aids	28	217	245
Schedule change impact	[2]	256	256
Navy/U.K. quantity impact	0	125	125
GAEC price increase	[2]	262	262
MAC price increase	[2]	81	81
Titanium	0	113	113
Engine growth	31	450	481
Facilities expansion	[2]	60	60
GD/FW price increase	57	256	313
Systems test	37	[2]	37
Expanded flight test	66	[2]	66
AIM-7G (Sparrow)	19	[2]	19
Data	18	15	33
Mark II support F-111D	17	25	42
TAC deployment	23	45	68
Test base support	28	[2]	28
SWIP	28	[2]	28
Depot age	[2]	80	80
Flight to mission sim	[2]	38	38
Miscellaneous changes	58	349	407
Spares	[2]	(29)	(29)
April 1969	1,569	5,631	7,200
Delta program change	+706	+988	+1,694

[1] Transferred to FB-111A program.
[2] Not applicable.

FB-111A—SUMMARY OF CHANGES

[Dollar amounts in millions]

Production	December 1965	April 1969	Delta
Quantity	263	76	−187
Air vehicle	$1,123	$582	($541)
Engines	232	134	(98)
Flyaway	1,355	716	(639)
Age, training, data	209	167	(42)
Initial spares	133	110	(23)
Total production	1,697	993	(704)
Total R.D.T. & E	85	234	149
Total program	1,782	1,227	(555)

FB-111A—MAJOR CHANGES, TOTAL PROGRAM

[Dollar amounts in millions]

	R.D.T. & E.	Production	Total
Quantity, November 1965	1	263	264
Quantity, April 1969	1	76	77
Delta quantity	−0	−187	−187
November 1965 baseline	$85	$1,697	$1,782
Quantity reduction	0	(923)	(923)
Force structure change	(1)	(75)	(75)
Mark II	(1)	36	36
Pen aids	0	6	6
Schedule change impact	0	13	13
Navy-United Kingdom quantity impact	0	62	62
GAEC price increase	(1)	14	14
MAC price increase	(1)	4	4
Engine growth	28	74	102
Expanded flight test	15	(1)	15
Mark II support	24	23	47
Price increase and miscellaneous changes	48	85	133
SRAM interface	34	(1)	34
Spares	(1)	(23)	(23)
April 1969 baseline	234	993	1,227
Delta program change	+149	−704	−555

[1] Not applicable.

OVERHEAD COSTS

Mr. LIPSCOMB. As these program changes are made, what happens to the overhead costs that are included in the program? Are they adjusted?

Colonel BUCKINGHAM. Yes, sir, but there are certain fixed overhead costs, as you know, that don't change. The variable overhead is adjusted downward, as you adjust the program downward. The direct-indirect ratio I assume you referred to.

Mr. ANDREWS. Well, it is to be expected that the fewer planes you order, the more you will pay for each individual plane.

Colonel BUCKINGHAM. That is correct, sir. The defense contract auditors advised me that the fixed overhead at General Dynamics, Fort Worth, runs between $5 million and $6 million per month.

Mr. LIPSCOMB. What are the variable overhead charges?

Colonel BUCKINGHAM. Sir, I don't have that figure.

Mr. LIPSCOMB. Could you provide that information for the record.

General PITTS. Yes, sir; we can do that.

(The information follows:)

Based on rough estimates, the prime contractor's variable overhead projected for fiscal year 1970 and fiscal year 1971, when major differences between earlier and current production schedules become effective, reduces from an average of $120 to $105 million per year. The earlier estimate of $120 million was forecast approximately 2 years ago using substantially different economic factors than used in the current estimate; therefore, the actual difference based on today's projections of overhead costs would be much greater than indicated above.

Mr. ANDREWS. Proceed, General Pitts.

F–4E AIRCRAFT REPROGRAMING

General PITTS. That portion of the reprograming we talked about there, Mr. Chairman, took care of items 1, 2, 4, and 11. Those have to do with a readjustment of cost.

Turning to item No. 3, F–4E aircraft, no change in quantity of aircraft but a request to add $34,800,000 to this aircraft and the reason for this is the 1970 deletion. If you will recall General McNickle stated that we deleted a 1970 buy of 184 F–4E aircraft due to revised attrition rates. This deletion had the effect of extending deliveries an additional year and maintaining production continuity to the 1971 reorder time, increasing again the cost per copy of the aircraft for a total of $34.8 million, which we would like to put on this line.

Mr. ANDREWS. Are there any questions about this item?

What is next?

AIRCRAFT MODIFICATIONS REPROGRAMING

General PITTS. Turning to items, 5, 6, and 7, these are modifications of inservice aircraft.

The first item, No. 5, the B/RB/WB–66—I can lump the next two together, Nos. 5 and 6 are modifications to the aircraft, to increase their capability for operations in Southeast Asia.

For No. 5, in the B–66 program, the increase of $5.5 million will provide ECM (electronic countermeasure), improvements to ——— aircraft for a total program of ——— to meet Southeast Asia and other worldwide continguency options, ———.

The next item is the C/HC/RC–130 aircraft.

This increase of $11,400,000 provides again electronic countermeasure improvements to ——— aircraft, and a cost increase to the all-weather aerial delivery system, and a start on a program for fuel cell explosion suppressant. This is a program to put fuel cell explosion suppressant in the fuel tanks to prevent the plane from exploding when it takes a hit in the fuel tank.

Mr. ANDREWS. These costs have risen due to your experience in Southeast Asia?

General PITTS. Yes, sir, they have.

AC–119 AIRCRAFT REPROGRAMING

The next item of $8 million provides for the AC–119 gunship program. There is a cost increase in this modification program. I think you have had testimony in this committee on the gunship program. These are planes that have sensors, go out at night, and find moving targets such as trucks or large groups of men. They have tremendous firepower. They can deliver that firepower on these groups of men, or trucks, and provide a kill capability.

Mr. ANDREWS. Again that is due to requests from Vietnam?

General PITTS. Yes, sir; these aircraft are destined for operation in Southeast Asia and there is a cost increase. There are ——— of these AC–119 aircraft. ——— AC–119G's and ——— AC–119K's. The K is distinct from the G in that it has jet engine pods, two jet engine pods mounted on it. This gives it a shorter takeoff capability and a greater payload capability and it can carry more sensors.

Mr. LIPSCOMB. What is the total cost of the modification if this is an increase of $8 million?

General PITTS. I would like to turn to General Tanberg, who is our director for maintenance engineering, sir.

General TANBERG. The line item total for the entire program, including all the labor, spares, AGE, engineering and everything, is $137 million for the ——— aircraft. The AC–119G's have already deployed. ———.

Mr. LIPSCOMB. What was the unit cost of these gunships?

General TANBERG. The figure I gave you takes in this $8 million increase. This is not additive to the $137 million program that I quoted. The $8 million is part of that.

Mr. LIPSCOMB. What you are calling a modification was not in the original unit?

General TANBERG. That is right.

Mr. LIPSCOMB. What was the original unit cost?

General PITTS. Mr. Lipscomb, if I might, these are old aircraft, the flying boxcar, if you will remember. They were planes we had in the Reserve program and, as we put more modern planes in the Reserve program, these became available. We took these planes and adapted them for this program out in Southeast Asia. It is an aircraft that has been in the inventory for some time.

Mr. LIPSCOMB. You are missing my point. How much did the original aircraft cost? Then we'd like to see the modification and see where we are.

General PITTS. I don't have the original unit cost of those aircraft. I could supply that for the record. Perhaps Colonel Buckingham has it.

Colonel BUCKINGHAM. The average flyaway cost of the C–119 is $970,000 per aircraft. That includes flyaway and peculiar support.

Mr. LIPSCOMB. Per unit?

General MCNICKLE. They are 15 years old.

Mr. LIPSCOMB. The total modification program for ——— of these then was how much?

General PITTS. $137 million for the total program.

Continuing to item No. 8——

Mr. ANDREWS. Let me ask you a question on these old airplanes. Is this about the only use you could put them to? You had them in storage, didn't you?

General PITTS. Perhaps General Boylan could speak to that.

General BOYLAN. We are continuing to operate some C–119's in the Reserve forces at the present time, a limited quantity. They are to be phased out as the Reserves get C–130's.

The first gunship program, as you will recall, was the AC–47. Based on the success of that program, the Air Force had only the C–119 in any quantity to provide the platform for the sensors and the guns to convert to gunships.

We, have, I believe the number is ——— S–130's that are being especially modified, but there will be no more added to that program.

Mr. ANDREWS. Are you still flying any C–47 gunships?

General BOYLAN. Yes, sir.

Mr. ANDREWS. How are they holding up?

General BOYLAN. They are doing quite well, but the airplane, of course, is older than the C–119 and it has been plagued with wing spar problems.

Mr. ANDREWS. Do these C–119's make better gunships than the AC–47's?

General BOYLAN. Yes, sir. There is more capacity for sensors and guns.

As you will recall, the first unit deployed was in December and January. It was out of Columbus, Ohio, and it was an Air Force Reserve unit. The crew members, the unit personnel, will be withdrawn during June, based on the Air Force study that all of our Reserve and Guard personnel would return to inactive status by the first of July.

Mr. ANDREWS. How about your accident rate over there, General Boylan, in Southeast Asia, with these old planes, the C–47's and the C–119's?

General BOYLAN. The accident rate would not be significantly above or below the average of all other operating forces, Mr. Andrews. We have had no particular problem with 47's from an accident standpoint.

Mr. ANDREWS. Have you had any accidents due to the age of the plane?

General BOYLAN. I wouldn't be that categorical.

I can give you the aircraft, AC–47's, that we have lost, and whether or not they are in combat or other operational losses. I can't derive from these particular figures whether an accident resulted from a failure of an aircraft component.

Mr. ANDREWS. Old age is what we are talking about. That is what I had in mind when I asked the question.

General BOYLAN. We have lost ——— AC–47's in combat. We have lost an additional ——— to operational losses. I can't give you at the moment what caused those operational accidents. The total of ——— losses is since we have deployed the AC–47's.

Mr. ANDREWS. You may elaborate on that for the record.

(A classified statement was submitted.)

Mr. ANDREWS. Proceed, General Pitts.

ECM PODS

General PITTS. On item 8, Other Production Charges, $11,900,000 is requested to buy additional ECM pods to protect combat aircraft. We have equipped all our aircraft in Southeast Asia and this is to provide ECM toward equipping the rest of the tactical fighter force in Europe, in the Continental United States and in Korea.

Mr. ANDREWS. How many pods will you get for the $11.9 million?

General PITTS. Sir, I don't have that figure with me. Could I supply that for the record?

Mr. ANDREWS. Yes.

(The information follows:)

NUMBER OF ECM PODS TO BE PROCURED

Sir, the $11.9 million the Air Force requested for reprograming will buy ——— QRC 335–4 ECM pods, including three sets of aerospace ground equipment and spare parts for 1 year. The Air Force has added $3 million to this from the same program line and has directed the procurement of a total of ——— QRC 335–4 ECM pods and necessary support.

The Air Force has a requirement for approximately ——— additional ECM pods to completely equip our worldwide tactical fighter forces at a total cost of $355 million. This is being programed over a 5-year period, beginning with the fiscal year 1970 budget.

F-111E MODIFICATIONS

General PITTS. The ninth item of the increases is an item of $37,800,000 for the F-111E aircraft. This is a fiscal year 1968 item and provides for the installation of a continuous-solution ballistic computer in the F-111E aircraft. The reprograming is erroneously marked D. This is for the F-111E aircraft. This will assure that the E aircraft have a capability similar to that of the D aircraft that are in the follow-on buy. The D will be equipped with MK-II avionics which has the ballistic computer as part of the avionics. This increases the bombing capability of this aircraft, sir.

Mr. ANDREWS. It increases the bombing capability?

General PITTS. Yes, sir.

Mr. ANDREWS. In other words, you are just updating the E's to the D's?

General PITTS. To improve their bombing accuracy, to put them in the same configuration as the follow-on buy of F-111D's which will have this capability as a part of the MK-II avionics.

General JEFFREY. In the early airplanes, this computation is done manually. This is an automatic updating of the direction, speed, and altitude in the airplane to improve the bombing. That capability is incorporated in the F-111D airplane.

Mr. ANDREWS. Have you completed the R. & D. on this system, General Jeffrey?

General JEFFREY. Yes, sir.

Mr. ANDREWS. And they are being installed on the D's?

General JEFFREY. In connection with the D airplane, this will be a part of the MK-II avionics system which is incorporated in that airplane. The D airplane will have this capability when it first comes off the production line.

Mr. ANDREWS. Is it correct to say you are trying to put something on the E that you didn't know about at a time the E's came through the line?

General JEFFREY. No; we did not know about this at the time the F-111A's came through the line. It will go into the A's in retrofit as they become E's.

Mr. ANDREWS. What is next?

PROGRAM REDUCTIONS

General PITTS. Program reductions to finance those increases, item 10, the first one, is a decrease of $35,900,000 on the F-4E advance buy and this is directly attributable to the deletion of the 1970 buy program.

Item 11, the F-111D, is a decrease of $88 million. This is part of the reallocation of costs between the F and FB-111 aircraft we discussed earlier.

Mr. ANDREWS. Is this where you are cutting down on the quantity?

General PITTS. No, sir; that doesn't play in this line. That is, the reprograming you have before you. It just reallocates the cost to more nearly describe where the costs are being incurred in the production of these aircraft. So it is a readjustment within the total for the combined F/FB programs. There is no increase in total at all. It is just reallocating costs and this is a decrease on the F-111D line to offset a corresponding increase on the FB-111 line.

Item 12, RF–4C, is a reduction of $6,500,000 attributable to the decrease of procurement on this aircraft from 36 to 12 due to revised attrition rates.

Item 13, the T–37B/aircraft decrease of $2,400,000 is attributable to a decrease in the buy from 17 to six, a reduction of 11 aircraft.

The reason for the reduction of this buy is that when we got into the operation of the T–37, we found out that the capacity to operate this aircraft was greater than we had anticipated. I will just use a couple of examples. For instance, this aircraft is a simple trainer aircraft that doesn't require depot maintenance. It only requires base-level maintenance. Spare parts were not used as rapidly. We found through experience that the aircraft has a better turnaround time increasing the number of sorties available per aircraft. This, in turn, reduced our requirement and we found we didn't need these 11 aircraft.

Mr. ANDREWS. When did you decide to reduce the quantity of this aircraft?

General PITTS. Last summer, sir. This is part of the 1969 project, 693 actions under the Revenue and Expenditure Control Act.

The T–38 reduction of 38 aircraft, and $26,900,000 is again part of the Revenue and Expenditure Control Act reductions taken for budgetary reasons.

We are requesting funds in 1970 to procure those 38 aircraft for advance attrition.

At the time, because of budgetary reasons, it was determined we didn't need the advance attrition for this time period so we cut the buy out in 1969 and are going to buy in 1970 for that advance attrition.

Mr. ANDREWS. The way you are cutting the quantity of these planes causes me to think at first blush that you asked for too many originally.

General PITTS. No, sir. Understand that I said these were for advance attrition, and it is a question of what point in time you have to have these aircraft. We preferred to buy the aircraft on a continuing production in order to get a better buy, but in a tight budget year and because of the Revenue and Expenditures Control Act, these 38 aircraft were deleted from our fiscal year 1969 program and are being put back in fiscal year 1970.

Mr. ANDREWS. All right.

General PITTS. Items 15 through 22 are a series of decreases in modifications of in-service aircraft. They cover the types of aircraft shown.

The modification requirements for these aircraft have been adjusted as a consequence of a change in priorities and scheduling.

Mr. ANDREWS. What are you eliminating from the B–52 here, at an estimated cost of $5,100,000?

General PITTS. I will call on General Tanberg to answer that.

General TANBERG. This item on the B–52 pertains to the AIMS program, for the new FAA Air Traffic Control System. Some of the equipment was not ready on schedule. This frequently happens in our modification programs and we have to slip. Something doesn't get ready that we anticipated to be ready to complete the modification and in this particular case the AIMS program on that airplane slipped. We will have to pick it up later and we have it in the following year's program.

Mr. ANDREWS. You are giving it up this year and asking for it to be returned next year?

General TANBERG. Yes sir, and that is one of the things that happens frequently in our modification programs. Often we anticipate something will be developed or be ready for modification and it doesn't transpire so we have to slip it into the next year.

Mr. ANDREWS. Are these B-52's you are talking about in Southeast Asia?

General TANBERG. No, we don't require this over in Southeast Asia. However, all of our aircraft will have to have this modification by the end of calendar year 1972.

Mr. ANDREWS. General Pitts, have you given up anything in this schedule that you will not rerequest in 1970 or 1971?

General PITTS. Yes, sir. Those T-37's. We aren't going to rerequest them, sir.

Mr. ANDREWS. You are cutting out 11?

General PITTS. Yes, sir; 11 T-37's.

Mr. ANDREWS. But you will request the 38?

General PITTS. We have those in the 1970 budget request, yes, sir.

The explanation on decreases associated with the modifications pertains to items 24 and 25 also. These are modifications in the 1968 program that have been deleted for the same reason which General Tanberg spoke of.

Item 23. Resources available for reprograming in the amount of $3,200,000 are derived from the residual balance of the reduction to the RF-4C advance buy in reprograming action No. 69-4, previously approved by this committee.

The financing of that program freed up $3,200,000 available for reprograming.

Mr. ANDREWS. Proceed.

Mr. LIPSCOMB. General Pitts, just for clarification, on page 4, item 15, on the B-52 modification of in-service aircraft, it shows a revised program of $107.9 million.

General PITTS. Yes, sir.

Mr. LIPSCOMB. In exhibit P-1 dated April 4, which is the procurement program for aircraft, line item 41 shows B-52 modification of in-service aircraft for fiscal 1969 only $76.7 million. Has there been a further reduction in that modification program?

General PITTS. Yes sir, that is an adjustment by the Nixon administration.

Mr. LIPSCOMB. How much damage is being done to the modification of in-service aircraft, B-52? Is it being delayed, stretched out?

General PITTS. This additional decrease is associated with the modifications to the B-52 fleet for the carriage of SRAM.

As you will recall, we have not exercised the option for production on the SRAM, so we are deferring that modification on B-52 aircraft.

F-111D REPROGRAMING

Turning to reprograming action appropriation serial 69-9, DOD serial No. fiscal year 1969-94, prior approval: The F-111D item, item 1, for an increase of $11,500,000 is attributable to the termination of the FB-111 buy in 1970.

The result of this buy—Colonel Buckingham has gone into this—reduces the production rate of the aircraft from ——— down to ——— per month.

Mr. ANDREWS. What you are telling us is that you are just paying more per unit on these F–111's?

General PITTS. There are three factors at play. The production rate going from ——— to ———; a lower plant loading, and inflation.

Mr. LIPSCOMB. When do you get to the cost-effectiveness breaking point on the F–111? Have you passed it already?

General MCNICKLE. Yes, as we see it now the program will be worth the cost.

Mr. ANDREWS. You haven't gone up too much. One has doubled and the other has gone up $3 million.

General PITTS. Yes, sir.

Mr. MINSHALL. You have quite a cushion yet.

Mr. LIPSCOMB. I think those upward figures are minimum too.

Mr. ANDREWS. I hope it is as good a plane as you thought it was. How many of them have you lost?

General JEFFREY. We have lost 11, sir.

Mr. ANDREWS. How many do you have flying now?

General JEFFREY. We have flown 167. We have accepted 131 and we have flown 167 airplanes for a total of 20,000 hours as of this time.

Mr. MINSHALL. Where are these 131 birds now?

General JEFFREY. They are either at the contractor's plant or at Nellis Air Force Base in the Combat Crew Training Center.

F–111 WING CARRYTHROUGH BOX MODIFICATION

Mr. MINSHALL. I thought you said you accepted them. Is this with or without the modifications?

General JEFFREY. Are you referring to the modification related to the structural problem?

Mr. MINSHALL. The wing carrythrough box problem.

General JEFFREY. These airplanes have been accepted without that modification.

Mr. MINSHALL. Why?

General JEFFREY. The airplanes have a flight restriction of ——— g's, which permits us to conduct training operations satisfactorily and we, therefore, decided to accept the airplane and then put them back through a modification program to incorporate the fix of the wing carrythrough structure.

Mr. MINSHALL. How many g's will these take when you put the modification in the wing?

General JEFFREY. We expect them to go back to handbook limits.

Mr. MINSHALL. What is that?

General JEFFREY. We consider this to be—well, this will be in the neighborhood initially of about ——— g's.

Mr. MINSHALL. You expect them to go back to that?

General JEFFREY. Yes, sir.

Mr. MINSHALL. Are you certain that they will go back to that figure?

General JEFFREY. No, sir, I don't know for sure they will go back to that figure. We have an active test program with a full-scale center fuselage section with simulated wings on it where the wings are

being pushed up and down with jacks. We hope by the 20th of July to have run this test vehicle through 8,000 hours of testing to this maximum load condition.

Mr. MINSHALL. Is this a test vehicle that you are actually flying or a test vehicle on the ground?

General JEFFREY. A test vehicle on the ground where we are jacking the wings up and down to simulate flights under high load conditions up to ——— g's, which is the design load for the airplane. We hope to get it through 8,000 hours by the 20th of July. We do not intend to release even the modified airplane to unrestricted flight until after we have achieved at least 8,000 hours of maximum load testing on this particular rig.

Mr. MINSHALL. What is going to happen if at the end of 8,000 hours that your tests show there is still a weakness in the airplane, that the modification doesn't do all you thought it would do? What course are you going to follow then?

General JEFFREY. We are going to have to determine what that problem is, if it happens, and go back in there and fix it and rerun the tests.

Mr. MINSHALL. I am anticipating the worst and you are anticipating the best. I wish you well.

General JEFFREY. I am not anticipating the best and I realize there is a possibility that what you suggest might occur.

Mr. LIPSCOMB. This is why I don't understand, General, why you would go ahead and accept these birds when you have to put on all these modifications. After you fix this, I suppose something else will turn up.

General JEFFREY. Sir, we have weighed the alternatives and the principal alternative would be—let's say one or two of them—would be to stop production at the plant and lay off the people until we went through this lengthy testing process. The cost of the airplanes, if we did this—I couldn't even guess what they would go to if we followed this procedure.

Another alternative was to continue with production but just let the airplanes pile up on the ramp down there at the plant, and then put them back through a modification.

So the most economical alternative that appeared to be available to us was to go ahead and accept the airplanes, fly them, train the crews with the "g" limitations——

Mr. LIPSCOMB. Who made the decision to follow the course you are following now?

General JEFFREY. This decision was made by the Secretary of the Air Force.

Mr. LIPSCOMB. When?

General JEFFREY. If my memory serves me correctly, it was in October of last year. We did stop accepting the airplanes for a period of time when we were trying to determine what the problem was. After determining what the fix would be and how long it would take us to do it, we decided to go ahead and accept them.

Mr. MINSHALL. Place the exact date on which the Secretary made the decision in the record. Wasn't it feasible to make this decision before last October?

General JEFFREY. I don't think it was, sir. We hadn't much prior to that time, determined actually how serious the problem was.

(The information follows:)

DECISION TO ACCEPT F-111 BEFORE G TESTING WAS COMPLETED

The decision to resume acceptance of F-111A's, which were coming off the production line with unmodified wing boxes, was made at a meeting with the Secretary of the Air Force on October 11, 1968. These aircraft were to be accepted subject to their being modified at a later date. This was established as the best means by which training and continued wing equipage as well as minimum cost could be obtained.

Mr. MINSHALL. When did you first know of the problem?

General JEFFREY. We first knew of the problem in September of last year.

Mr. EVANS. The problem you are speaking about is the strength of the wings under "g" tests?

General JEFFREY. The strength of the carrythrough wing box structure as we call it, to which the wings are attached. The center section of the airplane.

Mr. EVANS. If I understand you correctly, you have some 130 F-111's which are now restricted to a ——— something-g.

General JEFFREY. ———. The airplanes are restricted to the ——— condition when the wings are in the forward-swept position and restricted to ——— when the wing—this is from the forward position back to 45 degrees—they are restricted to ——— g's and back beyond 45 degrees—between 45 and 72 degrees, they are restricted to ——— g's. This permits us to do most of the training that we need to do.

Mr. EVANS. In earlier aircraft having similar operation requirements, what kind of "g" restrictions have we had?

General JEFFREY. You are talking about aircraft, other than the F-111?

Mr. EVANS. Yes. Earlier.

General JEFFREY. Our normal procedure is to run a static test——

Mr. EVANS. Excuse me, General. I am not talking about the procedures; I am talking about the restrictions.

General JEFFREY. I was going to lead up to that. I will come right to the point.

We restrict airplanes normally to what we call an ——— percent load factor. If the airplane is ultimately designed for ——— g's, which is what we normally design a fighter to, when we first release the airplane, it is normally released at ——— percent of that figure. This is pretty much an arbitrary factor.

Mr. EVANS. Is this what previous fighters have been required to——

General JEFFREY. That is what previous fighters have been released to. After the testing continues, that goes along concurrently with the airplane production, at some point in time the airplane is released to 100 percent. This is standard procedure and this was being followed with the F-111.

Mr. EVANS. The ——— g factor was a factor required, a performance factor required of previous aircraft which the F-111 reflects?

General JEFFREY. That is right.

Mr. EVANS. You accepted 137 that are now restricted at a ——— g factor, if I understand you?

General JEFFREY. That is right; 131.

Mr. MINSHALL. How many of these came off the line after you first identified the problem last September?

General JEFFREY. I would request I be permitted to supply that for the record.

Mr. MINSHALL. Give us a ballpark figure.

General JEFFREY. I would say probably 50—and this is a guess. I will supply the exact figure for the record.

(The information follows:)

F-111'S ACCEPTED AFTER WING PROBLEM WAS IDENTIFIED

Fifty-seven F-111 aircraft have come off the production line since the wing carry-through problem was identified last year.

Mr. EVANS. I am still not clear as to why the decision wasn't made sooner to go ahead with this modification. You knew what the problem was. Why would you wait for nearly 6 months?

General JEFFREY. Let me try to explain it, sir.

First, we had to identify the problem and we had a hard time finding out——

Mr. EVANS. You knew that in September, didn't you?

General JEFFREY. No sir; we just knew it broke, but we couldn't figure why the thing broke. I could go into a lengthy discussion of this. The center section is made of a new type of steel called D-6A steel. It is tool steel. The whole thing weighs in the neighborhood of 2,300 pounds. It is a fuel tank also; it is welded together and takes six months to build. It is tempered to a point so it rings like a bell when you hit it. The thing is about 15 feet long, 3 feet thick and 6 feet wide. It has a lot of moving parts in it and the wings are attached to each end of this thing. The landing gear is attached to it, the engines are attached to it, the fuselage is attached to it. It is basically the center section of the airplane.

Mr. EVANS. Isn't a g test an initial test the Air Force requires of new model craft coming into production for buys the Air Force is making?

General JEFFREY. Yes; it is performed on one of the first full-scale aircraft that is representative of production.

Now, to get back to the problem, the first problem was to determine not where it broke, but why the thing broke. Once we determined that, it was then necessary to determine a fix for it and once the fix was determined, it had to be tested extensively to find out whether or not the fix had corrected the problem, you see. This adds up to a very time-consuming exercise because you just have to bend these things and it takes 25 days of bending on the ground of one of these things to get one lifetime of 4,000 hours——

Mr. MINSHALL. Why wasn't this done before you accepted the aircraft?

General JEFFREY. Before we accepted the airplane in the first place?

Mr. MINSHALL. Yes.

General JEFFREY. It has been the Air Force procedure to test and produce concurrently.

Mr. MINSHALL. How did you discover this weakness in this particular aircraft? How was this first discovered that you had this fault in the F-111?

General JEFFREY. The full-scale airplane, in a test rig at San Diego, was undergoing fatigue testing. We were bending the wings up to ——— g's and then letting them go, bending them up to ——— g's, just like you bend a tin can. The airplane as I recall had gone through some 1,700 cycles at ——— g's. On the first cycle at ——— g's, it broke. This gave us sufficient concern to immediately ground all the airplanes.

Mr. MINSHALL. This was last September?

General JEFFREY. Yes.

Mr. EVANS. How many had you bought at that time?

General JEFFREY. I believe we had probably accepted somewhere in the neighborhood of 60 aircraft.

Mr. EVANS. Before this test was performed?

How many had you accepted?

General JEFFREY. As I said, I am guessing, about 60.

Mr. EVANS. Had been accepted before this test had been performed?

General JEFFREY. While the test was being performed on the test article.

Mr. EVANS. This test takes what, 28 days?

General JEFFREY. The accelerated conditions today, it takes between 25 and 30 days to run one lifetime which we consider to be in the neighborhood of 4,000 hours. We were going to run this on up to four lifetimes, or 16,000 hours, so it would have been roughly 4 to 5 months if we didn't run into problems.

Mr. EVANS. This would be a nice test to present to these aircraft before they are accepted, wouldn't you say?

General JEFFREY. Yes, sir; and we are looking into this. It would be very desirable to do what you say.

Mr. EVANS. Do we know what the difficulty is and do we have a fix on it?

General JEFFREY. We know what the difficulty is and we have a fix on it. The airplanes are being modified on a limited basis, but we don't want to get too far ahead of the test program.

Mr. EVANS. What will it cost to modify the 100 and some odd aircraft that you have purchased? I assume they are all going to be modified?

General JEFFREY. They are all going to be modified. We estimate right now that the cost to modify the airplanes would be about $75,000 per airplane. I would have to multiply that by the airplanes that will have been accepted by the time that we complete this modification.

Mr. EVANS. That is total cost per unit?

General JEFFREY. That is right.

Mr. MINSHALL. Who is going to foot this bill?

General JEFFREY. This falls under the area of correction of deficiencies and it will be the responsibility of the contractor to pay this bill.

(NOTE.—The statement "and it will be the responsibility of the contractor to pay this bill," was subsequently deleted.)

Mr. EVANS. In other words, this was in the original specifications, that the craft should meet certain g tests, and the contractor will have to absorb this himself?

General JEFFREY. Yes, sir.

STAFF NOTE.—The response was changed to read "This will be covered in the sharing arrangement as the costs that are between target and ceiling. Over ceiling the contractor absorbs all of the costs.")

Mr. EVANS. When was this aircraft first flown in a combat environment?

General JEFFREY. I believe it was in the early summer of 1968. I understand the answer is March 25, 1968.

Mr. MINSHALL. Why was this sent out to Vietnam without knowing whether or not the wings would stay on?

General JEFFREY. Sir, this problem hadn't been encountered or wasn't encountered until September.

Mr. MINSHALL. You lost some aircraft in Vietnam. Can their loss be attributed to the same failure?

General JEFFREY. No, sir.

Mr. MINSHALL. Are you sure of this?

General JEFFREY. Two of the airplanes that were lost out there have never been found so I can't say I am absolutely certain of it, but I would say we have no reason to believe that the airplanes were lost due to structural failure.

Mr. MINSHALL. Why not, if somebody exceeded the g's that you are now restricted to. It is conceivable that you could have had a complete structural failure.

General JEFFREY. There would be no reason for the airplane, on the type of mission they were flying, to go anywhere near a high load limit. The missions they were flying would just be about within the load restrictions that we have subsequently placed on the airplane ———.

Mr. MINSHALL. They could have been just without the load limits too.

General JEFFREY. They could have been just without it. We attribute with a high degree of confidence, the loss of those airplanes to a flight control problem which was duplicated back here in the United States.

Mr. MINSHALL. General, a few moments ago you said you thought you had this fix in hand and you had to wait for test completion. Yet in your statement on page 14 you say "The structural failure encountered during ground testing was cause for some concern but that situation is now in hand."

General JEFFREY. By that we mean that we have determined what the problem was, what the cause of the problem is, and we have determined what the fix is. We have had some of the foremost authorities in the technical community in the United States thoroughly evaluate everything that we have done.

Mr. MINSHALL. Then you go on to say that the F–111 continues to rank among all modern air force tactical airplanes as one of the safest.

It couldn't be one of the safest, except when you fly it within "g" limitations. It is certainly not one of the safest if you can't fly it according to contract specifications.

General JEFFREY. We were referring to the accident record to date in comparison with all of the other comparable types of airplanes. It has an excellent safety record.

Mr. MINSHALL. Within limitations, as to "g's" and speed and load limitations.

General JEFFREY. Yes, sir; but on the other hand, I wouldn't be surprised but what some of the other airplanes, at that point in their lives, might not have had the same sort of restrictions for one reason or another.

Mr. MINSHALL. Looking backward, would you follow the same procedure of taking the planes off the production line without having sufficient testing to discover this fault? Would you do the same thing again?

General JEFFREY. We are investigating, as I pointed out a moment ago, the feasibility of trying to run these fatigue tests prior to the acceptance of any airplane.

Mr. MINSHALL. Then you are looking into the possibility of changing this practice?

General JEFFREY. We are looking into the possibility of changing this practice. We can't promise anything on it because it could delay the production of the aircraft extensively.

Mr. MINSHALL. What do you mean "extensively?"

General JEFFREY. Well, some of these tests often go on for years. One to 2 years.

We have found, so far, that it has been in our best interests to run the tests concurrently with production and then, as problems show up in the fatigue testing, to go back in and fix the airplane, to bring them up to date.

Mr. MINSHALL. That is what is basically wrong, though, General, with our whole package procurement practice today in not only aircraft procurement, specifically F–111, but other programs and weapon systems. You go into R. & D. and procurement practically at the same time and it hasn't worked out. It just ends up delaying the development of the particular weapon and costing a lot more money than it should.

General JEFFREY. We are concerned about that, sir.

Mr. MINSHALL. We are concerned on this committee.

General JEFFREY. I understand.

General MCNICKLE. Mr. Minshall, on the other hand, there is no test like getting it in the hands of the operator. This test was made in a test rig. Whether or not those tests in that rig are good simulations of actual flying conditions, there is some question.

Mr. MINSHALL. This I understand, but what you are doing here is sort of shooting craps with the taxpayers' money and hope that you don't get snake eyes.

General JEFFREY. Well, sir, our experience in this area, historically, has been very good. We have followed this procedure on every airplane we have ever built. We never have built an airplane and then put it through the lengthy fatigue testing cycle prior to going on ahead with production. Even when we build one or two prototypes, as we did back in the early fifties. These were never put through complete fatigue testing before going to production.

Mr. EVANS. I may not see all the complications and difficulties in it, but I am sure it amounts to something more than holding it down and wiggling the wings up and down with jacks for 28 days, but it sounds like that. It sounds like a rather simple test.

General JEFFREY. It is not, I assure you.

Mr. EVANS. It looks like it would just take 28 days or 30 days to do this.

It is difficult to understand why this wouldn't be standard operating procedure earlier.

General JEFFREY. Sir, I oversimplified the problem. First, we need a production airplane to test. To replace the airplane in the test rig that broke out in San Diego has taken us since last September, and we haven't gotten it back into a test configuration yet. I doubt that we will have it in before June. Something of this nature. So it has taken us 8 months to rerig the airplane. We expect it could take up to ——— to get this done.

The airplane has gages and instrumentation to the point where you can't even see it for the wires. It goes to literally hundreds of thousands of points throughout the structure and all of these go into recorders to indicate the stresses that all of these various elements of the airplane are being subjected to. And then the rig to actually subject the airplane to these tests is exceedingly complex. It is exceedingly expensive to do this.

Mr. EVANS. If you had 130 aircraft that have to be changed, at $75,000 per aircraft, it is going to cost about $9,750,000. Now, this is the contractor's baby. He contracted to deliver aircraft at certain specifications and he didn't meet it here and this is his hard pill to swallow, as I understand it. Is this correct under the contract?

General JEFFREY. Yes, sir. Note the phrase: "within the sharing arrangement," was added.

Mr. Minshall. Are these planes still coming off the line?

General JEFFREY. Yes, sir.

Mr. MINSHALL. How many a month or a week?

General JEFFREY. Eleven at this time.

Mr. MINSHALL. Over what period?

General JEFFREY. This month.

Mr. MINSHALL. Per month?

General JEFFREY. Per month.

Mr. MINSHALL. How many more are scheduled to come off?

General JEFFREY. We are building up to a rate of ——— per month in March 1970, and then it starts on down to ——— per month by January 1971.

Mr. MINSHALL. Are you going to incorporate the fix in production on the additional aircraft, should you get a satisfactory fix?

General JEFFREY. We are incorporating the fix in production. The first production fix comes off the line, I think, in July of this year.

Mr. MINSHALL. And the manufacturer is going to pick up the tab for this?

General JEFFREY. That is right. These were incorporated in the production line and there is a minimum cost to doing this while the airplanes are being built, you see.

(*Note*: Information subsequently furnished indicates that the manufacturer will share in the cost.)

Mr. MINSHALL. But you haven't started to do this yet?

General JEFFREY. Yes, this is being done. The first airplane is scheduled to come off the line in about July of this year. That airplane is being built now. As a matter of fact, it is well into final assembly. We are studying and have in the works at the present time a new wing carry through structure design in case future testing indicates that the one currently under test fails.

Mr. EVANS. Without objection, when we adjourn we will meet tomorrow at 2 o'clock with the Secretary of Defense.

APPROVED STATUS OF REPROGRAMINGS

Mr. LIPSCOMB. General Pitts, in these three reprograming actions which are before the committee, what committees have approved them already?

General PITTS. The House Armed Services Committee, sir.

Mr. LIPSCOMB. All three?

General PITTS. Yes, sir.

If I might, the next three items, item 3, 4, and 5, were taken up rather extensively in this committee as part of our 1969 supplemental request. The A–37B, the UH–1H/N, and the OX–1. I can take those up later.

Mr. LIPSCOMB. Mr. Rivers' committee has approved all three?

General PITTS. Yes, sir, he has.

Mr. LIPSCOMB. That is the only committee that has acted at this time?

General PITTS. He is the only one who has heard us on them entirely, yes, sir.

Mr. LIPSCOMB. In view of the dates on some of them, what actions have been accomplished to date? Have you taken any actions on these? Have you gone ahead with any of them?

General PITTS. Only the reductions, sir. Not on any of the increases at all.

Mr. LIPSCOMB. No action has been taken by the Air Force without the committee's approval?

General PITTS. No, sir. If I might just add, we have a couple of time-urgent problems. For example, in the A–37 line for one and getting on with the quiet aircraft, the OX–1.

Mr. EVANS. The committee is adjourned.

MONDAY, MAY 26, 1969.

QUIET AIRCRAFT PROGRAM

Mr. SIKES. The committee will come to order.

The committee, at its last session, considered certain reprogramings, and part of the discussion was completed. I believe we are now ready for the discussion of the A–37B, the UH–1H, the OX–1, is that correct?

General PITTS. Yes, sir, Mr. Chairman.

You will recall that these were discussed previously during the 1969 supplemental hearings when General Crow appeared.

Mr. SIKES. They were withdrawn.

General PITTS. Yes, sir, the supplemental request was withdrawn and we are now handling them as a reprograming action. At that time General Crow requested the committee, as a matter of procedure, to consider it a supplemental and reprograming hearing at the same time because we were going to free up funds in the FB–111 program to cover these requirements.

Mr. SIKES. We had a reasonably full explanation of the requirement at that time.

General PITTS. Yes, sir.

Mr. SIKES. Have there been any changes or is there anything that should be added at this time?

General PITTS. Yes, sir. In regard to the last item of the three, the OX–1, so-called quiet aircraft, if you recall, as part of those hearings the committee voiced some concern with the fact that the Air Force was in somewhat of a sole source situation and was not competing the aircraft. Subsequent to those hearings and prior to hearings before the House Armed Services Committee, we have gone out on a competitive basis for those aircraft. I can give you the results of what we have done in that regard if you would like at this time, sir.

Mr. SIKES. If you will.

General PITTS. We went out and asked for contractors interest to the following manufacturers; Piper, Fairchild Hiller, Helio, Ryan, Beach, Lockheed, Robertson, Cessna, North American Rockwell, Mooney, and Wren. Of those 11 we have had expressions of interest from seven. Mooney, which has subsequently been acquired by American Electronics Laboratories and World Flight, Inc., have also expressed interest. Those nine are Fairchild Hiller, Helio, Beach, Lockheed, Robertson, Cessna, Wren, Mooney/AEL, and World Flight, Inc.

That is the situation we are in right now. If we obtain reprograming approval, we will go out on requests for proposals (RFPs) to those nine and get bids and on a competitive basis select the contractor who will give up the best bid on a quiet aircraft.

Mr. SIKES. If the reprograming is approved, you will get bids?

General PITTS. Yes, sir.

Mr. SIKES. You have the other authority that you need?

General PITTS. Yes, sir, we do.

Mr. SIKES. Is there anything else?

General PITTS. Nothing over and above the financing for the reprograming of those. We did not get into the offsetting decreases.

Mr. SIKES. I would like to have that information.

General PITTS. The decreases come from items 7 and 8 as shown on the reprograming document and pertain directly to the cancellation of the FB–111 program in fiscal year 1970—cancellation of that program after the fiscal year 1969 buy. The cancellation of 28 aircraft freed up $190,400,000. The $3,500,000 associated with advanced procurement for the current year provides a total of $193,900,000 available to offset the increases in the reprograming action; $57 million of that total is not required to balance this reprograming action and will be available to reduce fiscal year 1970 NOA requests.

T–41 AIRCRAFT REPROGRAMING

Mr. SIKES. Does that complete your statement?

General PITTS. We have one other reprograming request, sir. Prior approval reprograming fiscal year 69–5 appropriation serial number. This is for the procurement of 14 T–41A/C aircraft for $200,000. This buy is broken up into two parts, seven aircraft to be procured for the U.S. Air Force are directly connected with the activation of our 10th Undergraduate Pilot Training Base at Columbus Air Force Base, Miss. The other seven are to be utilized at Keesler Air Force Base, Miss., in the program to train the Vietnamese Air Force pilots.

The offsetting reduction comes from the fiscal year 1968 program under other production charges; $200,000 in various line items in that program are not required in the 1968 program.

Loss of C–130 in Britain

Mr. Sikes. Are there questions on the reprograming? If not, thank you very much.

There has been recent publicity on the loss of a C–130, apparently as a result the actions of one individual who flew it off the airbase in Britain and presumably was lost at sea. I think this obviously raises a special concern about security measures which would permit a plane to be flown off a base in a foreign country by an unauthorized person. What can you tell us about it?

General McNickle. Mr. Chairman, an investigation has started on this.

As you are aware, the C–130 is a real workhorse and it is not unusual for maintenance to go on on those aircraft at night; in fact, most of the maintenance is done at night. Once they finish an inspection, or repair of some kind, depending on what it is, they may take the aircraft down to the end of the runway, or to a certain pad, and run it up, or taxi it, if it is landing gear work or something like that. It certainly is routine for this to be done. On another base where we have combat airplanes guards are a lot more in evidence. But I can rationalize how this mechanic could get this airplane started, particularly if he was familiar with the surroundings, and taxi it, with the people on the base thinking that he was well within the normal routine and the circumstances would not be unusual. This is the first time that I can recall in many, many years that this has happened. Where there is work going on at night, I can see how it could happen.

He took off and flew around England, and they have verified that one liferaft which they found in the channel, was from this airplane. The search is still going on today with a British destroyer and some U.S. Air Force airplanes.

Mr. Lipscomb. Isn't there more you can tell the committee as of today? What hour of the day was it?

General McNickle. Mechanics are doing this all the time. We don't have all the facts on this particular case at this time; but certainly we must continue to maintain our aircraft and this requires taxiing, and engine run-ups.

Mr. Lipscomb. You say it is conceivable. They work on planes all the time. A mechanic gets in a plane and taxis out to the end of the runway, revs it up and takes off. Scratch one C–130. And you say they do it all the time.

General McNickle. The maintenance is going on, and this often requires taxiing and engine run-ups.

Mr. Lipscomb. But it doesn't seem reasonable. Are we not alert enough at these bases, particularly overseas, to stop a man on temporary duty from doing something like this? It causes great concern as to the security arrangements. We just can't pass it off that easily in the record or anywhere else.

General, if you are not ready to talk on it, we should not let the record stand this way.

General McNickle. I am not prepared on the specifics of this incident. I was just giving an explanation of normal maintenance operations.

Mr. LIPSCOMB. We can't let the record stand like this.

General MCNICKLE. I would like to submit the specific facts for the record.

Mr. LIPSCOMB. Everything you have told us is exactly what has been in the press. People are going to be checking this record to find out what the facts are.

General MCNICKLE. I would like to submit the facts. It will be a few days before we can piece the record together, the conversation over the phone, over the radio, and so on.

(The information follows:)

FACTS SURROUNDING C-130 THEFT

On 23 May, at 0008 e.d.t., a USAF crew chief performed an unauthorized takeoff in a C-130 aircraft at Mildenhall RAF Station, United Kingdom. At approximately 0155 e.d.t., the aircraft crashed into the English Channel and was destroyed.

The crew chief, Sgt. Paul A. Meyer, was assigned to the 36th Tactical Airlift Squadron, Langley AFB, Va., on Tactical Air Command rotation in the United Kingdom since February 22, 1969, and due to return to CONUS June 15, 1969.

Prior to the incident, Meyer was apprehended by local authorities in a drunk and disorderly condition. He was released to the base security police and, subsequently, to his unit first sergeant who restricted him to quarters at approximately 2200 e.d.t.

Sergeant Meyer departed his quarters, obtained a unit maintenance vehicle without permission and proceeded to the area of his aircraft under the guise of performing maintenance. On arrival at the maintenance area, Meyer appeared sober, and since he was appropriately cleared, access was not refused. Using a false identity, he was able to have the aircraft provided with a full load and immediately started the aircraft engines.

At 2400 e.d.t., a maintenance vehicle dispatcher observed the C-130 aircraft with engines running and wheel chocks removed. As he drove in front of the aircraft, it rolled toward him, forcing him out of its way. Following the aircraft up the taxiway, he noted only a crew chief at the controls and alerted the security police by radio through the Combat Support Center.

Security patrols responded rapidly but were unable to prevent the aircraft's takeoff, since the aircraft proceeded from the parking area to the takeoff runway in 2 minutes or less and was airborne shortly thereafter.

The aircraft departed in a southerly direction. A short time after becoming airborne, Meyer established radio contact with TAC Headquarters via HF radio. A phone patch to his wife was provided. Military authorities were unable to draw the sergeant into a conversation. At 0144 e.d.t., he stated he had trouble with the automatic pilot and advised his wife to wait 5 minutes.

The aircraft was observed by radar immediately after takeoff and tracked from east of London to Seaford on the southern English coast, south to short of LeHavre on the French coast, northwest across the channel to Weymouth, England, and finally south to a point between Weymouth and the western tip of the Cherbourg Peninsula, where it faded from radar at 0155 e.d.t.

From 0158 e.d.t. through 0326, one C-130 aircraft and four fighter aircraft were launched for various contingencies; to assist in talking Sgt. Meyer through a landing, attempt intercept, or commence search operations.

At 0815 e.d.t., search and rescue responsibility was assumed by the 40 Air Rescue and Recovery Wing at Ramstein, Germany. The search encompassed the entire English Channel area with the center of the search located at the aircraft's last known position. Five USAF, one French and one German aircraft, one British helicopter,, and two British mine sweepers plus numerous other military and civilian surface craft participated.

At approximately 1600 e.d.t., on May 24, a 20-man life raft was recovered by a British helicopter. It was found 5 miles northeast of the C-130's last reported position and positively identified as having been aboard the C-130.

On May 25 and 27, respectively, an A-3 kit bag and a MD-1 survival kit belonging to the C-130 were located in the suspected crash area. Other items, including

a C–130 deicer heater and tires were recovered but not identified with the missing aircraft.

The search was suspended at 1700 e.d.t., May 27, 1969, as no indications developed that Sgt. Meyer survived the crash.

Mr. ANDREWS. Would the gentleman yield?

Mr. LIPSCOMB. Yes.

Mr. ANDREWS. General, how was he able, according to the newspaper report, to talk to his wife Virginia from a plane over England, or over the ocean?

General MCNICKLE. They have a high frequency single-side-band radio and can get a phone patch or connection.

Mr. ANDREWS. Would he have to go through the base to do that?

General PITTS. Yes, sir.

Mr. ANDREWS. That is what I was thinking.

General MCNICKLE. Yes, sir.

Mr. ANDREWS. It would appear that somebody at the base would have done something.

General MCNICKLE. Once he was airborne, there was not a thing you could do about it. But we would try to maintain radio contact any way we could.

Mr. LIPSCOMB. What did the tower do when they saw this U.S. Air Force plane without a flight plan?

General MCNICKLE. I don't know, but they would be unable to stop the aircraft.

Mr. LIPSCOMB. Wouldn't this raise a question?

General MCNICKLE. Yes, sir, and I am sure it did.

General JEFFREY. If I may, Mr. Lipscomb, I will try to expand on what General McNickle has said.

Over the years with most of the aircraft maintenance going on at night there is a great deal of engine run-up, taxing around the ramp, going between one parking place and another with airplanes that have been having their engines repaired, the brakes repaired, and that need a taxi test to see that they have been fixed. So generally there is a considerable commotion going on at all hours of the night, especially on a busy air base. Generally, it is necessary to call the tower whenever a mechanic, and there are certain mechanics who are authorized to taxi airplanes, to receive permission to move the airplane from one place to another.

Generally, this is for safety reasons, as well as control of movement on the ramp. He is trusted to do the job he is scheduled to do.

Generally, the movements on the ramp are known and scheduled ahead of time.

Mr. ANDREWS. Was he authorized to taxi that plane?

General JEFFREY. I would have to check in this particular case for the record to find out whether or not this man was. But normally this is the case. So it is not unreasonable to find a man in an airplane with the engines running somewhat in the vicinity of the end of the runway. We normally would not have a guard there with a jeep with machineguns on it or something of this nature. If the individual decided to taxi onto the runway and open the throttles, there is very little anybody can do about this. The airplane is guided with a nose wheel steering device and almost anybody that could ride a tricycle could keep the airplane heading down the runway. Once he got it up

in the air, he would be in big trouble and we would be in big trouble because the question arises, what can you do about it. We could send up a bunch of fighter planes and shoot him down.

Mr. SIKES. Could one man land it?

General JEFFREY. There would be no way for somebody who is not knowledgeable and did not know how to fly an airplane to get this down. If he got into any sort of instrument weather he would probably spin in almost immediately.

Mr. SIKES. Could the tower have given him enough information to bring that plane down had he been trying to bring it down or wanted to bring it down?

General JEFFREY. It would be my opinion that they could not have.

General MCNICKLE. General Tanberg has some more information.

General TANBERG. This is a preliminary report I saw Saturday. At the time the aircraft was being runup, the maintenance control individual in the jeep noticed the airplane at the parking stand and drove up. As he drove up he noticed that the chocks were not in front of the wheels. Whenever the aircraft are runup there are supposed to be chocks in front of the wheels. He pulled the vehicle in front of the aircraft and started to get out and at that time it moved out. He jumped back into the car and he said he had to drive 30 or 40 miles an hour to keep up as this boy was taxiing down to the end of the runway. He chased him, at the same time calling maintenance control, and asking whether this was an authorized flight because he didn't have anything on his schedule. They said no. They alerted the air police. The air police asked for permission to shoot the tires. In the time interval to get the authority to do this, he poured the coal to it and got off. He was authorized as a crew chief to taxi the aircraft.

Mr. SIKES. What command channels did they have to go through in order to get authority to shoot the tires? It would seem to me that there would be prior planning for this sort of thing. You can't write a letter and get an answer while the man is taxiing down the runway and taking off.

General TANBERG. Each one of these situations as they occur vary slightly. In this particular case the individual felt he had to get permission from his supervisor to do this. This is the part that is being investigated, Mr. Sikes, and as General McNickle indicated, a thorough and complete investigation will be made of this entire thing.

Mr. SIKES. These investigations do not bring back a lost aircraft that cost considerable money and apparently is in short supply. It appears to be another case where there is a timelag between the receipt of information and the finding of someone who is responsible and prepared to take immediate action.

The investigations which follow these events are of no particular value. They tell us something we knew, that the plane is gone and cannot be returned, and that is about all they tell us. I sincerely urge that this not be just another routine investigation. I would like to know, and this committee would like to know, where the planning gap was that did not permit an instantaneous response such as someone saying all right, I take authority, shoot those tires. Don't let that plane get off the runway. It is not an authorized flight.

Can the committee have information as to why that sort of action could not be taken?

General McNICKLE. Yes, sir; we will provide the committee with details as to what the investigation shows and the action taken.

(The information follow:)

AUTHORITY TO ACT REGARDING UNAUTHORIZED USE OF AIRCRAFT

The investigation has shown that Sgt. Meyer acted alone in committing this highly irrational act and was not intentionally assisted by any other individual. The residual effects of alcohol consumed prior to the incident plus the fact that Meyer was under considerable emotional strain because of constant pressure by his spouse to return home undoubtedly influenced his actions.

His success in performing the theft was made possible through a series of compounding personnel and supervisory errors and/or inadequacies.

Mildenhall Air Base policies did not provide for the proper disposition of personnel apprehended for being under the influence of alcohol. When released to his unit 1st sergeant and restricted to his barracks, Meyer was not placed under adequate surveillance, nor was his commander informed of the incident.

Adequate control procedures for validation of fuel requests did not exist, and the fuel truck operator who assisted in refueling Meyer's aircraft was not provided with directives and guidance that would allow detection of improper C-130 aircraft servicing procedures.

Unit procedures allowed the maintenance flight line supervisor to be absent, providing transportation for other maintenance personnel during what proved later to be a crucial period.

Communications between the control tower and central security control did not conform to Air Force standards, i.e., a required direct telephone line did not exist. Additionally, the unit maintenance control supervisor contacted the parent unit (Wing) maintenance control to report a possible unauthorized taxi instead of placing a call direct to central security control. The Wing maintenance control supervisor, in turn, contacted the security and law enforcement section through the base telephone operator rather than calling the central security control direct. Neither of these acts was in consonance with existing directives, nor did they indicate good judgment. Both wasted valuable time.

In spite of the unnecessary delays, security patrols responded to the situation rapidly and were in position to prevent the aircraft's departure. Personnel had the authority to use their weapons to stop a felony and had weapons trained and ready to fire. At this point, central security control made the decision to obtain corraboration from the control tower that the aircraft was performing an unauthorized taxi. The control communications plotter who queried the tower personnel understood the individual responding to say that the aircraft was authorized to take off, when in fact the tower had no information on the aircraft. The patrols were informed that the takeoff was authorized, and because of this message did not take final action to fire.

In addition to the Air Force wide directive to review and insure compliance with existing aircraft security procedures and to take action as necessary to tighten control, the Mildenhall units immediate corrective procedures included: Central control and accounting for keys permitting access to aircraft interiors; mooring aircraft at all times except when movement is required and authorized by competent authority, with the mooring being accomplished by chain tiedown with lock; improved procedures for detection, reporting, checking, and blocking any unauthorized movement of aircraft; additional security police checks on aircraft and parking areas; procedures for checking immediately on aircraft taxiing without control tower contact; procedures for the employment of air base emergency crews and fire fighting equipment to assist in blocking aircraft movement; revised refueling procedures and check lists; and, revised procedures for restraint and more strict control of personnel under the influence of alcohol or narcotics by the security police.

The investigative board has published for dissemination to all Air Force commands and adoption, as required, the following recommendations:

That greater emphasis be placed on the problems associated with the excessive use of alcohol in commander's call, counseling sessions and briefings. Procedures authorizing adequate guidance to law enforcement personnel and commanders concerning the release of personnel apprehended for being under the influence of alcohol must be established. Personnel released to their unit must be kept under surveillance and control during periods of restriction. Personnel having a

substantiated history of overindulgence in alcoholic beverages should receive medical interviews prior to clearance for sensitive positions. Briefings for married couples being separated by extended TDY or isolated tours should stress the importance of using mature judgment in relating domestic problems to each other during the separation. Extended TDY periods for airlift units should be limited to 90 days if operational requirements permit.

Parent unit maintenance control should be designated as the sole agency for requesting aircraft servicing and validate all requests for fuel to insure that only duly authorized requests are honored. All servicing personnel will receive specific training on refuel/defuel procedures for all aircraft assigned to their base.

Units must insure compliance with current directives by developing plans to prevent the unauthorized taxi and takeoff of aircraft and exercises these plans to insure proficiency and speed by all agencies concerned. Central security control should react to all reported unauthorized aircraft movement. Attempts to gain additional information must be secondary to stopping the aircraft.

Unit plans must comply with Air Force directives concerning aircraft security, communications between the central security control and control towers, with continued emphasis being placed on security education, personnel motivation, and reporting and alerting procedures.

Finally, the investigative board strongly recommended that commanders at all echelons continue an extensive review of applicable directives and procedures concerning internal security of their organizations. Areas that should receive particular attention are the adequacy of procedures against unauthorized acts from within their resources; the role of the control tower, because of its advantageous location in detecting unauthorized aircraft movement; the requirement for increased awareness on the part of all personnel associated with the flight line concerning any irregular acts or behavior; and, the use of locks and securing devices coupled with stringent key control and accountability. Procedures initiated should be practiced to facilitate fast reaction, completeness, and to insure that they do not compromise safety or hamper the primary mission.

COST OF C–130 AIRCRAFT

Mr. SIKES. What is the cost of a C–130 aircraft?

Colonel BUCKINGHAM. $2.2 million, as an estimate, but it depends on whether it was an A or B model.

Mr. SIKES. Our figures show $2.872.

Colonel BUCKINGHAM. Sir, that is the unit program cost of a C-130E in the fiscal year budget request.

Mr. LIPSCOMB. Sometimes after one of these events is publicized, a rash of such incidents occur. Has there been any instructions or orders put out worldwide which would change the operational procedures at least until you find and analyze the problem?

General MCNICKLE. I do not know.

Mr. LIPSCOMB. For example, perhaps for a while two men ought to work together. We cannot stand many of these things.

Mr. MINSHALL. How long was this man airborne after he took off and before he crashed?

General MCNICKLE. They don't really know. They lost contact on radar.

Mr. MINSHALL. How long did you have contact with him on radar?

General MCNICKLE. I do not have all the details.

Mr. MINSHALL. It seems to me that it is imperative that you take immediate stopgap measures to prevent another incident like this. These things often go in waves, whether it be hijacking to Cuba or hijacking a military aircraft. We better do something about it now.

General MCNICKLE. Yes, sir.

Mr. MINSHALL. I also wonder if it would be feasible to put some kind of lock on the elevator control so they could not take off. It could only be unlocked by the commander or somebody duly author-

ized. Would that be feasible? Could you put a lock on it so it could not become airborne but mechanics could still taxi it?

General McNICKLE. There is a lock on the airplane.

Mr. MINSHALL. I know, but in this case why couldn't there have been something on it so the plane could have been taxied but could not have been taken off?

General JEFFREY. It is feasible. It is certainly something that could be done. The problem that we run into in this area is trapping ourselves with some sort of a device for preventing one thing and then causing us to have accidents as a result of it.

Mr. MINSHALL. This is a part of your checkout on flying any aircraft. If it could save a $2.2 million aircraft and a life, it would be worthwhile.

General JEFFREY. Yes, sir. I imagine, however, a check-back through the records will probably show we have lost a greater number of aircraft and people as a result of neglecting to take control locks off than we have by people stealing airplanes.

Mr. MINSHALL. That is well enough, and I understand that problem. But you have mental lapses and human error in automobiles or boats or anything else. I am looking for something to prevent this kind of thing.

General JEFFREY. I understand.

Mr. MINSHALL. I am not an engineer, but it seems to me that you ought to look into the feasibility of putting something on aircraft to lock the controls so an unauthorized person could not be in a position to get airborne.

General JEFFREY. So he just could not get it off the ground?

Mr. MINSHALL. Yes; maybe it is not worthwhile but I wish you would look into it.

General JEFFREY. Yes, sir.

(The information follows:)

External and internal control locks as they are now used on USAF airplanes are installed for aircraft safety from wind gusts and their adaption to use as a security device could cause more problems than it would solve. Also there is no known device that would allow crew chiefs to runup engines and taxi airplanes that would prevent them or any unauthorized flight crews from taking off. Problems arise because some airplanes would need the control systems unlocked for engine runup.

The USAF feels the best solution to this problem is tighter security on the flight lines so the Vice Chief of Staff has sent a message to all commanders dated May 26, 1969, which brought to their attention the incident discussed and requested the commanders to do whatever was necessary to avoid such a thing from happening again.

Mr. SIKES. Are there further questions? If not, gentlemen, are we ready for questions on aircraft procurement.

FISCAL YEAR 1970 EXPENDITURES FOR AIRCRAFT PROCUREMENT

A tabulation, which was requested by the committee earlier, showing your estimated expenditures in fiscal 1970 will be placed in the record at this point.

(The information follows:)

The following table shows the estimated gross expenditures expected to occur during fiscal year 1970 against the fiscal year 1970 program by budget activity, and total gross expenditures expected to occur during fiscal year 1970

against prior program years 1960 through 1969. The estimated collections are shown as a deduction from the gross to derive the estimated net expenditures.

Fiscal year 1970 gross expenditures

(Dollars in millions)

Program year 1970:	
Combat aircraft	$152.9
Airlift aircraft	639.6
Trainer airlift	8.5
Other aircraft	11.2
Modification of inservice aircraft	61.0
Aircraft spares and repair parts	212.6
Aircraft support equipment and facilities	398.9
Reimbursable program	39.0
Total	1,523.7
Program year:	
1969	2,369.5
1968	874.8
1967	150.0
1966	100.0
1965 and prior	50.0
Total gross expenditures	5,068.0
Less estimated collections during fiscal year 1970	−415.0
Total net expenditures	4,653.0

Mr. SIKES. What is the total sum availale for expenditure in fiscal 1970 estimated to be?

General PITTS. $4,287,600,000, sir.

Mr. SIKES. That is the total sum available expenditure?

General PITTS. That is available for expenditures from the fiscal year 1970 program.

Mr. SIKES. What is the total amount available for expenditure?

General PITTS. For 1970 and prior years the total available would be $9,105,100,000, net of reimbursable transactions.

Mr. SIKES. There is an amount unexpended at the beginning of fiscal 1970.

General PITTS. Yes.

Mr. SIKES. In addition, you are asking for about $4.1 billion of new money.

General PITTS. That is right.

Mr. SIKES. When you add those two together, that gives you the total availability. What does that total?

General PITTS. $9,105,100,000.

Mr. SIKES. How does this amount compare with similar amounts of availability for expenditure in the last several fiscal years?

General PITTS. I will first give you net unexpended balances for previous years.

Mr. SIKES. Would you provide that information for the record?

General PITTS. Yes, sir.

Mr. SIKES. Then give the committee the net unexpended balances as of the end of the fiscal year for the past 5 years.

General PITTS. The net unexpended balances by fiscal year for the last 5 years—going back to 1965, there was $3,691.2 million, in 1966, $4,917.2 million—these are rounded off figures—in 1967, $5,391.0 mil-

lion—in 1968, $5,844.9 million, and for end fiscal year 1969 we estimate net unexpended balances of $5,004.9 million. For 1970, we are estimating $4,452.1 million in end-year unexpended balances. The last two are estimates.

Mr. SIKES. If your estimates for 1969 and 1970 are reasonably accurate, there is a trend toward reduction of unexpended balances in this account.

General PITTS. That is right, sir. Now the net amounts available for expenditures are: for 1969—$10,304.9 million; 1968—$10,923.5 million; 1967—$10,233.5 million; 1966—$8,991.0 million, and for fiscal year 1965—$6,806.0 million.

Mr. SIKES. I would like to have for the record, updated, the tabulation similar to those on page 353 of last year's hearings.

(The information follows:)

AIRCRAFT PROCUREMENT, AIR FORCE APPROPRIATION—MONTHLY STATUS REPORT AS OF MAR. 31, 1969 (ALL PROGRAM YEARS)

[In millions]

	Program	Availability	Procurement authorization	Budget authorization	Commitments	Obligations	Expenditures	Unexpended	Percent
1969	$5,656.9	$5,656.9	.....	$5,303.4	$4,233.0	$2,894.5	$1,326.2	$4,330.7	76.6
1968	5,629.9	5,629.9	.....	5,584.6	5,403.2	5,061.7	3,623.5	2,006.4	35.6
1967	5,854.1	5,854.1	.....	5,844.8	5,788.5	5,642.2	5,039.9	814.2	13.9
1966	5,781.2	5,781.2	.....	5,781.2	5,761.4	5,730.6	5,563.2	218.0	3.8
1965	4,125.8	4,125.8	.....	4,125.8	4,115.0	4,101.0	4,069.0	56.8	1.4
1964	3,813.2	3,813.2	.....	3,813.2	3,812.2	3,803.0	3,789.8	23.4	.6
1963	3,984.4	3,984.4	.....	3,984.4	3,980.7	3,974.9	3,965.7	18.7	.5
1962	3,844.5	3,844.5	.....	3,844.5	3,842.0	3,841.7	3,839.4	4.9	.1
1961	4,213.7	4,213.7	.....	4,213.7	4,213.5	4,213.5	4,211.5	2.2	.1
1960	3,984.7	3,984.7	.....	3,984.6	3,984.5	3,984.5	3,983.6	1.1	.....
Total	46,888.3	46,888.3	.....	46,480.1	45,133.9	43,247.8	39,412.1	7,476.2	15.9

EXPENDITURES (HISTORICAL EXPERIENCE FACTORS)

	1st year	2d year	3d year	4th year	5th year	6th year	Net expenditures during 1969
Program year:							
1961	24.0%	77.3%	94.5%	98.6%	99.5%	99.8%	$457.4 (J)
1962	26.5	77.9	95.6	98.7	99.4	99.7	443.2 (A)
1963	28.9	76.1	93.9	97.1	98.7	99.8	490.4 (S)
1964	30.7	71.7	92.5	97.2	99.5	.....	457.1 (O)
1965	32.1	74.2	93.8	97.6	.....	.....	450.9 (N)
1966	28.6	76.0	92.9	.....	.....	.....	425.3 (D)
1967	26.7	70.1	.....	.....	.....	.....	479.0 (J)
1968	27.9	.....	.....	.....	.....	.....	446.8 (F)
							441.1 (M)
Cumulative (percent)	28	75	94	98	99	99	.....
Annually (percent)	28	47	19	4	1	.....	.....
Total							4,091.2

UNEXPENDED BALANCES

Mr. SIKES. Members of the committee are familiar with Air Force management practices and understand the reason for the existence of large unexpended balances, but this is not generally understood by

those who are are not familiar with service procedures. This is a subject of very much interest to the Congress, and each time that this committee takes a bill to the floor, there are questions about the unexpended balances which the services have in the respective categories. The question which always accompanies these inquiries is, Why don't they use the money they now have instead of appropriating more. I want an explanation for the record in very clear terms that will show exactly what the situation is. In other words, I want an explanation of the existence of unexpended balances in large amounts, so that all can understand.

General PITTS. We can provide that, sir.

(The information follows:)

First of all, the aircraft procurement account is a "continuing" appropriation and unlike an "annual" appropriation its availability continues until expended.

Secondly, in this account it is Air Force, DOD, and congressional policy to provide full obligational authority for the items included in each program year, regardless of the number of fiscal years required to obligate or expend the funds. This policy is commonly referred to as "the full funding policy."

Thirdly, it is pertinent that Congress, historically, has controlled programs and the creation of obligations by appropriating "new obligational authority" as opposed to expenditure authority or controls.

A fiscal year program consists of procurement of complete weapon systems, other major end items, aircraft modification projects, spares, and other support requirements. Individual weapon systems and support programs obligate and expend at different rates depending on the nature of the procurement contracts, the authorized rate of progress payments, or in the support programs, the number of long-lead time items involved. Historically, the aircraft procurement programs, in total, obligate approximately 80 percent the first year, 18 percent the second, and the balance in the third and fourth years.

Expenditures occur and unexpended balances are reduced as bills are paid. With the exception of progress payments on production contracts, most of the items are not "paid for" until they are received by the Air Force. None of the weapon systems, very few major end items, and a relatively small percentage of even the spares items are received in the first year in the life of the program. Hence, by the end of the first year only a portion of the funds available have been paid out. As a general rule of thumb our experience has shown that some 28 percent of the value of the program will have been paid out in the first year. At the end of the following year many of the long-lead time items are still undelivered and only 75 percent of the original funds available have been paid out by the end of the second year in the life of a program. At the end of any fiscal year, with only 28 percent of the current year's funds and 75 percent of the prior year's funds paid out, a substantial unexpended balance is consequential.

Our request for new obligational authority is reduced each year by the amount we estimate will become available during the year from prior year programs because of reduced costs or deleted items. This reduction in the case of fiscal year 1970 budget request amounts to $187.4 million. This amount does derive from "unexpended" balances but most of the unexpended balance of record at the end of a given fiscal year is to pay bills related to valid obligations.

SUMMARY OF UNOBLIGATED BALANCES

Mr. SIKES. I would like to have an analysis of unobligated balances in the record at this point. Also, a summary of unobligated balances as of your last reporting date.

General PITTS. Yes, sir.

(The information follows:)

ANALYSIS OF UNOBLIGATED BALANCES

SUMMARY BY CATEGORY

Category	Unobligated June 30, 1968	
	Dollars (thousands)	Percent of total unobligated
(1)	(2)	(3)
1. Military interdepartmental purchase requests (MIPR's)	$296,500	15.8
2. Delays in completing contractual arrangements:		
(a) Specification difficulties	46,300	2.5
(b) Definitization of contracts	313,400	16.6
(c) Price redeterminations	35,400	1.9
3. Full funding policy:		
(a) Forward purchasing policy	53,900	2.9
(b) Initial provisioning	92,500	4.9
(c) Delayed /Revised program release	984,822	52.2
(d) Engineering changes	59,400	3.2
Total unobligated end fiscal year 1968	1,882,222	100.0
Estimated end year unobligated balances	[Thousands of dollars] Fiscal year 1969	Fiscal year 1970
Aircraft procurement, Air Force	$1,815,636	$1,578,136

EXPLANATION BY CATEGORY

Major procurement programs are budgeted on a fully funded basis and represent the best estimate of the Service requirements at the time of preparation for the procurement of weapon systems and their support equipment. Normally, each year continuous review of requirements discloses necessary changes to the originally planned procurements occasioned by changing world conditions, technological developments, or overall fiscal problems. Frequently, a planned procurement is reduced, canceled, or delayed pending decisions on the advisability of proceeding with the planned procurement or substituting a more desirable or necessary item. When this occurs, procurement direction is delayed, creating unobligated funds from that fiscal year which will be obligated in the subsequent year after reprograming approvals are secured from the Office, Secretary of Defense, or Congress, as the action requires.

A considerable portion of the unobligated balance is represented by funds for properly programed and needed items on which there has been a delay in the procurement process and the contracts have not reached the obligational stage by the end of the fiscal year. Some of these delays are normal within the established procurement policies and the various rules and regulations; others are occasioned by contract or production difficulties or engineering and specification changes.

The preceding chart of the unobligated funds as of June 30, 1968 reflects an unobligated balance only slightly higher than the 5-year average of $1,725 million in a year when a considerable number of major programs were established by reprograming action late in the fiscal year. The categories on the chart are illustrative of the reasons which will reflect unobligated balances at the end of each fiscal year. The Air Force cannot specifically identify in advance items of equipment or systems or supplies which will fail to meet scheduled dates of completion thereby making a category distribution of the estimated unobligated balances for fiscal year 1969 and fiscal year 1970 impractical. Explanations of the unobligated balances of funds reserved in the various categories to be obligated subsequent to June 30, 1968 to fulfill approved Air Force program requirements are as follows:

1. Military interdepartmental purchase requests—(MIPR) ($296,500,000)

These documents are used, in the case of the Air Force, to request one of the other military services (Army or Navy) to procure Air Force requirements in conjunction with their own. Funds to support these requests remain unobligated until notification is received from the other military service. Fre-

quently, contractual arrangements will have been completed and the obligation incurred but notification from the other service is not received in time for recording in Air Force records prior to closing the books at the end of a fiscal year.

2. Delays in completing contractual arrangements

(*a*) *Specification difficulties*—($46,300,000)—Unobligated funds in this category result when specifications for newly introduced items cannot be definitized in time to permit contract negotiations prior to the end of the fiscal year.

(*b*) *Definitization of contracts*—($313,400,000)—Many of the procurements of complex systems and large material orders are initiated under letter contracts. The letter contract generates a partial obligation of the total program value but the balance remains unobligated pending definitization and negotiation of the detailed contract terms. These actions can carry over the end of a fiscal year and result in unobligated funds in this category.

(*c*) *Price redeterminations*—($35,400,000)—Prices are redetermined at certain intervals throughout the life of many contracts. Final obligation for many contracts must await negotiations on sharing overruns or underruns based on agreed target-ceiling formulae. In most large contracts, the rewards and penalties of multiple incentives (cost, performance, and schedule) cannot be determined and obligated prior to the end of the fiscal year. Funds are reserved for these purposes when upward adjustments seem likely; however, obligation does not occur until a formal redetermination has been agreed upon and the contract amended. Unobligated funds at year end result.

3. Full funding policy

Stated briefly, this policy which is enunciated in DOD directive 7200.4 (May 21, 1957) provides that adequate appropriations and funds must be available in a given fiscal year for obligation, committed, or set aside in a reserve account in an aggregate amount sufficient to complete the procurement of a specified number of end items and advance procurement for approved programs. Unobligated balances at the end of a fiscal year are a consequence of this policy and accrue in the following categories:

(*a*) *Forward purchasing policy*—($53,900,000)—Procurement of short lead-time items or components is accomplished when necessary to meet requirements or to maintain continuity of production. This practice may result in placing the orders in a following fiscal year with resultant unobligated balances at year's end.

(*b*) *Initial provisioning*—($92,500,000)—This category covers the portion of end item contracts which contain supplies, materials, spare parts and components, AGE, training devices, technical data and the like on which contractor proposals for initial stockage objectives and squadron equipage requirements must be evaluated and agreement reached. These contractor proposals—and Air Force proposals—are acted on in increments during the early phases of production on the end item. Not all actions can be completed and obligations recorded prior to the end of the fiscal year which accounts for unobligated balances in this category.

(*c*) *Delayed/Revised program release*—($984,822,000)—Programs based on financing from supplemental appropriations, almost without exception, cannot be directed to the Air Force procuring agencies until late in the fiscal year with resulting unobligated balances in this category. Also, adjustments in quantities or specifications of aircraft or other equipment to meet changing situations or to exploit engineering improvements generally require prior approval of reprograming requests which can delay program release and direction until well into the fiscal year thus delaying the obligation of funds. The same prior approval of reprograming and late program direction occur when decisions are made to procure new items during the fiscal year. Also included in this category are approved and funded programs delayed/undirected as of June 30, pending final decisions on implementation.

(*d*) *Engineering changes*—($59,400,000)—Based on prior experience with systems of like nature and complexities, provision is made in procurement programs, as a percentage of the estimated cost of the item, to cover engineering improvements and design changes which will occur as a result of manufacturing experience or Air Force requirements. Engineering changes are not definitive requirements known in advance and they cannot be obligated until the change is authorized and directed. These changes occur throughout the life of the production contract and result in unobligated balances in this category.

Summary of unobligated balances (as of Mar. 31, 1969)

Program year:	Dollars in millions
1969	2,762.4
1968	568.2
1967	211.9
1966	50.6
1965	24.8
1964 and prior	22.9
Total	3,640.8

Mr. SIKES. The above analysis indicates that 52 percent of your unobligated balances in fiscal year 1968 were caused by delayed or revised program releases. This would indicate that the program estimates presented in the budget were not very firm. To what extent is this true of the fiscal year 1970 budget? What programs in the fiscal year 1970 budget for aircraft procurement are most likely to be changed?

General PITTS. That item that you are speaking about, "delayed or revised programs" for end fiscal 1968 was 52 percent of the total or $985 million. At end fiscal year 1967, 25 percent;—$505 million; end fiscal year 1966—a total of $599 million or 25 percent of the total amount unobligated at the end of that fiscal year. For 1965 some $119 million or about 10 percent of the total; end 1964, $412 million or 39 percent of the total, and at end of fiscal year 1963, $172 million or some 12 percent of the total.

This category of unobligated balances reflects amounts that are generated by reduced or canceled programs, undirected programs pending final approval for procurement and programs directed so late in the fiscal year that obligational action cannot be completed by June 30—the final reporting date we are addressing. You will notice there is no comparability from one year to the next and that is because some years remain relatively stable while other years have great fluctuation.

Mr. SIKES. When we go to the floor with a 52.2 percent, $985 million in delayed or revised program releases in the last year for which we have actual figures, we may be told that since the Air Force doesn't seem to know what they want, shouldn't we wait until after further reviews are made to approve this much money? What is the answer to that?

General PITTS. Again, sir, this derives from programs that have had radical fluctuations in them. One case in point is the F/FB–111 program—the first item in the category of program reductions and cancellations, which is for $209.9 million, was the cut made in the 1968 program during the hearings last year. The A–7 weapon system was reduced some $111 million in the fiscal year 1968 program and the amount applied to procurement of additional F–4E aircraft in the fiscal year 1969 program. These amounts were unobligated at reporting time so they show up in the $985 million total we are discussing. These resources did, in fact, reduce the amount of new obligational authority required for fiscal year 1969.

Turning to the second category, undirected programs, as the committee is well aware, there is some $55 million which was authorized and appropriated in fiscal year 1967 for the procurement of the F–12 Interceptor. The appropriation language restricts this amount to the

extent that it cannot be used for procurement of anything other than F–12 aircraft. That money is still undirected—unobligated—and forms a part of the total in the category we are discussing; $28 million for the SR–71 weapon system was undirected/unobligated on June 30, 1968, but $25 million of that was subsequently applied to fiscal year 1969; $13.3 million for the HH–53 weapon system was undirected awaiting completion of R. & D., some $78 million in the reimbursable program was undirected—unobligated. Finally, under the category of delayed directon, and these are procurement directives issued too late in the fiscal year to be obligated by the end of the fiscal year, there is some $452 million. This is broken down under a series of weapon systems, modifications and other support items. The largest single item is for modifications, some $215.1 million, where we received program approval too late in the year to have these funds obligated during the fiscal year. They are being obligated for the previously approved programs this year.

Mr. SIKES. You have not answered my comment about delay of appropriation until you know specifically what you want to do. That question is certainly going to come up in the House if this request is approved and goes to the floor without more explanation than we have now. What is the answer to that question?

General PITTS. For a more detailed explanation, I would like to turn to Mr. Coffelt of our Procurement Division.

Mr. COFFELT. The figure we are addressing is the unobligated balance at the end of the last fiscal year—June 30, 1968. We have a record for that year having completed the year. The end fiscal year 1969 and 1970 amounts are estimates at this point. What General Pitts has said is that many of the things that contribute to that balance are really beyond anyone's control. The $209.9 million which he mentioned is money which we had in the bank—it was unobligated and Congress cut back the F/FB–111 program and reduced the fiscal year 1969 new obligational authority by that amount. The $111 million on A–7's was in the bank—it was unobligated and these funds were used to procure additional F–4E's in fiscal year 1969. These large amounts show up as unobligated on the 30th of June 1968 and contribute to the total in the category we are discussing. Those amounts were used to reduce the amount of new money required for 1969 as you are suggesting Mr. Sikes.

We are doing essentially the same thing at the end of 1969. General Pitts mentioned a bit ago, we have $87.4 million available from 1969 which will be in an unobligated status at the end of the fiscal year 1969, and the 1970 NOA request was reduced by that amount. To take the $985 million out of context and say this is a large unobligated balance sort of leaves some analysis to be done.

Mr. SIKES. I am trying to get that analysis.

Mr. COFFELT. Let me try it again sir. The 1969 NOA request was, in fact, reduced by the portions of unobligated balance. I have discussed. It is unfortunate that the way we keep books we show up with an oversize unobligated balance at the end of the year in this category. We can explain $209.9 million and $111 million as having reduced the 1969 NOA requirement, and that is exactly what we are talking about. Also, $55 million is for the F–12. We cannot use it but it has to sit on the books "unobligated." Those items are really a large part of it. If

these three amounts are set aside, it brings the large number we are looking at here, $985 million, somewhat into line with what has been our experience of record over the past several years.

General PITTS. Mr. Coffelt can correct me, Mr. Chairman, but, in layman terms, the specific amounts which Mr. Coffelt has discussed plays against following year requests for NOA and the Congress takes note of it and reduces our new money to that extent. I think that is probably the simplest way I can explain it.

Mr. SIKES. Is the fiscal 1970 budget reduced by this amount?

Mr. COFFELT. No, sir. The 1969 NOA request was reduced by a large amount of this total as I explained. The rest of it is a normal proposition that would be unobligated at the end of the year.

Mr. SIKES. You estimate that $1,578 million will remain unobligated at the end of fiscal 1970. Will 52 percent of this amount be due to delays and revisions in the program releases?

Mr. COFFELT. No, sir.

Mr. SIKES. What indication do you have on that?

Mr. COFFELT. Based on experience over the past several years there would be perhaps 25 percent of the June 30, 1969 unobligated balance in this category. We will not have $300 plus million sitting in the 1969 program as we did at end of fiscal year 1968.

Mr. SIKES. At the point in time when you were presenting the 1969 budget, you did not think you would have those amounts unused in 1968.

Mr. COFFELT. That is correct.

(Discussion off the record.)

Mr. SIKES. Could unobligated and unexpended balances be reduced substantially if the appropriation in the regular bill was reduced and if new programs were funded through supplemental appropriation acts rather than through reprogramings?

Mr. COFFELT. I think delays in obligation caused by reprograming contribute to the balance we are discussing. But I think the administrative workload and delay associated with supplemental appropriations would far exceed that caused by current reprograming procedures.

RECOUPMENT OF FUNDS

Mr. SIKES. Are there further questions on obligations and expenditures? If not, let us turn to the recoupment of funds. How much money has been recouped from the balances of appropriations made in prior years and used to finance part of the fiscal 1969 program?

General PITTS. Some $388.5 million, sir.

Mr. SIKES. Is that the total recoupment anticipated for 1969?

General PITTS. The estimated total recoupment is $475.9 million of which $87.4 million will be used to apply against the 1970 program to reduce new obligational authority under the 1970 budget.

Mr. SIKES. To what extent are the fiscal year 1969 recoupments from unobligated funds and to what extent from funds obligated and later deobligated?

Mr. COFFELT. That would be extremely difficult to determine as to that kind of a split. I think the best way to answer your question is to describe, in part, how we manage and review our programs with the

operating agencies. At least quarterly we review obligations, unobligated balances, and new estimates of program costs and to the extent excesses are available, we withdraw and recoup funds. I think it would be good for the record to show in view of our prior conversation that the total amount we expect to recoup this year, $475.9 million, includes the $55 million for the F–12, the $209.9 million for the F/FB–111 reduction in 1968 and the $111 million on the A–7. All those amounts are brought forward into fiscal year 1969 for application.

Mr. SIKES. Thank you.

In fiscal year 1969, the unobligated balance at the beginning of the fiscal year was $1,882,222,000. You are planning the recoupment of $333,500,000. At the beginning of fiscal year 1970, the estimated unobligated balance is $1,815,636,000 and the estimated recoupment is $187,400,000. In fiscal 1969, the recoupment was 17.7 percent of the unobligated balance. In fiscal 1970, the recoupment is only 10.3 percent. Does this indicate that the estimated fiscal 1970 recoupment should be higher?

Mr. COFFELT. No, sir.

Mr. SIKES. Why not?

Mr. COFFELT. The abnormal percentage relationship goes back to the canceled or reduced programs in 1968.

Mr. SIKES. What was it in fiscal 1968?

Mr. COFFELT. The recoupment number, sir?

Mr. SIKES. Yes; the percentage.

Mr. COFFELT. I cannot answer that, sir.

Mr. SIKES. Provide it for the last 5 years.

(The information follows:)

Following is a table which shows the ratio of recoupments to unobligated balances as reflected in congressional budget requests for each of the last 5 fiscal years:

[Millions of dollars]

Fiscal year	Budget date	Unobligated balance	Estimated recoupments	Ratio (percent)
1969	January 1968	$1,847.9	[1]$475.9	25.7
1968	January 1967	2,734.2	100.0	3.7
1967	January 1966	1,880.7	100.0	5.3
1966	January 1965	925.7	200.0	21.6
1965	January 1964	1,331.0	200.0	15.0

[1] The fiscal year 1969 amount includes specific reprograming actions as well as a congressional reduction to the F/FB-111 fiscal year 1968 program. These items are abnormal and could not be considered in appraising the general recoupment capability in the aircraft procurement account. The following items make up the amount for fiscal year 1969:

	In millions of dollars
F/FB-111, congressional adjustment (fiscal year 1968)	$209.9
A-7/F-4, reprograming (fiscal year 1968 to fiscal year 1969)	111.0
F-12, unobligated fiscal year 1967 program brought forward as fiscal year 1969 item	55.0
Estimated recoupments from routine, prior year program adjustments	100.0
Total	475.9

MILITARY ASSISTANCE FUNDING

Mr. SIKES. Are there further questions on the recoupment of funds? If not, under military assistance funding, what items and sums in the request are for forces other than those of the United States?

General PITTS. $103.8 million for support of free world forces, and those countries are Vietnam, Laos, and Thailand.

Mr. SIKES. Break that down for the record.

General PITTS. Yes, sir; $83.5 million for Vietnam, $7.7 million for Laos, and $12.7 million for Thailand.

Mr. SIKES. Are there questions on military assistance funding?

Mr. DAVIS. What about South Korea, aren't they involved in this at all?

General PITTS. South Korea comes under the military assistance program. Support of these three countries in Southeast Asia are now included in the military assistance service funded program. Two or three years ago they were transferred out of the regular MAP program and into the service funded programs.

Mr. ANDREWS. Are you training any South Vietnamese pilots?

General MCNICKLE. Yes, sir.

Mr. ANDREWS. Where?

Colonel GROSSMILLER. We have undergraduate pilot training being conducted by the Army at Fort Wolters, Tex., and Fort Rucker, Ala. In fiscal 1970 there will be 1,486 people in helicopter training. At Williams Air Force Base, Ariz., we will have 16 in T–37 and T–38 training. At Keesler Air Force Base, Miss., we will have 190 training in T–41's and T–28's. Additionally in transition training, we are conducting training in the F–5's at Williams, 10 pilots, A–37's at Eglin Air Force Base, Fla., 23 pilots, and C–47's at Eglin, 35 pilots.

Mr. ANDREWS. Supply the rest for the record.

(The information follows:)

——+—— the plan is to provide undergraduate training for some 3,100 pilots in helicopters and fixed-wing aircraft. Additionally, over 1,200 crew members are programed to complete transition/combat crew training by that date. Concurrent with crew training, some 6,200 maintenance personnel and 2,300 support personnel of the South Vietnamese Air Force are programed to complete training ——.

Mr. ANDREWS. Have you started graduating pilots yet?

Colonel GROSSMILLER. Yes.

Mr. ANDREWS. How many?

Colonel GROSSMILLER. In 1969, 177 pilots. From 1964 through 1968, we graduated 305 in the UPT.

Mr. ANDREWS. What is UPT?

Colonel GROSSMILLER. Undergraduate pilot training. Many were also in transition and combat crew training. We have graduated 487 pilots from 1964 through 1968. By the end of 1969, some 155 additional pilots will graduate.

Mr. ANDREWS. Are those graduated pilots thoroughly competent to fly choppers?

Colonel GROSSMILLER. Yes, sir.

Mr. ANDREWS. As well as fixed-wing planes?

Colonel GROSSMILLER. Yes, sir. They go through the same training as the Air Force and Army pilots for each type aircraft.

Mr. ANDREWS. The same length of time.

Colonel GROSSMILLER. Yes, sir.

Mr. ANDREWS. What aircraft can they fly upon graduation?

Colonel GROSSMILLER. In the undergraduate pilot training we will have them trained in the T–37, T–38, T–41, and T–28. When they go through the combat crew training school which includes both pilots

and other crew members, they will be able to fly the F–5, A–37, C–47, T–28, A–1 and by fiscal year 1971, the C–123.

Mr. ANDREWS. Have you graduated any of that type of pilot?

Colonel GROSSMILLER. Yes, sir; we have. Up through the end of 1969 we will have trained 41 F–5 pilots; 127 A–37 pilots, 86 C–47 pilots, 212 T–28 pilots, 135 A–1 pilots, and 35 C–119 pilots.

Mr. ANDREWS. How do you evaluate their ability as pilots?

Colonel GROSSMILLER. We evaluate it very well. I was checking this morning on our A–37's. We have had no attrition this year and they presently have received some ——— aircraft.

Mr. ANDREWS. How long will it take to graduate enough pilots in South Vietnam for them to take over operation of their activities in South Vietnam?

Colonel GROSSMILLER. The training program runs through ——— so they will be able to support their own forces.

Mr. ANDREWS. At the end of ———?

Colonel GROSSMILLER. Yes, sir. They will then have ——— squadrons of aircraft.

Mr. ANDREWS. Thank you, Mr. Chairman.

(Discussion off the record.)

AIRCRAFT ATTRITIONS

Mr. SIKES. The cessation of bombing of North Vietnam should have had a significant effect on your aircraft losses in fiscal 1969. How do aircraft attritions projected for operations in fiscal 1969 when you appeared before the committee last year compare with actual experience to date?

(Discussion off the record.)

Colonel GROSSMILLER. There has been a reduction in our projected versus actual losses from May until October, 1968. We projected the loss of ——— fighter and attack-type aircraft. We lost some ———. These have been taken into account in the reduction in our new buy.

Mr. SIKES. That already has been made a part of your new procurement figures.

Colonel GROSSMILLER. Yes, sir.

Mr. SIKES. Is there later information which also has been taken into account or has there been adjustment for the entire fiscal year which takes into account that situation?

The figures you gave were from May until October. I am asking did you take into account the entire fiscal year in the reduction?

Colonel BUCKINGHAM. We adjusted the fiscal 1970 procurement when we reviewed it last fall with OSD and took into consideration the attrition forecast. For example, the fiscal 1970 budget has no F–4E aircraft in it whatsoever. Previously we had contemplated buying 184. So there is a specific example of a large number of aircraft that were reduced.

Mr. SIKES. How have other than SEA actual attritions compared with estimates projected for the fiscal year?

Provide that for the record.

(The information follows:)

"Other than SEA" aircraft attrition, which includes Active and Reserve Forces, was estimated to be 225 during fiscal year 1969. Actual attrition from July 1, 1968, through April 30, 1969, was 172. If this trend of losses continues the fiscal

year 1969 actual attrition is expected to be approximately 207, which is 18 below the projection. The following is a breakout by aircraft type:

Aircraft type	Fiscal year 1969 non-SEA attrition	
	Estimated (PA 70-1)	Actual (July 1968-Apr. 1969)
Fighter	———	———
Bomber	———	———
Reconnaissance	———	———
Airlift	———	———
Other	———	———

COMPETITION IN PROCUREMENT OF SPARE PARTS

Mr. SIKES. Last year, the committee report on the fiscal year 1969 DOD appropriation bill criticized the military departments on the lack of competition in the procurement of replenishment spare parts, particularly in the aeronautical spare parts area. What strides have you made in this respect during fiscal 1969 for improvement?

Provide a statement for the record.

(The information follows:)

During the first nine months of fiscal year 1969 the Air Force has screened over 30,000 items to determine the most appropriate manner to procure them; that is, competitively, direct from the manufacturer or from the prime systems contractor. This increased the total amount of items screened, since initiation of the program, to approximately 119,000 items. Some 31 percent of the items have been coded for competitive procurement and 36 percent for procurement directly from the manufacturer.

We have taken certain actions to improve the management of efforts directed to buying more competitively or from the actual manufacturer. In this respect spare parts breakout managers have been established at each of the air materiel areas to manage the total breakout effort. Accomplishment goals have also been established to motivate improvements. During fiscal year 1968 approximately 50 percent of the dollars spent for aeronautical spare parts were procured noncompetitively from the prime cnotroctors. During the first nine months of fiscal year 1969 this amount has been reduced to 45 percent.

Mr. SIKES. What percentage of your spares, by items and by dollars, are purchased competitively?

General RIEMONDY. We will supply that for the record.

Mr. SIKES. I am surprised you do not have that information at the present time.

General RIEMONDY. I think I have it, sir. It is a question of finding it in the right book.

In the area of competing of spares, we have embarked upon a program of when we initially provision the item, we require the contractor to go through every new item that enters the inventory and to code it, whether or not it ought to be competed or whether we ought to buy it from the manufacturer of the weapon that is being procured or from the original vendor of the item. We have now gone through about 119,000 of these items and have coded them for competitive, direct or sole source procurement.

In this particular regard, for example, in 1969, we estimate that about 25.8 percent of all of our spare parts buy—this is replenishment spares—will be procured competitively on a dollar basis. An

additional 33½ percent of those will be bought directly from the vendor rather than going through the prime manufacturer. In terms of numbers of items, thus far in 1969 we have procured some 98,000 different stock items of spares, and we have procured 30.9 percent of that quantity competitively, and an additional 41.2 percent directly from the vendor of the item.

Mr. SIKES. Will you provide for the record a statement showing how you determine when an item is to be procured competitively and when it is to be bought directly from the original supplier.

General RIEMONDY. Yes, sir; we can do that, sir.

(The information follows:)

COMPETITIVE VERSUS DIRECT PURCHASE FROM ORIGINAL SUPPLIER

The procedures used by the Air Force in determining the optimum method of procurement for spares and repair parts are set forth in Air Force Regulation 57-6 which is the joint services DSA-DOD high dollar spare parts breakout regulation. This regulation is further implemented within the Air Force by a joint AFLC-AFSC supplement which set forth the detailed operational procedure and organizational/functional assignments. The optimum methods of procurement are either competitively (advertised or negotiated) or where these methods are not feasible, directly from the actual manufacturer. In the absence of competition, procurement from the actual manufacturer is programed. This eliminates the middleman such as a prime weapon system or equipment manufacturer in situations where they are not the fabricators of the item being procured. The decision to purchase an item by the formal advertised method is based upon our ability to draft for a solicitation of bids, adequate specifications, or any other adequately detailed description of the required supplies. There are numerous reasons why competition in spares and repair parts procurement cannot be obtained.

Some of these are (i) lack of complete data or rights thereto, that would permit solicitation from sources other than the original manufacturers; (ii) the technical (criticality) aspects of the item are such that acquisition from other than already qualified sources would place the end item on which it is used in jeopardy from a safety/reliability standpoint; the design stability is also a cogent factor; and (iii) the costs associated with developing a procurement data package, installation, transportation of special tooling for master gages and test fixtures, qualification testing, etc., are such that it is uneconomical for the Government to seek additional sources. These reasons are explained in detail in the aforementioned regulations. A further refinement of the DOD high dollar spare parts program is the Air Force competition with confidence program. This is a program whereby industry aids the Air Force in procurement method coding. The prime contractor recommends how parts and components for their end items should be coded for reprocurement purposes. These coding recommendations by the contractors are closely scrutinized and each recommendation is validated by Government personnel prior to acceptance. The final decision is always made by the Government. The aforementioned procedures are directed basically toward items that have an annual buy value in excess of $2,500. Those below this level are accorded a lesser degree of scrutiny.

Mr. SIKES. Are there questions on spares?

Provide the dollar value of items bought competitively against the dollar volume of items purchased directly from the supplier.

(The information follows:)

DOLLAR VALUE OF COMPETITIVE PROCUREMENT VERSUS DOLLAR VALUE PURCHASED DIRECTLY FROM ORIGINAL SUPPLIER

For the first three quarters of fiscal year 1969, the Air Force procured 99,132 items of replenishment spares, for all types of equipment, at a contract value of $933.1 million. Of these totals, 30,650 items were procured competitively at a contract value of $235.9 million. This amounts to 30.9 percent of the items and 25.3 percent of the dollars; 40,894 items were procured directly from the manufacturers at a contract value of $312.6 million. This represents 41.3 percent of

the items and 33.5 percent of the dollars. The remaining items, amounting to 27,588 were procured from the prime systems contractor at a value of $384.6 million. This represents 27.8 percent of the items and 41.2 percent of the dollars.

FB–111A Aircraft Program

Mr. Sikes. On the FB–111A, recent action to cutback from the original program of 263 to 76 aircraft indicates a lack of confidence in the program on the part of the Air Force and the Department of Defense. If this aircraft will not considerably enhance the capabilities of the Air Force, and since it is a very expensive aircraft, why shouldn't we terminate the program now rather than maintain a token force?

General Jeffrey. The FB–111 will provide us with a substantial increase in our strategic strike force even though the numbers of aircraft have been reduced, as you indicate, from 263 to 76 aircraft. These 76 aircraft will equip two wings, four squadrons. Each one of these airplanes will be able to carry ——— thermonuclear weapons, the yields of each of which will be in the neighborhood of ——— or a combination of free fall bombs, like those I mentioned, and the SRAM air-to-surface missile with a nuclear warhead. By a simple method of arithmetic, this megatonnage can be multiplied out and I believe will provide a significant bombing capability.

With regard to its capability to penetrate, the FB–111 will provide us a significant increase in our capability to penetrate the enemy defenses. It has been estimated that our strategic bomber force capability could enhance or could be enhanced to somewhere between 20 and 25 percent through the use of these 76 airplanes in case of an emergency.

Mr. Sikes. What is the reason for the reduction? Why not the original 263?

General Jeffrey. Basically, sir, the reductions were for budgetary considerations.

Mr. Sikes. Is that the only reason?

General Jeffrey. There was consideration in connection with the reduction from a figure of 126 to the 76—we introduce this as a new figure this morning since last fall the 263 figure was reduced to 126 and then after the Nixon administration came into office that figure was reduced to 76. During the latter reduction, consideration was given to proceeding with the B–1, which has been known as the AMSA, advanced manned strategic aircraft, on an accelerated basis.

Mr. Sikes. What was that, 126 you say?

General Jeffrey. Yes, sir.

Mr. Sikes. What is the basis for that number?

General Jeffrey. This represented a reduction from 14 squadrons which the 263 represented, to six squadrons which the 126 represents the number required for that. The reduction from 126 to 76 reduced the force from six squadrons to four squadrons.

Mr. Sikes. Does the Air Force have as much confidence in this aircraft and its potential as you had a year ago, or do you feel its capabilities may have been somewhat overestimated?

General Jeffrey. Testing to date over the past year has enhanced our confidence in this airplane.

Mr. Sikes. The Air Force has a pretty good record of getting what it really wants. The Air Force is a great institution.

If you really feel so strongly for this aircraft, could you not have made reductions elsewhere in order to get more of them, or do you really feel that you need more than the 76?

General JEFFREY. We believe we need more than the 76 airplanes.

Mr. SIKES. Then why didn't you make adjustments elsewhere in the budget in order to get more?

General MCNICKLE. Sir, it was a trade-off with the Deputy Secretary of Defense to cut here; we leave the B-52 squadron in, we go for AMSA on an accelerated basis and we leave the B-58's in, and this is one that we agreed to.

Mr. MINSHALL. You said the performance of the FB-111 during the past year enhanced your opinion of them and that you want more of them. What has it done in the way of performance?

General JEFFREY. Let me answer this way, if I may: During the past year, as the testing of the FB-111 has proceeded, nothing has happened that would destroy our confidence in the airplane during that period. I answered the question that during this period the testing has enhanced our confidence in the airplane, meaning that the tests have proven satisfactory; the airplane has done what we expected it to do during this past year.

Mr. MINSHALL. Does this particular bird have the fix on it that limits the other F-111 aircraft to ———?

General JEFFREY. No, sir; not yet.

Mr. MINSHALL. When do you expect this bird to have the fix on it and to be able to operate at the contract specifications?

General JEFFREY. The first airplane that will have the fixes incorporated and tested, as we discussed last week, should be off the modification line some time in the latter part of July of this year. I would have to ask when one of the FB-111's falls into this category.

It is reported that three FB-111 aircraft have been delivered to date. The first one to come out with the fix incorporated will be in August of this year.

Mr. MINSHALL. What has the FB-111 done in your testing program that F-111A has not done?

General JEFFREY. What we have been testing in the FB-111 has been its range, its load-carrying capability, its bomb navigation system and its takeoff lengths, landing lengths, and this sort of thing, and these differ from the F-111A. The airplane has about 7 feet more wing. The airplane has a different TF-30 engine which modifies its performance for long-range cruise as opposed to the shorter range tactical aircraft. These are the areas in which we are testing.

The airplane has also a considerably greater maximum gross weight than the F-111. These are areas in which the first two airplanes have been tested.

Mr. MINSHALL. The first two airplanes have been tested. What are the limitations on it as far as the "g" limitations are concerned?

General JEFFREY. These two airplanes have the same restrictions as the F-111A, which would be ——— g.'s for a wing sweep, a forward sweep of 16° back to 45°, and ——— g.'s from 45° back to 72°; the same as the F-111A, sir. It is specified as a 3 g. airplane.

Mr. MINSHALL. In your statement, you said the range would be variable. I understand that, depending on the load, but the average load with conventional weapons and/or nuclear weapons, what will the range of it be?

General JEFFREY. The unrefueled range of the FB-111 with a 10,000 pound bomb load——

Mr. MINSHALL. Is that an optimum load?

General JEFFREY. ———.

Mr. MINSHALL. That wasn't my question. Is that an optimum load?

General JEFFREY. That is a difficult question for me to answer, sir. I would have to talk in terms of optimum with respect to range, optimum with respect to the target that we are trying to destroy, optimum with respect to enemy opposition——

Mr. MINSHALL. What will it vary between what and what then? Let me ask it that way.

General JEFFREY. It could vary from practically nothing up to ——

Mr. MINSHALL. What do you mean "practically nothing"?

General JEFFREY. No payload at all and no aerial refueling up to——

Mr. MINSHALL. That is the ferry range?

General JEFFREY. Yes, sir.

Mr. MINSHALL. We have that. You told us that was 4,300 nautical miles approximately.

General JEFFREY. I can't find the figure right now.

Mr. MINSHALL. Put it in the record.

General JEFFREY. The airplane can carry 36 750-pound bombs so it is up to a pretty high payload.

Mr. MINSHALL. With the maximum payload, what would your range be?

General JEFFREY. That is the figure I would have to supply.

(A classified statement was submitted.)

Mr. ANDREWS. General, do you have any F-111's in Southeast Asia now?

General JEFFREY. No, sir.

Mr. ANDREWS. You lost three?

General JEFFREY. Yes, sir; three were lost over there.

Mr. ANDREWS. How many did you bring back?

General JEFFREY. We brought the remainder back. I think there were five of them.

Mr. ANDREWS. With bombing restrictions on North Vietnam, I would assume you have no mission there for the F-111, is that correct?

General JEFFREY. We don't believe that we have a sufficient mission to justify the use of these airplanes over there now.

Mr. ANDREWS. As long as those restrictions remain?

General JEFFREY. Yes, sir; as long as those restrictions remain, in my opinion, we shouldn't have the airplanes over there.

Mr. ANDREWS. If bombing restrictions are lifted on North Vietnam, would you send the F-111's back over there?

General JEFFREY. I am not competent to say what higher authority would do.

Mr. ANDREWS. Would the F-111's be good planes for military missions in North Vietnam?

General JEFFREY. The planes would be good for military missions in North Vietnam and I am sure if the bombing in the north were started we would probably send them back over there. In my opinion, they should not be sent back over there until the structural problem is corrected.

Mr. SIKES. Are you talking about the fighter version?

General JEFFREY. Yes, sir; we are talking about the fighter version, which was the one that was over there before.

Mr. ANDREWS. You haven't had any FB's?

General JEFFREY. No, sir; we only have two of those.

Mr. ANDREWS. That is what I had in mind in conjunction with bombing in North Vietnam. Would you have a use for the FB–111 in North Vietnam?

General JEFFREY. I would say no, sir; we would not. The FB–111 is configured primarily for carrying nuclear armament, though it can carry conventional munitions, and so can the F–111A. I don't think there would be reason to send the FB over there even if the bombing restrictions were lifted.

MODIFICATION OF WING CARRYTHROUGH BOX

Mr. MINSHALL. General, when are you going to have this fix resolved one way or another on the carrythrough box trouble? How do you describe it?

General JEFFREY. We describe it as a fix to the wing carrythrough box; the fix is at the present time being incorporated in airplanes through a modification program, both at Forth Worth and out at McClellan Air Force Base in California. Concurrently, a test of one of the modified or fixed-wing carrythrough structures is in process. We expect to have completed approximately 8,000 hours of test time on this test carrythrough box by about the 20th of this coming July. If the tests prove successful, we would expect, with the approval of the Chief of Staff, to release those aircraft that have been modified to unrestricted flight. That is, to take them off of the ——— "g" restriction.

Mr. MINSHALL. If it is not successful by the 20th of July, what course do we follow then?

General JEFFREY. We would have to find out what caused the lack of success or what caused it to break again if such be the case. We would have to determine what the fix would be and we would have to install the fix in the test rig and retest it prior to release of the airplane. Or, if the fix turned out to be—if the answer to the problem turned out to be a new wing carrythrough box structure, we would have to consider what to do about that problem at that time.

Mr. RHODES. Are the planes coming off of the production line now coming off with the modification aboard, or are they coming off with the defective parts as previously?

General JEFFREY. The corrections are being incorporated into the production line. I would estimate that they are now coming off with the fixes incorporated.

I stand corrected on that.

The first deliveries from the production line with the fixes incorporated will be in July of this year. The answer to your question is, the airplanes aren't coming off of the assembly line now with the fixes incorporated.

Mr. RHODES. How many have you gotten off the production line with the defect subsequent to the time that you discovered the defect?

General JEFFREY. I believe that the other day, sir, I indicated I would furnish this for the record. I would guess in the neighborhood of 30 airplanes.

(The information follows:)

The Air Force has taken delivery of 57 F-111's since a structural failure in the wing carrythrough box occurred during fatigue article ground tests in August 1968. All aircraft are received with the defect noted at acceptance.

Mr. RHODES. Why haven't you stopped the production line until you could incorporate the improvements?

General JEFFREY. There were two or three options open to us in this regard at the time the wing carrythrough structure broke. We first had to determine what the cause of the break was and, as I explained to the committee during the hearings last week, the wing carrythrough box is a significant part of this airplane. It is not just something you can carry around in your hand. As I recall, it weighs over a ton. It is somewhere in the neighborhood of 15 feet long and 3 feet thick and 6 feet wide. Fuel is contained in it. It takes 6 months to build one on the production line. It is made of tool steel, and is tempered so it rings like a bell when you hit it.

The tolerances of the wing attach points and other fittings are up to one ten-thousandths of an inch. I make these points to emphasize that we are not talking about an insignificant piece of the airplane.

The fixes then had to be designed and tested. The early fixes didn't work. It was necessary to redesign them, to do them over again.

The first option was to close the production line. This essentially would have meant shutting down the factory while we determined what the problem was and determined how to fix it and test it. Considering the associated start-up costs. Our second alternative, and the one we determined to be more economical, since the airplane, in a restricted condition, could be used satisfactorily in our training program, was to continue with acceptance and then concurrently determine the fixes, test them, and so forth; go back and modify the airplanes that had been accepted, then to incorporate the fixes in the production line as soon as we could.

I am afraid that is a rather long explanation, sir, but I hope it covers the point.

Mr. RHODES. How much will it cost to modify each airplane?

General JEFFREY. We estimate it will cost approximately $75,000 per airplane to incorporate the fixes.

Mr. RHODES. Does that include the cost of transporting the aircraft to the point of correction and the cost of the crew during the time or is this just the amount the factory would charge for correcion?

General JEFFREY. This is just the amount associated with fixing the airplane itself. When this correction would be incorporated, there would be other modifications as well. That cost would have to be prorated over the entire modification program.

Mr. RHODES. General, what kind of training can you do in an airplane that is restricted to ——— g's? You can't do much more than familiarize the student with the aircraft itself, and its straight and level flying capabilities, and take it off and land; isn't that correct?

General JEFFREY. No, sir. We can go through the majority of the maneuvers that would be required to train a student within those limits. With the wings back to 45 degrees where we can go to ——— g limits, your eyeballs are getting pretty close to the ground at that kind of g limitation.

I have flown in the F–111 over the terrain-following course with these restrictions, flying the airplane down close to the ground, and you can fly all of your terrain-following missions with your bomb loads.

Mr. RHODES. At what speed?

Mr. MINSHALL. Terrain-following at what speeds?

General JEFFREY. We were flying at 450 knots, indicated, sir. That would be somewhere in the neighborhood of 550 miles per hour.

Mr. MINSHALL. What kind of training can you do within this limitation? You described it in general terms, but what is the maximum speed they are allowed to go and what is the maximum load they are allowed to carry and what is the maximum turn?

General JEFFREY. I am not sure, sir, that I am competent to explain these things that you have asked.

Mr. MINSHALL. Mr. Rhodes asked that question, I didn't.

General JEFFREY. The airplane isn't restricted in speed and it can go to mach ——— and this is part of the training. The airplane can carry its maximum bomb loads and it can perform all of its missions with the restrictions of ——— g's. The only thing you can't do, is to pull it around a turn that will exceed those limitations. So it is a maneuver restriction primarily.

Mr. MINSHALL. In your normal course of the training of these pilots, are you flying it at ———?

General JEFFREY. Their training program requires that they fly at ———. I can't answer as to how frequently, and so forth.

(The information follows:)

TRAINING ON F–111'S WITHIN SPEED LIMITATIONS

The airplanes in the training program are flown to limit mach No. ——— as a matter of course during routine functional check flights performed after maintenance and/or inspection.

F–111 CRASH

Mr. MINSHALL. What caused the crash of the F–111 last week? It happened right after we had a rather lengthy discussion about this bird. The day after, as a matter of fact.

General JEFFREY. I felt bad about that.

Mr. MINSHALL. We all did. What happened to the pilots? Did they get out of it?

General JEFFREY. Yes, sir; the pilots got out of the airplane all right.

The results of a preliminary investigation—the Accident Board is in the process of meeting—indicates that the windshield on the airplane shattered. I don't know whether this came about from having been struck by something or whether the force of the air on it caused it to shatter.

The pilots recognized that something was happening to the windshield. It apparently started up in the upper corner and progressively shattered down through the rest of the windshield. They were going at about 450 knots.

Mr. SIKES. What was their altitude?

General JEFFREY. A very low altitude. One thousand feet.

They had an opportunity to pull their face shields down and they leaned over the control column before the windshield left the airplane. The reason they had to get out of it was because they couldn't control the airplane under those conditions.

In other words, they couldn't get their heads back up into the wind. They decided that the best thing to do was to get out of it. They did eject and landed safely.

As I indicated, the investigation is going on.

Mr. MINSHALL. Have you had any other problems with windshields prior to that time?

General JEFFREY. As I recall, we had had some problems with the windshields prior to that time. It was some time ago. I don't recall now exactly what they were.

Mr. MINSHALL. I think it would be well to put it in the record and if you have more problems with this bird, you better have a look at it.

General JEFFREY. As I recall, the previous problems had to do with distorted vision through the windshield and also delamination when it went through rain.

Mr. MINSHALL. What is it going to cost? What is it going to cost, General, if these 130 or 150 birds that you are putting through the production line now with this fix on them, what happens if the fix doesn't work?

General JEFFREY. If the tests we are currently undergoing indicates that the fix is unsatisfactory, we are going to have to fix them and test them again, sir.

(The information follows:)

Previous problems included distortion of vision through the windshields and several cases of cracks developing in only one of the two layers of glass. Cracking of a single layer is not uncommon in other aircraft and in the F-111 leaves a very large safety margin. A new windshield made similarly of two layers of glass with a middle layer of Teflon-like material will soon replace the older windshields to eliminate distortion. The glass windshields are being tested well above in-flight pressures. Until the recent accident has been analyzed for exact cause, a statement of further necessary actions, if any, is not possible.

Mr. MINSHALL. Are they conducting any R. & D. on a completely new wing carrythrough box other than just this fix?

General JEFFREY. Yes, sir.

Mr. MINSHALL. What is the status of that?

General JEFFREY. There is a completely new wing box structure being designed at the present time to be considered as a replacement for this one should the tests on the fixes fail.

Mr. MINSHALL. When will that be completed?

General JEFFREY. I don't have that information with me. I will have to supply that for the record.

(The information follows:)

At this time, we are confident that the design improvements being introduced into the current wing box will prove to be capable of providing the required 4,000 hours of operational life. However, as an insurance against possible unforeseen problems, the design of a new interchangeable wing box is proceeding without delay. We are currently assessing other design concepts to determine the inherent advantages and disadvantages compared to the present design. A decision on these alternatives will be made within the next 60 to 90 days, and we estimate that the time required to develop a box ready for production use following this decision would vary between 14 and 30 months depending on the

design selected. The decision to continue or to terminate this effort will be tied to the results of the current fatigue test program.

Mr. MINSHALL. That is all I have. Thank you, Mr. Chairman.

Mr. SIKES. What would be the cost of retrofitting the new box?

Gneral JEFFREY. I wouldn't want to hazard a guess on that, Mr. Chairman. It could be an expensive proposition. It would necessitate sending the airplane back through the assembly line disassen.bling it and putting in a new box.

Mr. SIKES. Would it amount to hundreds of thousands of dollars?

General JEFFREY. I would guess it would be well over $100,000 per airplane.

Mr. SIKES. On the problem which developed with the windshield of the plane that crashed last week, you say there have been no previous problems of this nature?

General JEFFREY. We have had no instances where the windshield came out of the airplane. I indicated that there had been previous windshield problems with the airplane in terms of distortion of view, in terms of delamination. This is all that I recall that we had had.

Mr. SIKES. Nothing about the glass shattering?

General JEFFREY. Not that I recall.

Mr. SIKES. I was under the impression that this was a special type of material which was designed not to shatter. That even a bullet could pass through it without causing shattering. Am I incorrect?

General JEFFREY. I can't answer your question, sir. I don't know.

Mr. SIKES. Will you provide that for the record?

General JEFFREY. Yes, sir.

(The information follows:)

The F-111 windshield is neither designed nor tested for bullet impact, however, tests with both layers of glass cracked when added to design knowledge would indicate that bullet penetration could result in loss of a section of the windshield. The windshield is designed and tested to prevent shattering from cracking of one or both glass layers.

Mr. MINSHALL. This is a very unusual occurrence at that slow speed, isn't it, General, to have a windshield shatter?

General JEFFREY. Yes, sir; it is, since the airplanes, all of them, have been flown at much higher speeds than this. At acceptance from the factory, they are flown to the neighborhood of mach ———.

Mr. MINSHALL. Did a bird hit it, or anything?

General JEFFREY. I mentioned earlier that in view of the low altitude at which the airplane was flying this is something we will certainly investigate carefully.

Mr. MINSHALL. Did the pilot seem to think something had hit it?

General JEFFREY. I haven't got enough of the preliminary action report to know about that, sir.

Mr. MINSHALL. Will you also supply, General, at the appropriate spot in this record, what the R. & D. costs will be on the new wing carrythrough box that you are developing, the completely new one?

General JEFFREY. All right, sir.

(The information follows:)

R. & D. FOR NEW WING CARRY-THROUGH BOX FOR F-111

It is important to note that, while a redesign effort is proceeding and plans for R. & D. are being developed, we believe that the present design as modified will prove to have the required 4,000 hours for operational life. Presently planned

development activities are the same as required in finalizing the present box. The box would be designed and engineered and specimen and full-scale component tests would be completed to prove adequate fatigue endurance and static strength of the detailed features of the design. Failure testing to allow formal qualifications would be completed in the full-scale fatigue and static test article. In parallel with this program, testing of the current design is continuing. At any point where sufficient confidence has been established in the current fixes as compared to the alternatives, the alternative redesign effort will be discontinued. Currently, the redesign and material to be used have not been finalized; therefore, a valid cost estimate cannot be provided.

EFFECT OF FB-111 REDUCTION ON NUCLEAR RETALIATORY CAPABILITY

Mr. SIKES. Under earlier plans, the FB-111 aircraft were to provide the capability for the delivery of a part of our nuclear retaliatory capability. Under the cutback in numbers now projected, will our nuclear capability be reduced accordingly for a period of time?

General JEFFREY. It would be my opinion that it will, sir, yes.

Mr. SIKES. Will you expand on that for the record?

General JEFFREY. Yes.

(The information follows:)

EFFECT OF FB-111 CUTBACK ON NUCLEAR RETALIATORY CAPACITY

A reduction in FB-111 procurement does reduce the bomber force capability and continues the downward trend in the size of the bomber force. The FB-111 was to replace the older series B-52 C-F's to provide a better bomber penetration capability. This improved penetration capability results from the FB-111's reduced radar cross section, higher speed, improved avionics and low altitude capability. The present program calls for retention of some older series B-52C-F's to partially offset the FB-111 reduction. The Air Force has recommended retention of 13 B-52C-F squadrons until AMSA is available and SRAM equipage of all 17 B-52G/H squadrons. This will insure maintaining the strategic bomber force capability. Although a reduction in the FB-111 force from 14 to four squadrons results in some reduction in the bomber force capability, this could be partially offset by the Air Force recommendation for B-52C-F retention and SRAM for the B-52G/H force.

NONNUCLEAR CAPABILITY OF FB-111

Mr. SIKES. Is the FB-111 capable of being used in South Vietnam in lieu of the B-52's, or is it not adaptable to that type of use?

General JEFFREY. The FB-111 could be used for this sort of operation, Mr. Chairman. I don't believe it would be economical.

Mr. SIKES. It would be a marginal use?

General JEFFREY. It could do a good job. It cannot do as good a job as the B-52 can for the mission that the B-52 is flying.

Mr. SIKES. Is this because of load-carrying capability and the fact that it is primarily intended for nuclear delivery?

General JEFFREY. Yes, sir.

UNIT COST OF FB-111

Mr. SIKES. Last year, when a larger buy was contemplated, the unit cost of the aircraft was estimated to be $7,995,000. What is the comparable unit cost for the aircraft in the fiscal year 1970 program as originally projected, and the average unit cost for a buy of 76 aircraft?

General JEFFREY. Mr. Chairman, there isn't a 1970 buy of the FB-111. The projected unit flyaway cost for the airplane last year was $9.076 million——

Mr. SIKES. Was that 263 aircraft?

General JEFFREY. May I ask Colonel Buckingham to speak to that?

Colonel BUCKINGHAM. If I understand your question correctly, sir, you want to go back to the original FB-111 cost, or last year's cost?

Mr. SIKES. I want both. I want the original cost and last year's cost. I want the cost projected for the 263 aircraft and the cost now projected for the 76 and you can provide all of that for the record.

Colonel BUCKINGHAM. Yes, sir.

(The information follows:)

The cost of the FB—111A as estimated at the time of congressional approval of the program was $5.2 million (flyaway). This was for a quantity of 263 FB-111's and a total production buy of 1,228 aircraft. Last year's flyaway estimate (at the time of FY 1969 budget submission) was $6.4 million. This was for a quantity of 263 FB-111's and a total buy of 1,356 production aircraft. The cost now projected for flyaway is $9.4 million each for a quantity of 76 FB-111's in a total production program of 710 aircraft.

Mr. SIKES. Is this number of 76 the minimum of aircraft which can be bought and which will keep the production line open?

General JEFFREY. I would say that these airplanes are part of the overall F-111—part of the overall F-111 production line. We could possibly go below this number and keep the production line open.

Mr. SIKES. But not much?

General JEFFREY. Not much.

Mr. SIKES. Are you seeking primarily to obtain some improvement in your bomber capability and a minimum buy of the aircraft that would provide that improvement while you are waiting for the AMSA to be developed? Is that what you are doing?

General JEFFREY. Yes, sir.

Mr. SIKES. That would be an understandable policy. This will provide an improvement, I assume?

General JEFFREY. This will provide a significant improvement in our bombing and penetration capability. The AMSA is going to be several years away.

Mr. SIKES. You can expand on that for the record. I think this is fully understandable.

General JEFFREY. Yes, sir.

(The information follows:)

The capability of our bomber force is a continuing concern of the Air Force. The most effective method of maintaining the capability is through force modernization and the degree of modernization required is geared to the threat. The intelligence community estimates that the Soviets will continue to improve their defensive capability, including deployment of highly effective advanced defensive systems during the early and mid 1970's. The Air Force is seeking to improve strategic bomber force capabilities with SRAM, SCAD, and AMSA to maintain bomber force effectiveness against these defenses; however, these improvements will not be available in the near term. The FB-111 represents the only improved strategic bomber system readily available to the Air Force. If some FB-111's are not obtained as an interim modernization effort until more advanced systems become available, the bomber force, which consists primarily of aircraft and avionics technology of the 1950's, would be at a disadvantage against Soviet defensive technology of the 1970's. Therefore, even a relatively small number of FB-111's that possess a high speed, low altitude capability, small radar cross section, and advanced avionics, will provide a significant improvement in our

bombing and penetration capability. This will improve the overall bomber force penetration capability and will also complicate the defensive problems of the Soviets.

Mr. ANDREWS. How many beyond the 76 do you see, General?

General JEFFREY. That, for the present time, is the end of the FB–111, sir. There are none anticipated.

Mr. ANDREWS. When will the last ones be provided?

General JEFFREY. December 1970.

Mr. ANDREWS. At what rate are they being delivered?

General JEFFREY. They will reach a maximum rate of ——— per month. They reach that point in ——— sir. Then they taper on down from there.

Mr. SIKES. What is the estimated total cost of the FB–111 development program?

Colonel BUCKINGHAM. The development cost is currently estimated at $234.4 million for the FB–111 aircraft.

EFFECT OF FB–111 CUTBACK ON SRAM PROGRAM

Mr. SIKES. What is the impact of the cutback on the FB–111 program on the SRAM program?

General JEFFREY. I don't believe that it has any immediate effect on the SRAM program, sir. The FB–111, those that we are currently scheduled to get, will be equipped with provisions to carry the SRAM with the exception of electronic gear.

Eventually the total number of SRAM's procured could be affected.

Mr. SIKES. It would seem there should be substantial long-term effects since the FB–111 aircraft is to carry SRAM and the program is being cut by two-thirds. Why wouldn't there be a corresponding planned reduction in the numbers of SRAM's? SRAM's are not slated for AMSA.

General JEFFREY. Yes. I think I indicated I didn't anticipate there would be any immediate effect, but certainly there would be a long-range effect because this is to be the main weapon that the FB–111 is supposed to carry.

Mr. SIKES. Won't there be some immediate effects such as increased unit cost of SRAM missiles since those missiles will not be procured in large quantities?

General JEFFREY. Well, sir, the principal number of SRAM's were to be carried on the B–52's rather than the FB–111's, so this would depend upon a tradeoff here. The initial SRAM contract, as I recall, was for ——— missiles, which was far short of those that would have been required to support the overall SRAM operational requirements for both types of airplanes. So it would be difficult to say right now just what effect cutting back on the FB–111 would have on the total SRAM buy since we don't know at the present time what this means in terms of increased B–52 SRAM requirements.

COST OF FB–111 PROGRAM

Mr. SIKES. For the record, I would like to have a projected cost of the FB–111 program. I would like to have the costs associated with training for the program and the ground support and equipment costs associated with the program.

(The information follows:)

5-YEAR PROJECTED COST FB-111 PROGRAM

The total estimated costs, including operating expense and excluding SRAM procurement fiscal year 1967 through 1974 are:

	Dollars in millions
Development	218.6
Investment	1,255.6
Operating	1,674.9
Total	3,149.1

Development.—All R.D.T. & E. funds for the aircraft and related equipment.

Investment.—Procurement costs of the vehicle, aerospace ground equipment, training items, technical data, modifications, initial spares, investment-type replenishment spares and military construction.

Operating.—Military and civilian pay, POL, depot and base maintenance including spares procured from the stock fund.

RETENTION OF B-52'S

Mr. SIKES. Is it a part of the plan involved in the cutback of the FB-111 to keep the B-52 C through F in the active inventory for a longer period of time?

Colonel GROSSMILLER. We are keeping ——— to the end of the program period. In fiscal year 1970 we will have ——— squadrons of B-52's, C through F. This is an increase as a result of the reduction from 14 to four squadrons of FB-111's, the retention of ——— B-52 squadrons and the extension of six B-58 squadrons ———.

Mr. SIKES. Are there additional costs associated with this change?

General JEFFREY. Mr. Chairman, do you mean additional costs associated with the reduction——

Mr. SIKES. The B-52's. Keeping a larger number of B-52's in the inventory.

General JEFFREY. Yes, sir; there would be.

Mr. SIKES. Provide a breakdown for the record.

General JEFFREY. Yes, sir.

(A classified statement was provided.)

Mr. SIKES. Will modifications of the B-52's be required as a result of this change in schedules?

General TANBERG. Yes, Mr. Chairman. If we reach the 4,000 "E" hours on these aircraft, we would have to modify them if they stay in the force. As it stands now, they are programed to go out. If they remain, IRAN would also have to be incorporated.

Mr. SIKES. Give us a breakdown for the record of the specific costs in that operation.

General TANBERG. Yes, sir.

(The information follows:)

SAFE STRUCTURAL LIFE

The B-52C thru F safe structural service life has been established as 4,000 "E" hours. An "E" hour is used as a measurement of fatigue damage to the wing structure. Engineering change proposal (ECP) 1243 consists of minimum structural modifications generally to the lower wing surface to increase the fatigue life of the wing to 6,000 "E" hours. In accordance with present projected usage no additional aircraft will require this modification prior to fiscal year 1975. Unit cost, $187,000.

INSPECTION AND REPAIR AS NECESSARY (IRAN)

This is depot level maintenance performed each 36 months. Unit cost $330,000. In addition to the structural service life modification (ECP-1243) and IRAN,

there are two other categories of modifications which must be accomplished on these aircraft.

ELECTRONIC COUNTERMEASURES (ECM)

Retention of B-52C, E, or F series will require ECM modifications that were accomplished on D, G, and H series. Due to the previously planned phaseout schedule, these modifications were not incorporated on these models. Unit cost, $170,000.

AIMS

Air traffic control radar beacon with identification—friend or foe (AIMS). These modifications are required for air traffic control purposes beginning January 1, 1973. Unit cost, $18,250.

GROUND-SUPPORT EQUIPMENT

Mr. SIKES. What can you tell us about the degree of commonality between the F-111 tactical aircraft and the FB-111?

General JEFFREY. There is approximately 78 percent commonality between the FB-111 aircraft and the F-111A/D version.

Mr. SIKES. Will the ground-support equipment utilized for the tactical F-111 aircraft also be used for the FB-111 strategic bomber?

General JEFFREY. It will be about 53 percent common, sir.

Mr. SIKES. What additional ground-support equipment will be required?

General JEFFREY. There would have to be additional ground-support equipment associated primarily with the avionics system which differs in the FB-111. I would have to provide for the record, sir, the details of the pieces of equipment.

Mr. SIKES. If you will.

(The information follows:)

ADDITIONAL GROUND SUPPORT REQUIRED FOR FB-111

The major items of additional ground-support equipment which are peculiar to the FB-111 are as follows:

Attack radar test equipment;
Navigation and flight controls test equipment;
Servo and indicator test station;
Indicator and sensor tests for star tracker;
Navigation aids tests;
Digital test station;
Doppler radar test station.

OVER-TARGET COSTS

Mr. SIKES. The justifications indicate that $44.4 million will be required in fiscal year 1969 for fiscal year 1968 and prior years for over-target costs associated with the FB-111. What are the principal reasons for these over-target costs?

General JEFFREY. The principal reasons for the over-target conditions, sir, would be the cutback in the quantities, the reduced production rate, and economic escalation in the country during this period.

Mr. SIKES. Are additional over-target costs anticipated in fiscal year 1970?

General JEFFREY. No, sir.

Mr. SIKES. What part of the cost overruns that you have identified are borne by the contractor?

General JEFFREY. I would request that I be permitted to supply that for the record, sir.

(The information follows:)

PORTION OF COST OVERRUNS ON FB–111 BORNE BY CONTRACTOR

The over-target costs identified to date fall within 107 percent of the target cost. Between 100 and 107 percent, the contractor pays 25 percent of the over-target costs.

TEST EXPERIENCE

Mr. SIKES. What has been Air Force experience with the three FB–111 aircraft which have been undergoing tests at Edwards?

General JEFFREY. With regard to gross weight and payload requirements, the airplanes have met specifications. With regard to range, these tests are still going on and have not yet been completed. There isn't anything that we have seen in the tests thus far that would cause us alarm in regard to the airplane not meeting specifications.

Mr. SIKES. It has been reported that the FB–111 has eight pylons which carry 48 750-pound bombs. It has also been reported that the bombs on the outer four pylons must be jettisoned when the wings of the aircraft are swept back. Is this true?

General JEFFREY. The outboard pylons were not self-streamlining so in order to achieve maximum range with the airplane, if these pylons are loaded, it would be necessary to drop whichever pylons were loaded.

In connection with the FB strategic mission, these pylons would not all be loaded. It is expected that two of them would be and, on an operational mission these two would be dropped, sir.

Mr. SIKES. What operational problems would be presented by this situation?

General JEFFREY. We do not consider that dropping those pylons would present any operational problems, sir.

A–7D AIRCRAFT PROGRAM

Mr. SIKES. Are there further questions on the FB–111?

Turning to the A–7D, the average unit flyaway cost through fiscal 1974 for the A–7D is listed at $2,415,000. Is this the cost upon which your fiscal year 1970 request was based?

Colonel BUCKINGHAM. No, sir; that is the average cost of the entire quantity of ——— aircraft we plan to buy. In fiscal year 1970 we plan to buy 128 at an average unit gross flyaway of $2.238 million.

Mr. SIKES. What is the average unit flyaway cost and the average weapon system cost for the A–7D's to be procured?

Colonel BUCKINGHAM. In fiscal year 1970, the unit gross flyaway cost is $2,238,000 and the unit weapon system cost is $2,916,000.

TF–41 ENGINE

Mr. SIKES. What cost overruns have you experienced in the development of the TF–41 engine?

General JEFFREY. The TF–41 is on a total package type of contract. Allison, who is the prime contractor for this engine, has incurred

some costs in excess of its billing target price. The Government would be responsible for 50 percent of the "overrun" which may be in the area of $28 million, but we haven't gotten far enough down the road in this contract to be aware specifically of what the overrun will be.

Mr. SIKES. How does the unit cost of the TF-41 engine compare with the original estimate?

General JEFFREY. Very good at the present time.

Mr. SIKES. How close to target cost is the avionics system for the A-7D?

General JEFFREY. The avionics system for the A-7D, Mr. Chairman, is subcontracted by Ling-Temco-Vought.

Since this is their subcontract, we don't know the status.

GROUND SUPPORT EQUIPMENT

Mr. SIKES. To what extent is the ground support equipment utilized by the Navy for their version of the A-7 to be used by the Air Force, with the A-7D?

General JEFFREY. There is a 95-percent degree of commonality between the A-7D, the Air Force airplane, and the A-7E, which is the Navy version of this airplane.

Mr. SIKES. Do you mean commonality in ground support equipment?

General JEFFREY. Yes, sir.

CONTRACT DEFINITIZATION

Mr. SIKES. Has the contract on the A-7D been negotiated and definitized?

General JEFFREY. We are buying this airplane through the Navy. For 1969 and prior, it has been definitized, yes, sir.

Mr. SIKES. When was that, please?

General JEFFREY. This was in February, 1969.

Mr. SIKES. Are you operating under a letter contract now?

General JEFFREY. No, sir; we are operating under a definitized contract.

Mr. SIKES. How long were you under that contract?

General JEFFREY. We were under a letter contract for several years.

Mr. SIKES. Could you supply a specific time period for the record?

General JEFFREY. Yes, sir.

(The information follows:)

SPECIFIC TIME PERIOD OF A-7D CONTRACT

The A-7D program operated under a letter contract from October 27, 1966, to February 20, 1969.

Mr. SIKES. In what way does the contract protect against cost overruns?

General JEFFREY. It is a fixed-price incentive-type of contract. The contractor loses his profit on a share ratio if he proceeds above the target cost toward ceiling. The contract does have a target and a ceiling. The share ratio is 75 to 25 so the Government is protected in this regard.

Mr. SIKES. Provide further details for the record.

(The information follows:)

TERMS OF A-7 CONTRACT REGARDING COST OVERRUNS

The protection against overruns offered by this type of contract is that for every dollar of underrun, the contractor gets 25 cents added to his profit. Conversely, for every dollar of overrun, he gets 25 cents subtracted from his profit. For example, if the target cost is $100 and target profit is $10 and his final cost is $90, then the contractor's profit is increased by $2.50 which equals 25 percent of the $10 underrun. Conversely, if his final cost is $110, then his profit is decreased by $2.50 which is equal to 25 percent of the overrun. Under the terms of the contract, the contractor can earn a maximum fee of 13 percent of target cost and a minimum fee of 4 percent of target cost irrespective of the amount of underrun or overrun. The target fee is 10.5 percent of target cost.

Mr. ANDREWS. Let's say the price was $1 million.

General JEFFREY. The target cost was $1 million.

Mr. ANDREWS. And it wound up at $1.3 million. How does the contract function?

General JEFFREY. If the target cost was $1 million, and let's say that the ceiling was 130 percent of that—and this isn't an unusual percentage arrangement—then the ceiling would be $1.3 million. At $1 million—or target cost, he receives his maximum profit which might be, let's say, 10 percent of the target cost. Or, in this hypothetical case, it would be $100,000.

If he comes out on target cost, he gets that $100,000.

As he exceeds target costs and goes from the $1 million to the $1.3 million, he loses his profit, so that when he arrives at the ceiling of $1.3 million, he loses all of his profit. The Government pays a share of the difference between target cost and ceiling. When he goes over ceiling, he pays everything so he has lost all of his profit at ceiling and then he pays for everything over ceiling.

Mr. ANDREWS. He is in a jam if he gets over the $1 million?

General JEFFREY. He is in a jam when he gets over the $1 million.

Mr. ANDREWS. He could lose his $100,000?

General JEFFREY. He will lose his $100,000 when his cost exceeds ceiling and he can lose more than that. He gets in a tighter and tighter jam the further he gets over the target cost.

POSSIBLE CONTRACTOR LOSS ON C-5A

Mr. ANDREWS. Have you had occasions where this has occurred?

General JEFFREY. Yes, sir. With regard to the C-5, we estimate Lockheed will be, at the end of the total contract, somewhere in the neighborhood of $285 million in the hole on this same sort of an arrangement.

Mr. ANDREWS. $285 million?

General JEFFREY. Yes, sir; over ceiling. This is a cost for which they are responsible solely.

Mr. ANDREWS. And then have a loss of $285 million?

General JEFFREY. Yes, sir; we estimate that.

Mr. ANDREWS. This is on the what?

General JEFFREY. The C–5A airplane contract for 115 production airplanes. Halfway through that, if we didn't buy the additional 57 airplanes on production run "B", we estimate that they would be in a deficit position of $671 million. That is out-of-pocket to them.

Mr. ANDREWS. Do you see any way for Lockheed to bail themselves out of the position they are in?

General JEFFREY. They don't agree with out estimate. That they will be in this position. We are projecting this up to 1973, when the airplanes will have been delivered. Some spare parts will have been bought from them, which could improve their deficit position. I don't see any way, right now, that they can substantially improve the situation.

Mr. ANDREWS. And what is the total amount of potential liability?

General JEFFREY. The total amount of their loss is estimated to be $285 million.

Mr. ANDREWS. You mentioned a figure of $600-and-something.

General JEFFREY. This is an interim figure. If we only bought half of the airplanes, which would complete delivery in June 1971.

Mr. ANDREWS. If you double your buy, they still stand to lose $285 million.

General JEFFREY. That is our estimate, sir.

In answer to your other question, this situation does come up with reasonable frequency, where the contractors find themselves in a deficit position. Of course, not to this extent because of the size of this contract.

RISK IN A–7 CONTRACT

Mr. SIKES. The A–7 buy operated for several years under a letter contract. Why should the ceiling be as high as 130 percent after definitization?

General JEFFREY. The ceiling is something that is determined by the Government. It is based upon risk areas, unknown areas. The time during which the airplane is to be delivered and that sort of thing.

It is arranged to protect the contractor from excessive loss due to unknowns. A war, let's say, another war that might come about between now and the time that the airplanes are delivered and cause abnormal escalation of the economy. It is also designed to protect the Government against excess profits.

Mr. SIKES. In view of the experience that you have already had, that the contractor has already had, wouldn't you say that there is now a little risk involved in this contract?

General JEFFREY. I would say there is not a great deal of risk involved in this contract.

Mr. SIKES. Thank you, gentlemen.

The committee will resume its discussions at 2 o'clock.

AFTERNOON SESSION

THEFT OF AIRCRAFT

Mr. SIKES. On the record.

This morning we were discussing the incident in which a C–130 aircraft was lost when an airman flew it off a base in England. It is of concern to the committee. The situation which permitted these in-

cidents to happen was explored. I find that today a similar attempt was made at Andrews Air Force Base. Fortunately, in this instance the attempt was thwarted. Are you prepared to comment on the current situation and any alert which may have been sent out—a general alert—which may have been sent out, which helped to prevent this latest attempt of the theft of the plane?

General McNickle. I think this incident was caught without benefit of an alert that was sent out. This was just normal alertness that caught this one; however, an alert has gone out there could be additional incidents like this. If you find one, you are apt to find more. I am sure this sergeant read about the other incident, and I understand he was going to go home to his family in Kentucky.

Mr. Lipscomb. Mr. Chairman, did you have a chance to check and see if anything had gone out nationwide or worldwide?

General McNickle. Yes, sir; General Ryan told me it had. It did not help in this incident though. This maintenance officer was on the ball.

Mr. Sikes. Are there further comments?

Mr. Andrews. If he had gotten in the air from Andrews, an amateur with a C–47, it would have been very bad. I do not know how you are going to stop them. It may be contagious.

General McNickle. That is right. That is what Mr. Lipscomb indicated this morning.

Mr. Minshall. You might look into what penalties are involved and let the people know what the penalties are. You may have to increase them.

General McNickle. Yes, sir.

Mr. Andrews. It would not hurt if you increase your guard about parked planes until this wave of thefts dies down.

Mr. Sikes. Will you provide for the record the type of alert that has gone out and when the alert went out?

General McNickle. Yes.

(The information follows:)

INCREASED SECURITY REGARDING UNAUTHORIZED USE OF AIRCRAFT

The extreme gravity of this occurrence was made a matter of concern to all major USAF commands worldwide. In a message dated May 26, 1969, the Vice Chief of Staff, USAF, directed all commanders to review procedures established to prevent such occurrences and take action as required to preclude recurrence of similar incidents.

ENGINEERING CHANGES ON A–7

Mr. Sikes. Returning to the A–7D aircraft which we were discussing this morning, at the present time tell us what engineering changes which would result in increased costs in the A–7 have been indicated?

General Jeffrey. The principal changes which have increased the cost of the A–7 since the Air Force decided to buy—is that essentially to what you are referring?

Mr. Sikes. Yes.

General Jeffrey. This would concern first a new navigation and weapon delivery system, or new avionics system, which differed extensively from that contained in the original A–7A aircraft which was the airplane of the Navy was buying.

This has amounted to approximately $224,000 per airplane. Survivability improvements which have included foam in the tanks, armor plate for the pilot and also armor protection for certain critical components of the airplane, has increased the cost by $113,000 each.

Other improvements to the cockpit, the lights, paint, the addition of the M–61 Gatling gun, a starter, radio, and certain other standardization items increased the cost by $111,000 per airplane.

These changes in total increased the cost from $1.575 million which was the actual price after Navy procurement of ——— A–7 A/B's to $2.023 million. Those were the principal hardware changes to the airplane, sir.

Mr. SIKES. What is the effect of change orders on the contract insofar as profit to the manufacturer is concerned, or insofar as the possibility of loss to the contractor?

General JEFFREY. Change orders directed by the Government would increase the target cost of the contract. The Government therefore would be expected to pay for these changes. In the adjusted target the profit would also be adjusted. So with increased change orders, this would be a favorable position for the contractor.

Mr. SIKES. Do you visualize a situation where a contractor would be in a position to lose money on his primary contract, but would find himself in the profit column as a result of change orders.

General JEFFREY. Yes, sir; I can.

Mr. SIKES. Do you recall instances where this has happened?

General JEFFREY. I cannot recall specific instances where this has happened. Every effort is made to prevent this sort of thing through our audit activities to determine the actual cost associated with the changes that are approved. However, it is my opinion that the greater the number of changes that are Government-generated after a contract has been signed, the better are the contractor's chances of climbing out of any sort of deficit position that he might be in.

ADVANCE PROCUREMENT

Mr. SIKES. There is a request for $26.5 million for advance procurement of the A–7D for fiscal 1970. For the record, break down the requirement.

(The information follows:)

BREAKDOWN OF ADVANCE PROCUREMENT OF THE A–7D

The advance procurement for the A–7D for fiscal 1970 consists of the following:

	Dollars in millions
Engines (GFAE)	18.5
Avionics (GFAE)	2.5
Avionics subsystems and long leadtime materials, forgings, and castings (CFE)	5.5
Total	26.5

JOINT SUPPORT AGREEMENT

Mr. SIKES. Last year, General Ruegg testified that the Air Force was evaluating a joint support agreement with the Navy on A–7. Has an agreement been reached?

General RIEMONDY. Yes; it will be effective July 1. Some of the minor details are still being worked out because of the F–4 experience we have had. Come July 1, the Air Force will start getting its support from the Navy on the joint support list kind of items.

Mr. SIKES. How many spare parts items for the A–7 will you stock and how many are on the joint support list? Do you have that information readily available?

General RIEMONDY. Yes. At the present time we have just about a thousand on that joint support list. We anticipate it will go up to about 8,000 as we complete all the initial provisioning on that airplane.

Mr. SIKES. Will the A–7D's replace other aircraft in the Air Force inventory?

Colonel GROSSMILLER. Yes; F–100's and F–105's which will eventually go to the Air National Guard for modernization.

F–4E AIRCRAFT PROGRAM

Mr. SIKES. Are there questions on the A–7? If not, turning to the F–4E, if a decision is made to stretch the fiscal 1969 procurement deliveries of the F–4E, to what extent would this stretchout affect funding of the aircraft?

Colonel BUCKINGHAM. Mr. Chairman, it is estimated at the present time that the fiscal 1969 funds will be in excess by about $7.6 million if we do not stretch the program.

Mr. SIKES. How firm is the requirement for $25.7 million advance procurement in fiscal 1970?

Colonel BUCKINGHAM. It is based on a fiscal year 1971 buy of ——— aircraft. If that buy stands, the requirement for advance buy is firm.

Mr. SIKES. If the 1969 program is stretched out, would the requirement for the advance procurement funds be reduced?

Colonel BUCKINGHAM. No, sir; because that has no impact on the fiscal year 1971 planned production.

POTTING COMPOUND PROBLEM WITH F–4

Mr. MINSHALL. General, we had a discussion with some of the Air Force people and later with the Navy about the trouble with F–4's with the potting compound. We found out that you are correcting this problem in a different way from the Navy. Generally, you are doing it on a block basis and they are doing it by individual aircraft basis when the trouble manifests itself on each individual airplane.

General MCNICKLE. Yes, sir.

Mr. MINSHALL. I wonder if you have any comparison, cost comparison or time off the line or anything else, between your method and the Navy method?

General TANBERG. I do not think I have any specifics to your latter question. But with the way the Navy operates their aircraft; namely, on the carriers, they do not run into the same problem with the magnitude we have. It is on a scale they can handle as we did the initial ones that were attributed to be a mixture problem and you can pick it out and replace it on an individual basis. In Vietnam, after the initial F–4C models, had been there about 3 years, we had large numbers of connectors inside the cockpit revert. We had no choice. We

could not do it on a single individual connector basis. While we had the aircraft down doing a few of them, we decided to do the whole number. We are approaching the problem a little differently than the Navy. We did not really have much of a choice in it. In their operations they have not run into the high temperatures that we do with the aircraft parked on the ramps over in SEA.

Mr. MINSHALL. Would you supply for the record the cost per individual aircraft, and the time off the line and so forth, that it is required by your system?

General TANBERG. Yes, sir. Basically as far as time off the line, the majority of these we have tied in with other programs and you get a tradeoff. In other words, as they go through the normal IRAN cycle we do repotting. Initially when we ran into the problem we had to divert some aircraft, and put them into a depot facility.

Mr. MINSHALL. But it still takes more time and more expense regardless of the tradeoff.

General TANBERG. Yes. This expense is primarily for labor.

Mr. MINSHALL. Will you supply those figures for the record so we will have some basis of comparison?

(The information follows:)

F–4 REPOTTING COST PER INDIVIDUAL AIRCRAFT, ETC.

Based on approximately 368 F/RF–4 aircraft, which includes those completed plus those projected to require this rework, the average cost per aircraft will be approximately $59,000. We are still studying the reversion tendencies of the potting compound in the later series F–4 aircraft and will plan our rework accordingly.

Mr. MINSHALL. Supply what the specifications were for the potting compound. Did they ever have specifications for the potting compound originally to withstand heat. If so, what happened?

(The information follows:)

SPECIFICATIONS FOR POTTING COMPOUND

The Pro-Seal 777 potting compound was first introduced into the Navy F–4 aircraft commencing with block 8 which began delivery in November 1961. It was this block number that compact wire bundles were introduced and approved for installation at locations up to 300° F. To maintain temperature compatibility, Pro-Seal 777 potting compound, which was used in these compact wire bundles, was approved for 300° F. Pro-Seal 777 conforms to MDC (McDonnell Douglas Co.) process specification 17171 and was approved by BAR (Navy plant representative) St. Louis in March 1958.

General TANBERG. Of course, the aircraft we got were Navy aircraft. It was against their specifications. We had no reason to doubt their spec and under the testing that had been done. Frequently once you get equipment out into service you will discover a problem that you did not run into during the test programs.

Mr. MINSHALL. Who is paying for the cost of your making this fix on the potting compound?

General TANBERG. We have to pick this up. Our engineers bought off on the specifications as did the Navy, and hence the Government has to pick this up.

F–5 AIRCRAFT PROGRAM

Mr. SIKES. The F–5: Will the ——— RF–5's requested complete the authorized complement of RF–5's for the South Vietnamese?

Colonel GROSSMILLER. Yes, sir, it will complete them. There are no other planned buys at this time.

Mr. SIKES. The average unit flyaway cost of the F–5 is listed in your statement as $805,000. The weapon system cost indicated in the justifications is $1,120,000. Would you provide for the record a listing of the items which make up the difference in the figures?

(The information follows:)

F–5 ITEMS MAKING UP DIFFERENCE IN COST FIGURES

The $805,000 figure represents the average flyaway cost for the total Air Force funded F/RF–5 program of 64 aircraft procured over the 5-year period fiscal year 1966–70. The $1,120,000 figure is average unit weapon system cost of the 10 F/RF–5 aircraft in the fiscal year 1970 program only. The average flyaway cost is $1,020,000 and the remaining $100,000 is the support cost for each unit. The increase in the flyaway cost in fiscal year 1970, as compared to the average flyaway cost over a 5-year period, is due to the reduced plant loading in the contractor's plant and escalation in the economy.

Mr. SIKES. What is the unit weapon system cost of the RF–5 as compared with the F–5?

You can provide that for the record, too.

(The information follows:)

COMPARISON OF RF–5 UNIT WEAPON COST WITH F–5

The unit weapon system cost for the ——— RF–5A's in the fiscal 1970 program is $1,150,000, as compared to the unit weapon system cost for the ——— F–5A's of $1,075,000.

Mr. SIKES. What is the future requirement foreseen for F–5 aircraft?

General JEFFREY. In addition to those that are funded in the 1970 program, Mr. Chairman, a total of 10 in this particular case. You mentioned the ——— for the Vietnamese Air Force, and there are also ——— for Thailand.

Mr. SIKES. Are there any other foreign orders, while we are on that?

General JEFFREY. There are other anticipated orders both in the military assistance program and foreign military sales program.

Mr. SIKES. Do you have a listing of those?

General JEFFREY. I have a listing of those.

Mr. SIKES. Will you provide that for the record?

(The information follows:)

LIST OF FOREIGN ORDERS FOR F–5 AIRCRAFT

In addition to the 10 F/RF–5 aircraft we are requesting in fiscal year 1970, we anticipate that potential orders may materialize for 15 aircraft for the military assistance program (MAP) and 44 aircraft for foreign military sales (FMS) as follows:

MAP		FMS	
Country	Units	Country	Units
———	———	———	———
Total	15		44

ADVANCED VERSION OF F–5

Mr. SIKES. What is the general picture on the F–5? What about the advanced version? What is the status of that?

General JEFFREY. The Northrop Co. has proposed an advanced version of the F–5.

Mr. SIKES. That is the version I am speaking of.

General JEFFREY. We refer to it as the F–5–21 and the reason for the 21 has to do with the dash number of the J–85 engine that is going into it. The principal difference in this airplane and the present F–5 is an increase in maximum gross weight above 19,736 pounds to 24,140 pounds. Takeoff distance has been reduced. The speed would be increased from 1.4 to ——— mach. The attack mission radius is up from 465 nautical miles to about ——— nautical miles. One of the principal faults with the F–5 airplane has been its very limited range.

Mr. SIKES. It would seem this would add very considerably to its desirability. Is the new concept in the test stage rather than procurement stage?

General JEFFREY. Yes, sir. This is entirely in the test stage right now. There is a test bed airplane which is a modified F–5 with the new engine.

Mr. SIKES. Is it purely a company version, or is it a program in which the Air Force has participated?

General JEFFREY. Up to this point it has been a company effort. The Air Force has participated to the tune of $2 million in an engineering design effort.

Mr. SIKES. Is that in the budget before us?

General JEFFREY. There is no money in this budget for this airplane, sir.

Mr. SIKES. Explain something to me.

The Air Force has always seemed to frown on this aircraft for its own use but to recommend it for the use of others, which would seem a little incongruous. It is a good aircraft. It is purely the short legged feature that the Air Force has objected to, or are there other drawbacks?

General JEFFREY. The short legs represent a significant part of the Air Force's objection to this airplane.

Mr. SIKES. What about its load carrying capability?

General JEFFREY. It has a limited load carrying capability.

Mr. SIKES. What is that capability?

General JEFFREY. 6,200 pounds.

Mr. SIKES. Normally what weapons would it carry?

General JEFFREY. It could carry some number of the Mark 82, 500 pound bomb. Some number of the 150 pound bombs and 1,000 pound bombs. The number it could carry would be very limited. To get back to your question about the Air Force's apparent lack of interest in this airplane, our force structure when limited to 23 wings—fighter wings, as is the case—we have to be prepared to take on our principal enemy. We have to have the best thing that the country can afford to do this. Right now this is the F–4E airplane. Within that force structure in our opinion we would be very reluctant to trade off an airplane with a limited capability, more limited than the F–4E.

Mr. SIKES. Are there questions on the F–5?

AIRCRAFT FOR VIETNAMESE AIR FORCE

Mr. ANDREWS. General, what planes are you planning to supply to the South Vietnamese?

General JEFFREY. They will be supplied with the F–5. They will also be supplied with the C–123 transport airplane, the A–37—a light attack airplane—the UH–1D helicopter and the AC–47 gunship.

Mr. ANDREWS. Do you have those planes in hand today that you plan to give to the South Vietnamese, or will they be new procurement?

General JEFFREY. Most of these airplanes are in hand today. The F–5's, as indicated here, some number are being bought in this budget. The A–37's are being sent over there at the present time. The AC–47's and the C–123's are old airplanes.

The UH–1H's, the helicopters, by and large are yet to be bought.

Mr. ANDREWS. You told us this morning about your pilot training program for the South Vietnamese. If I remember correctly, you said you will complete that program by ———.

General JEFFREY. I believe that was the figure.

Mr. ANDREWS. By ——— the South Vietnamese will have enough pilots to take over the air operations in the war?

General JEFFREY. Yes, sir.

Mr. ANDREWS. How long would it take you to supply them with the necessary aircraft?

Colonel GROSSMILLER. Sir, the ——— squadrons will be completely equipped by ——— consistent with the training of the pilots.

Mr. ANDREWS. ——— is the earliest you hope the South Vietnamese will have an adequate force of planes and pilots to take over?

Colonel GROSSMILLER. Yes. We will be building from fiscal 1970 up to ———. In ——— they will have ——— squadrons.

Mr. ANDREWS. By ——— is when you expect them to be provided with enough planes and pilots to have an adequate Air Force to take over the activities?

General JEFFREY. Sir, I would like to qualify that, if I may, in connection with your expression of adequate. There will be enough pilots to take care of the airplanes that have been approved for them. Certainly these aircraft would not provide them with a capability to cope with, to any significant degree, in my opinion, the Soviet airplanes that North Vietnam has. The air superiority would have to be provided by somebody else.

Mr. ANDREWS. Are there enough Soviet planes in North Vietnam today to give account of themselves?

General JEFFREY. Yes, sir; they could give a very good account of themselves.

Mr. ANDREWS. By ——— you hope to fulfill your mission with reference to the South Vietnamese, and you still won't have them in a position to cope with the Russian planes that are in North Vietnam today.

General JEFFREY. That is correct, sir.

Mr. ANDREWS The assumption is, or the expectation is that the North Vietnamese fleet of Russian made fighters will increase also by ———.

General JEFFREY. We have no reason to assume otherwise.

Mr. ANDREWS. Thank you, Mr. Chairman.

Mr. SIKES. If the South Vietnamese are to be equipped with F–5's, what is their capability in combat against the Mig–21 which the North Vietnamese presumably would be equipped with?

General JEFFREY. The F–5 could give a good account of itself but in my opinion it is not a match for the Mig–21.

Mr. SIKES. Are we providing the South Vietnamese with any aircraft that are a match for the Mig–21?

General JEFFREY. Not to my knowledge.

Colonel GROSSMILLER. No, sir; the only fighter they have that could fight air to air is the one squadron of F–5 aircraft.

Mr. ANDREWS. How many Russian planes are in North Vietnam? Do you have any hard intelligence about it?

Colonel GROSSMILLER. In the North Vietnam air order of battle there are some ——— fighter aircraft and ——— light bombers. Of these fighters there are ——— Migs 15–17, ——— Mig–21's and ——— Mig–19's. ———.

Mr. ANDREWS. Is that pretty good intelligence?

Colonel GROSSMILLER. Excuse me, ——— Mig–21.

Mr. ANDREWS. Is that pretty good intelligence, Colonel?

Colonel GROSSMILLER. We certainly believe so.

Mr. ANDREWS. I do not recall hearing any testimony before the committee about that many planes in North Vietnam. We have been told there are some, but nothing like that. That is a pretty good air force; is it not, General?

General JEFFREY. It certainly is.

Mr. ANDREWS. I assume they have good pilots. Are they Russian or North Vietnamese?

General JEFFREY. We believe they are North Vietnamese pilots.

Mr. ANDREWS. Trained by the Russians?

General JEFFREY. Trained by the Russians and the Chinese.

Mr. ANDREWS. In North Vietnam or Russia?

General JEFFREY. We expect both there and in China.

Mr. ANDREWS. What kind of air-to-air weapons do they have?

General JEFFREY. The Mig–21 has a 30 millimeter cannon.

Colonel GROSSMILLER. Of course, North Vietnam does have the SAM's.

Mr. ANDREWS. That is ground to air.

Incidentally, some witness told us not long ago that they had a mighty good antiaircraft defense in North Vietnam as of a recent date.

General JEFFREY. They have antiaircraft defenses in North Vietnam that are comparable to or better than those that the Germans had in World War II.

Mr. ANDREWS. You are painting a pretty black picture this afternoon. I had hoped that eventually, I won't say when, the South Vietnamese would be able to take over all the fighting down there, which would include air activity. From what you said, I gather that they have a force in North Vietnam today that would be just about all that South Vietnam could take on in ——— and the assumption is that by ——— they will have beefed up their Air Force considerably.

General JEFFREY. Yes, sir.

Mr. ANDREWS. Where does that leave us?

General JEFFREY. ———.

(Discussion off the record.)

Mr. SIKES. Are there further questions for the F–5?

HARRIER AIRCRAFT

Mr. MINSHALL. General, I wonder if you would care to give us an appraisal of the British aircraft that they demonstrated over here for several weeks, the vertical takeoff and landing aircraft called the Harrier? With the exception of the vertical takeoff and descending capability it has, it has normal flight characteristics under battle configurations that bear a resemblance to combat aircraft we have in our inventory.

General MCNICKLE. I have seen the Navy reports and the Air Force pilot reports. The Navy reports indicate that its weight-carrying capability is better than their A–4.

Mr. MINSHALL. Better than their A–4?

General MCNICKLE. Yes, sir.

Mr. MINSHALL. Have you had any reports from the Air Force? Did you see these tests?

General MCNICKLE. I saw the Navy report.

Mr. MINSHALL. You did not see the actual test at Andrews?

General MCNICKLE. I have seen the airplane fly but I was not out at Andrews; no, sir. In the vertical mode, where they want them to support the marines in their landing, they do not really need long range, where we do.

Mr. MINSHALL. Do you see any place where this aircraft could fit into the Air Force inventory?

General MCNICKLE. Not this specific airplane. When it gets better engines, and greater range and payload, I would think there could be a place.

Mr. MINSHALL. What is wrong with this aircraft as far as the Air Force is concerned and what is good about it?

General MCNICKLE. The biggest problem is the payload and the short range in the vertical mode. It carries 3,000 pounds of bombs just over ——— miles. For Navy or marines, operating off a beachhead, that is not bad. If we are operating from bases ——— miles back, we just barely make it to the front lines.

Mr. MINSHALL. Put anything else in the record that you wish.

General MCNICKLE. I have some information here I will submit for the record.

(The information follows:)

BRITISH HARRIER

The Harrier V/STOL fighter, which has been proposed by the United Kingdom as a close-air support fighter, does not meet the U.S. Air Force requirements for a specialized aircraft for this role. The Harrier has limited payload-range performance, especially when operating in the vertical mode. It has somewhat better performance when using the short takeoff and landing (STOL) mode, but many of its mission capabilities have been compromised to provide the aircraft with vertical flight performance.

The A–X, on the other hand, represents the U.S. Air Force view of the specialized type of aircraft needed for best performance of the close air support mission. It has the versatility and flexibility which provides it with a high order of trade offs in range, payload and loiter time. For example, the Harrier using external fuel can deliver ——— pounds of ordnance over a combat radius of

——— but the takeoff ground run is —+——. The A–X can carry the same ——— pounds of external ordnance for a radius of ——— but uses a takeoff ground roll of ——— feet, or ——— feet shorter than the Harrier. In addition, landing distances of the A–X under heavy load conditions are shorter than the Harrier.

In summary, the A–X is proposed to do a specific mission, close air support, and is designed to do that mission in an optimum manner. The Harrier, on the other hand, gives up a great portion of its mission capability to achieve vertical flight. For these reasons, the U.S. Air Force considers the Harrier to be of marginal utility for the Air Force mission.

Mr. MINSHALL. I am not an expert on this type of aircraft or any aircraft, but it was a very impressive demonstration from a layman's point of view. I wondered just what it would do under actual battle conditions.

General MCNICKLE. We would like to have an aircraft of this type that would have greater range and payload. We have had some people participating in the test program all along.

General PITTS. General McNickle has gone on record before the Senate and House Armed Services that the Air Force is desirous of having a plane with a vertical takeoff and landing capability. But as he said, at this point in time we have not reached the state of the art in engine development to give the range the Air Force needs to carry a proper bomb load to do a proper job.

General MCNICKLE. We would like to have a few of these airplanes to really shake them down. We would not be willing to trade an F–4 squadron for some of these airplanes.

Mr. MINSHALL. Thank you.

F–12 AIRCRAFT

Mr. SIKES. Are there other questions? If not, we will turn to the F–12.

In the past, Congress has appropriated funds to keep the F–12 program alive, at least partially, so that if procurement of this aircraft was required, minimal cost would be involved in the initiation of production. What is the status of the F–12 production facility at this time?

General JEFFREY. The F–12 production facility is essentially intact. All of the major large items of tooling and tools are there.

Mr. SIKES. But not in operation?

General JEFFREY. No, sir; not in operation. A large number of the small tools have been put in storage. The facility is operational, however. It is being used on other programs to a significant degree.

Mr. SIKES. Have we reached the point where it would be difficult to initiate F–12 production again?

General JEFFREY. It would be expensive and it would be time consuming to initiate F–12 production. From the viewpoint of acquiring the people, the startup costs, and what not. As far as the tooling and tools are concerned, they are available, sir.

Mr. SIKES. The tools are then about all that you could say are available now. From all other standpoints, it would be almost the same as starting over again.

General JEFFREY. Yes, sir.

All of the subcontractors for the subassemblies and components have been allowed to expire. So the leadtime would almost be like starting production of a new airplane all over.

Mr. SIKES. Is there any significant or concerted effort to initiate new activity in this field?

General MCNICKLE. Sir, as you know, last year the Air Force was interested in the F–12 and DOD was interested in the F–106–X. Congress was interested in our having F–12s. So we got no place. This year the Secretary has not made up his mind. However, he is putting money on the technology and he says he wants an advanced interceptor. F–12 would be one of the candidates. But he has not at this time made up his mind what it might be.

We do need an advanced interceptor.

Mr. SIKES. Has time at least partially passed the F–12 by? Are there newer concepts? Has the state of the art brought about new developments that would substantially preclude the F–12 from being a serious contender?

General MCNICKLE. No, sir. It was so far ahead of its time that there still is not anything that will come up to it.

Mr. SIKES. What is the status of the $55 million which has been held in reserve for the F–12?

General PITTS. It has been transferred from 1967 to 1969 progressively. It is now shown as a line item in the 1969 column of the 1970 submission.

F–111D AIRCRAFT PROGRAM

Mr. SIKES. Are there questions on the F–12? If not, I would like to take up the F–111D.

There is a request for $727.2 million for the F–111D aircraft program for fiscal year 1970. This includes $599 million for the procurement of 68 aircraft, $56 million for advance procurement, and $71.4 million for cost overruns. Before the amendment to the budget, which reduced the buy of FB–111 aircraft, it was proposed that 52 F–111D aircraft be procured in fiscal 1970. No indication has been given of a military requirement for earlier delivery of F–111D aircraft. Why couldn't we reduce the funding requirement in fiscal 1970 by maintaining the earlier production schedule on the F–111D?

Colonel BUCKINGHAM. Sir, a reduction in the production quantity from the requested 68 aircraft would reduce the plant load below ——— per month rate. You are adding a lot of overhead to the remaining aircraft and driving the price up.

OVER TARGET COSTS

Mr. SIKES. There is a request for $71.4 million for over target costs applicable to fiscal year 1968 and prior year procurements for the F–111A through E aircraft. Would you detail for the committee what these cost overruns are?

Colonel BUCKINGHAM. Yes, sir.

There are two principal reasons for the over target cost in this instance. One is the correction of deficiencies clause in the contract which has required the contractor to correct some 900 deficiencies. These are Air Force directed correction of deficiencies measured against the specification. The effort required for the correction drives the cost up above target and hence the overrun.

Another principal reason relates itself to the escalation in the economy not provided for by the contract. Those are the two largest contributors.

(Additional information follows:)

The request for overtarget funding in the fiscal year 1970 budget request is $71.4 million. We anticipate requesting a further amount in fiscal year 1971. These costs arise because OSD has allowed the Air Force to budget only target price although we recognize that any underestimates, corrections, of deficiencies, or abnormal escalation will increase the cost to the Government. The amount is our best estimate at this time of the Government's share of the overtarget costs which will exist in the F-111 production contract.

Mr. SIKES. Are any more overruns anticipated?

Colonel BUCKINGHAM. Yes, sir. We have anticipated a total overrun in this contract of $272 million, of which $71.4 million is being requested in fiscal year 1970.

We will request $200.5 million in fiscal year 1971.

Mr. SIKES. How many aircraft included in the $71.4 million?

Colonel BUCKINGHAM. None, sir. That is an overrun related to the fiscal year 1968 and prior aircraft previously directed and placed under contract.

Mr. SIKES. How does this change the unit cost of the aircraft?

General JEFFREY. We estimate it would increase the unit cost of the airplane by approximately $783,000 per airplane.

Mr. SIKES. Mr. Lipscomb.

Mr. LIPSCOMB. Colonel, you said this $71.4 million was for fiscal year 1968 and prior. According to the justification book it is fiscal year 1969 and prior. Do you anticipate any 1969 overrun?

Colonel BUCKINGHAM. Yes, sir. I believe I stated there would be another $200.5 million which we would request in fiscal year 1971. So the total overrun as we see it today would amount to around $271.9 million. That would be applied against fiscal years 1969 and prior aircraft deliveries, broken out this way: $107.4 million applied to fiscal 1967 and prior; $84 million applied to fiscal 1968 and $80.5 applied to fiscal 1969.

I would like to emphasize these are estimates at this time. There is a good deal of negotiation to be done between the Air Force and the contractor and these may go up or they may go down. Hopefully they will go down.

General JEFFREY. Mr. Lipscomb, that is 1969 and previous rather than 1968 and prior.

Mr. MINSHALL. This overrun is for how many aircraft?

Colonel BUCKINGHAM. The overrun which I have referred to, sir, applies to fiscal 1969 and prior, a total of 347 aircraft.

Mr. MINSHALL. What is the cost per aircraft over the original estimate?

General JEFFREY. We estimated, sir, it would be in the neighborhood of $783,000 per airplane.

Mr. SIKES. Do you contemplate making changes in fiscal 1970 in the F-111 which will lead to additional procurement costs?

General JEFFREY. Not at the present time, sir.

Mr. SIKES. What would the effect of not appropriating the $71.4 million be?

General JEFFREY. We would effectively reduce the aircraft buy by approximately nine airplanes.

Mr. SIKES. What would be the effect of the reduction by seven or eight or nine aircraft?

General JEFFREY. The plant production rate would drop down. If these airplanes were not subsequently added into the program, the total planned buy of ——— F–111D's would be reduced by that number.

Mr. SIKES. Would this be serious from the standpoint of the Air Force?

General JEFFREY. This would cut into our training and into advance attrition and support. So we do think it would be a serious problem.

COST OVERRUN ON FB–111A

Mr. SIKES. How many aircraft of the ——— planned are in various categories of training and support aircraft over and above those required for the operational wing force?

General JEFFREY. Approximately 25 percent of the total.

Mr. SIKES. How many F–111 aircraft would be in an operational wing?

General JEFFREY. Seventy-two planes per operational wing.

Mr. SIKES. What over target costs have been experienced in the FB–111 program?

General PITTS. $44.4 million, Mr. Chairman.

General JEFFREY. This was the figure we discussed this morning on the FB.

Mr. SIKES. Mr. Preston.

Mr. PRESTON. In the original January budget, the cost overrun for the FB–111A related to fiscal 1969 and prior years was $74.7. The revised budget shows $44.4 million. Does this reduction relate entirely to the reduction in the number of aircraft? How can this be the case if the cost overruns were in prior years?

Colonel BUCKINGHAM. Sir, I can answer that. When we cut back the 1969 quantity, the 1969 overtarget applicable to the 42 aircraft remaining in the 1969 program is within the dollar amount of $393.3 million that you will see on your P.1 document for those 42 aircraft. The $44.4 million applies only to fiscal 1968 and prior. The amount for fiscal year 1969 did go down some because we reduced the 1969 quantity. The $44.4 million applies only to fiscal 1968 and prior.

F–111 SAFETY RECORD

Mr. SIKES. The Air Force insists that the F–111 aircraft has a better than average safety record. The general public believes the aircraft has a poorer record since all of its accidents have been widely reported and the aircraft which were sent to Vietnam encountered great difficulty. Can you offer statistics in comparison with other recent aircraft which would support the Air Force's contention that the F–111 really has a good safety record?

General JEFFREY. Yes, sir.

Mr. Chairman, if we plot numbers of aircraft accidents against the flying hours, we find, looking back through the safety records of the recent and existing high performance fighter airplanes that at the 20,000 hour point—this is at the point in an airplane's life when it would have flown 20,000 hours—that the F–111 up until last week and including the accident last week, had 12 accidents. This compares to eight accidents at that point in the lifetime of the F–4, 10 accidents at

that point in the lifetime of the F–106, approximately 14 for the F–105, 18 for the F–101, 22 for the F–102, about 26 for the F–104, and 28 for the F–100. So the F–111 in terms of these recent high-performance airplanes is well down in its accident rate of that particular point in the airplane's life.

Our projection, based upon a comparable projection for all of these other airplanes, is that the airplane will still be in this relative position at the end of 40,000 hours of flying time.

TEST EQUIPMENT FOR CARRY-THROUGH BOX

Mr. ANDREWS. General, it has been reported that the Air Force has been negotiating with Arvin Systems of Dayton, Ohio, for the production of an accoustical analysis system for the inspection of the F–111A, wing carry-through box. The purchase of this equipment might indicate that there is still considerable concern in this area. If there is no concern, why are you considering this special equipment?

General JEFFREY. During the investigations that related to the F–111 structural problem, we found that we did not have a very good technique for locating cracks—minute cracks—or for determining whether or not a bolt that is tightened up in a hole could be broken somewhere in the hole without us knowing about it. So various development efforts have been the result of extensive investigations to find out what sort of improved means could we have, for detecting such cracks in hard steel structures. This particular item is a sonic device that, in effect, would put a certain frequency of sound into a bolt. If the bolt was sound, a certain return signal would come back. In the case of a bad bolt, we would get back a different frequency signal. Also, the cracks surrounding a bolt could be detected without removing the bolt from the hole. This does not indicate any additional concern; the fact that this particular piece of equipment is under development does not mean—is not an indication of additional concern on our part.

Mr. ANDREWS. It is a precautionary measure?

General JEFFREY. That is right. It is a means of improving our capability to look for this sort of thing. As a matter of fact, a piece of equipment of this nature has been under development by the laboratory at Wright Field for quite awhile.

Mr. ANDREWS. Has the equipment been tested?

General JEFFREY. Only in a preliminary sort of way and it shows considerable promise. If it works, it will mean that we can detect cracks that we do not now have the capability to do and we can detect broken bolts in holes prior to the time that they would show otherwise.

Mr. ANDREWS. Is this a sole source procurement?

General JEFFREY. I believe at this time, sir, this is a development effort and we are not procuring these things in quantity. I would have to supply that for the record.

USE OF "P–100" ENGINE

Mr. ANDREWS. Does the Air Force have under serious consideration a plan to install the TF–30–P–100 engines in existing F–111 aircraft where technically feasible?

General JEFFREY. No, sir. We do plan to install the P–100 engine in F–111D number 90 which will provide it and the following F–111D's

with additional thrust. It is not feasible, as we see it at this time to go back and retrofit airplanes not so installed.

Mr. ANDREWS. What is your best estimate of the cost of replacing the engines presently installed in F–111 aircraft with P–100 engines? What use would be made of the engines replaced by those P–100 engines?

General JEFFREY. Sir, as I mentioned, we don't intend to retrofit any of the currently installed TF–30 engines with the P–100. We haven't really studied the matter of the cost associated with that.

Mr. ANDREWS. You have no use planned for the replaced engines?

General JEFFREY. No, sir. On the production airplanes that we would put the P–100 in, we simply would not buy the engines that have previously been used in the airplane.

Mr. ANDREWS. What progress has been made in reducing the time required in going from non-after-burning to after-burning power in the TF–30 engine?

General JEFFREY. Some improvement has been made in the current versions of the TF–30 engine. The P–100 would provide a significant improvement in going up to mach 2 from subsonic speeds due to its increased thrust from about 18,500 pounds in the current engine to approximately 25,000 pounds of thrust in the P–100. We estimate this would cut in half the time required to get up to this high mach number.

MODIFICATION OF F–111 AIRCRAFT

Mr. ANDREWS. Under modifications of inservice aircraft, you are requesting $37 million for the F–111. What is your requirement for the $37 million and what modifications are involved?

General JEFFREY. These modifications cover the "A" to what we call the "E" configuration. This is the F–111A—bringing the F–111A to the E configuration. Penetration aids that would improve our capability to penetrate enemy territory, we estimate the cost at $529,000.

Mr. ANDREWS. Is that for the program or each?

General JEFFREY. This is per airplane.

Vulnerability improvements. This is to improve the airplane survivability features, survivability through enemy fire. We estimate that these costs would be in the neighborhood of $66,000. There are certain bombing improvements which would cost $261,000 per airplane. Maintenance and reliability features to improve the reliability and improve the ability to maintain these airplanes, $117,000. These features altogether will add up to approximately $1 million per airplane.

Mr. ANDREWS. Do you consider the SAM missile the most effective in the hands of our enemy?

General JEFFREY. The SAM missile, in my opinion, was not too effective in shooting down our airplanes in North Vietnam.

Mr. ANDREWS. Do you think they were properly manned?

General JEFFREY. The SAM missile forced our airplane to fly at altitudes that were other than optimum for them. It forced them to fly at a lower altitude than we would like to have flown them. It forced us into an altitude of severe antiaircraft defenses. So even though the SAM missile, itself, didn't shoot down too many of our airplanes, indirectly it impacted on our losses.

Mr. ANDREWS. Does the enemy have anything better than the SAM?

General JEFFREY. The SAM missile with which the North Vietnamese forces were by and large equipped was called the SA–2 surface-to-air missile. This is the designation of this particular version of the Soviet missile. There is an SA–3 which is an improved surface-to-air missile that has a greater capability, than the SA–2. It has a low-altitude capability that the SA–2 did not have. I am not familiar with how many, if any, of the missiles were within North Vietnam.

Mr. ANDREWS. Are the modifications to the F–111's intended to improve the aircraft's defense?

General JEFFREY. Yes, sir. This is with the penetration aids. They are internally equipped electronic gear. This is the way we would protect ourselves against these missiles and it was through such equipment that we developed our quick reaction capability during the early phases of the North Vietnam war. It was with this that we were able to get along as well as we did with the SAM missile.

Mr. ANDREWS. Does your intelligence indicate that the antiaircraft capability of North Vietnam has increased since the bombing halt?

General JEFFREY. Yes, sir; it does. It indicates that it has increased.

Mr. ANDREWS. Considerably?

General JEFFREY. Appreciably.

FINANCING OF CAPITAL FACILITIES

Mr. ANDREWS. It has been Air Force policy that no facilities be provided by the Air Force for the F–111 program since the contractor's original proposal stated that the program would not require additional capital facilities. In March of this year, the GAO completed a review of the acquisition of industrial real property at five Government-owned contractor-operated plants. This review disclosed that between 1965 and 1968 the Air Force acquired major new facilities costing $23 million at Air Force plant No. 4 at Fort Worth, Tex., to support the F–111 aircraft program. These facilities were not financed directly by the Air Force but were financed indirectly through the contractor. The construction was not disclosed to the Congress in budget requests. It is understood that the contractor will recoup the costs of the facilities through overhead charges against defense contracts over a 5-year period. Thus the Air Force will, in effect, pay for the facilities through the overhead payments over a period of 5 years after which title to the facilities vest in the Government upon affixation to the realty. It would appear that this method of financing the Fort Worth facility was a circumvention of stated Air Force policy. Would you comment on this?

General MCNICKLE. Sir, when the GAO report came out, we studied it, and we will identify these kinds of costs during the budget cycle, identify them to the Congress and discuss them at that time.

General JEFFREY. We have had—without intent to deceive—a system whereby, when a new airplane was built, that from time to time certain facilities could be provided on Government property by the contractor, as a part of that contract, after which time, as you indicated, these facilities would revert to the Government.

The matter of who pays for these things gets pretty complicated when we try to figure it up. We recognized, after the GAO report,

as General McNickle points out—and I have read the GAO report—that this isn't a good situation, and we do intend to notify the Congress whenever this situation crops up in the future.

This year, at the present time, we can't identify any such facilities.

Mr. ANDREWS. Did the GAO report point out the facilities?

General JEFFREY. It pointed up the ones in the past and referred to Fort Worth specifically. I am speaking with regard to the analysis of our future programs and anything included in this budget. We don't believe there is anything in there.

Mr. ANDREWS. The problem at Fort Worth came to your attention after the GAO report?

General JEFFREY. Yes, sir. On the other hand, it was something that, had we been looking in that particular direction, we would have identified it ourselves.

Mr. ANDREWS. Do you feel that the interests of the Government in connection with plant No. 4 will be fully protected?

General JEFFREY. I believe so.

Mr. ANDREWS. Do you think the $23 million will be recouped?

General JEFFREY. Yes, sir.

Mr. ANDREWS. Will the cost of the $23 million be passed on to you as the customer?

General JEFFREY. Yes, sir. As our facility.

Mr. ANDREWS. Is there any comment any of the witnesses would like to make?

Colonel BUCKINGHAM. It ties into the fixed overhead as I said the other day, you will recall, a certain amount of the fixed overhead is the writeoff of the facility; a good part of it.

Mr. ANDREWS. Put anything else in the record that will throw light on the subject.

General JEFFREY. Yes, sir.

(The information follows:)

FINANCING OF CAPITAL FACILITIES

The construction and funding of construction at Air Force plant No. 4 as discussed by the GAO furthers the Air Force objective of requiring maximum contractor capital investment and of reducing contractor dependence on direct Government financed facilities. It was not the intent of the Air Force to withhold disclosure of this construction from Congress. The amortization costs of the contractor's capital investments, to the extent that allocation to a particular program was appropriate, were part of the total program costs submitted to Congress each year. However, these indirect costs for facilities construction were not specifically identified by separate line items. When future programs identify new brick and mortar construction on Air Force-owned property, the Air Force will inform the Congress during the annual budget hearings.

The GAO report implies that the contractors initially financed construction was to the benefit of the Government. The GAO stated that "if the Government had paid for the facilities at the time they were constructed, the Government would, of course, have incurred additional interest charges on the funds involved over the amortization period. Based on the average yield to long-term Treasury bonds as of March 1969, and the terms of the Government's current production contract with the contractor, it appears that the profit earned by the contractor in regard to the facilities will be substantially less than the interest cost the Government would have incurred if it had initially financed construction."

Mr. ANDREWS. What actions is the Air Force taking to assure that the budget submissions to Congress contain full disclosures of con-

struction projects, including those at industrial facilities, regardless of the manner in which they are funded? I believe you have partially answered that question.

General JEFFREY. The Air Force is establishing procedures to review our new programs, such as I have discussed, to be certain that any facilities construction which might appear to be hidden in these contracts is identified and brought to the attention of the Congress before the fact. There was such an area that, even though we were reporting to the Congress there were no brick and mortar programs identifiable that we knew about, this was a loophole whereby, when a new contract was awarded it did afford the opportunity for a contractor to propose an additional facility on an Air Force installation as a part of a new program.

Mr. ANDREWS. Was that proposal on the contractor's part after the contract had been signed?

General JEFFREY. It probably could have been either way.

Mr. ANDREWS. There was no discussion of a new facility before the contractor went to work on the contract?

General JEFFREY. I suspect, sir, that this was after.

Mr. ANDREWS. If the Air Force had known, prior to the execution of the contract, that it would be necessary to put up $23 million for facilities on this Government site, would that have entered into the cost?

General JEFFREY. It does in fact. Whenever this happens, that is the case.

Mr. ANDREWS. Do you have occasions arise where the contractor determines after he executes and starts performing the contract that he needs some new facilities?

General JEFFREY. Yes, sir. This does happen from time to time.

Mr. ANDREWS. Once you decide on a contract price, your primary interest then is in the performance?

GENERAL JEFFREY. Yes, sir; but this situation to which you referred could certainly happen, and does. In the past I am afraid we have not identified this to the Congress before the fact.

Mr. LIPSCOMB. General, you mentioned new procedures. Could you set those out in the record for us, please?

General JEFFREY. Yes, sir. I will provide as much information as we have at this time.

(The information follows:)

NOTIFICATION OF CONGRESS REGARDING CONTRACTOR NEED FOR NEW FACILITIES

The new budget procedures are presently under development. They are not, however, ready for publication at this time. These new procedures will require the submission of budgetary data to provide the Air Force with necessary information to advise Congress during the annual budget hearings of any programs that identify new brick and mortar construction using indirect financing on Air Force-owned property. These procedures will be published in time to obtain the information for presentation at the fiscal year 1971 budget hearings.

Current procedures require Air Force review and approval of construction projects on Air Force-owned land whether the work is to be performed with Government or contractor funds. For Government contract costing purposes, these procedures also stipulate that where the contractor is to accomplish the work at his own expense and the costs involved are to be written off, such costs will be processed by the contractor through his normal approved accounting practices.

All current procedures will be reviewed, expanded, and revised, if necessary, when the new budget procedures are issued.

TERMINATION COSTS FOR BRITISH

Mr. LIPSCOMB. General, have the negotiations with the British been concluded as concerns their cancellation costs and other financial costs in connection with termination of their order for the F–111K?

General JEFFREY. I believe they have or they are in the final stages of being concluded.

We had a team over there within the past few weeks that was supposed to have presented to them the cost of termination. I am not familiar with the immediate results. I understand that we are down to about a $25 million charge to them for this termination.

Mr. LIPSCOMB. Down to a $25 million cost?

General JEFFREY. We are at a $25 million cost.

Mr. LIPSCOMB. That is the estimate now?

General JEFFREY. Yes.

Mr. LIPSCOMB. In the hearings last May, on page 238, the estimate was being made then at $130 million.

General JEFFREY. Yes, sir; I recall that.

Mr. LIPSCOMB. And on October 15, 1968, it was announced in the Wall Street Journal that the Ministry of Technology told the House of Commons it would be $60 million.

General JEFFREY. I am not familiar with that estimate.

Mr. LIPSCOMB. Now it is down to $25 million estimated?

General JEFFREY. Yes, sir.

Mr. LIPSCOMB. What causes this?

General JEFFREY. Two things, of which I am aware. (1) The estimate that we made initially was high. It was a rough estimate of termination liability and included all of the components and tasks for which the British could be charged assuming no recovery. We got together one day before New Year's Day last year to present it to them on New Year's Day and we wanted to be certain that we didn't underestimate what it was going to be for various reasons, and we knew we were high. We knew that the termination costs were going to come out, whenever the negotiations were concluded, considerably below that. We knew that there was at that time almost an incalculable number of items of equipment that had been built for the British airplanes that we would be able to fit into our program. This has turned out to be the case. This hasn't come about as a result of trying to do the British any favors.

This has been done by the program office, going through hundreds of thousands of individual items with the contractor to determine: "This was something that you were providing for the British program. Can we use this piece over somewhere in the U.S. program," and if the answer to that was "Yes," then we would take that piece and we would be charged for it and it would be scratched off their account. So this whole thing has been gone through to this extent and it has come therefore down to this $25 million figure. I am not familiar with the results of the recent meeting with the British.

Mr. LIPSCOMB. Could you estimate what the expenditures were that we put into the F–111K program?

General JEFFREY. No, sir, I don't have that information.

Mr. LIPSCOMB. Would it be possible to get it?

General JEFFREY. Yes. I will ask our group if anyone here has anything?

No, sir, we just don't have that with us.

Mr. LIPSCOMB. Could you put that in the record?

General JEFFREY. It should be close to what the termination costs are.

Mr. LIPSCOMB. I am talking about the expenditures that the U.S. Government put into the F–111K, the expenditures we made.

General JEFFREY. The U.S. Government put no expenditures, into the F–111K.

Mr. LIPSCOMB. Then you are only negotiating with what the British put into it?

General JEFFREY. Yes, sir. The airplane was basically an F–111A, so the majority of the development work the Air Force did on this airplane would be applicable to the British airplanes, whether they bought them or not. I am not familiar with the provisions of the agreement made with the British at the time that this deal was consumated. I would, therefore, have to defer until we could look further into how the development costs were prorated between the two countries. We are really talking about the hardware that would have been procured to build the British airplane, and this was the stuff that was lying down there at the plant or on the way to the plant at the time the order was terminated and the question was: Could we use his stuff or not?

Mr. LIPSCOMB. Who makes up the negotiating team with the British on the cancellation costs?

General JEFFREY. This would be our primary contracting officer in the program office and his cost analysts and negotiators. They would be the ones to determine the item which could be used in Air Force programs and those which could not be used.

Mr. LIPSCOMB. Who are they and where are they physically located? At the Pentagon?

General JEFFREY. No, sir; they are not located in the Pentagon. These people are located out at Wright-Paterson Air Force Base in the F–111 program office, and the other people, the Air Force people, down at the plant at Forth Worth. The primary and administrative contracting officers would be the people responsible for doing this and these are Air Force people. I don't have the names here.

We also have involved or would be involved with the Defense Contract Audit Agency to see that everything was on the up and up.

Mr. LIPSCOMB. Where are the negotiations being physically conducted?

General JEFFREY. Our team, along with the people in the program office, have been in London in the past few weeks but the negotiations have been going on with the contractor here in the United States.

Mr. LIPSCOMB. Does it involve any personnel other than Air Force contracting officers? Does the State Department get involved, or any other agency?

General JEFFREY. No, unless the settlement which has been determined by the F–111 SPO would not be accepted by the United Kingdom. In that case OSD would become involved. I can't answer as to who else might be involved.

Mr. LIPSCOMB. It seems strange that within a year the Air Force estimate of the cancellation costs would be so different. Granting that the $130 million was a high estimate, but now to anticipate $25 million that is quite a difference.

General JEFFREY. I agree. It is a big difference. I have explained it, however, to the best of my ability, and we would be happy to provide you, sir, information on exactly how this has come down.

(The information follows:)

F-111K EXPENDITURES

An estimate of the potential termination liability of the United Kingdom was made in December 1967 in response to their request for a statement of maximum termination liability. This was based upon an estimate of the cost of all assets, both common and peculiar, including development which would have been chargeable to the F-111K at that time. This was a maximum estimate and was made with the knowledge that the common items would be diverted to the on-going F/FB-111 program, where practical. Following this, AFSC was directed to negotiate the termination of the F-111K with the contractor so that no additional cost would accrue to the on-going U.S. programs and to insure that the cost to the United Kingdom would be held to a minimum. The negotiations have been completed and the assets and development effort which cannot be absorbed by the on-going programs at no additional cost to the United States have been priced at $26.6 million.

Mr. LIPSCOMB. Are these negotiations being carried out under terms of a contractual arrangement of some sort, which was entered into at the time of the F-111K order being made?

General JEFFREY. They would be carried out in terms of the provisions of the contract at the time that the initial contract was awarded, and as might have been amended at the time the termination was directed.

AUSTRALIAN PURCHASE OF F-111 AIRCRAFT

Mr. LIPSCOMB. What about the Australian order? In what shape is that right now?

General JEFFREY. The Australians have 24 of the F-111C's on contract. This airplane is essentially the F-111A with longer wings on it. It has the FB-111 wing and it has the heavier landing gear and certain other less significant modifications. These airplanes, I believe, have all been produced. They have all been produced and they are on the ramp down at the plant at Fort Worth awaiting input into the wing box modification program. Some of them are in it now.

Mr. ANDREWS. Have any of them been flown?

General JEFFREY. Yes, sir.

Mr. ANDREWS. All of them?

General JEFFREY. I believe all of them have been flown, sir.

Mr. ANDREWS. And there have been no incidents?

General JEFFREY. The airplanes are all right. We know of nothing wrong with them but for safety reasons the modifications in the wing box should be incorporated in these airplanes.

Mr. ANDREWS. Will the Australians pay for that modification?

General JEFFREY. No, sir; the contractor will have to pay for the modification under the sharing arrangement of the contract.

Mr. ANDREWS. What should it amount to?

General JEFFREY. It should amount to the same thing that the modifications to the U.S. Air Force airplanes would, sir, and we estimate that to be approximately $75,000 per airplane.

Mr. ANDREWS. What is the total amount of the contract?

General JEFFREY. I don't have that.

Mr. ANDREWS. Supply that for the record.

(The information follows:)

Pursuant to a memorandum of understanding dated October 19, 1963, between the U.S. Department of Defense and the Australian Ministry for Defence, the Australian Government is procuring 24 F-111 aircraft from the United States. The procurement was implemented under a technical arrangement dated June 18, 1964.

The United States/Australian Technical Arrangement stipulated a pricing concept based on the average price of all F-111 aircraft programed at the time of delivery of the 24th aircraft to the RAAF. Based on a subsequent exchange of letters between Secretary McNamara and former Defense Minister Paltridge on September 27, 1965, and March 31, 1966, this pricing formula was modified to conform with the conditions of the then prevailing British F-111 agreement; namely, average unit cost as defined but not to exceed $5.95 million for the USAF F-111A common configuration. The ceiling price is to be adjusted upward:

(1) By the value of escalation of materials and labor since April 5, 1965;

(2) By the price of F-111 engineering changes approved by the RAAF which provide a new or improved capability not inherent in the baseline F-111A configuration; and

(3) By configuration changes requested by the RAAF which are not common to the F-111A.

General JEFFREY. The ceiling price on these airplanes is $5,950,000 per airplane, under the agreement as it stands today. This includes a pro rata share of the research and development and can be adjusted upward for escalation in labor and materiel costs. April 5, 1965, is the base date for determining adjustments to the $5,950,000 figure due to escalation costs.

Any Australian peculiar changes and so forth that they wanted to incorporate into the airplane are also additive.

Now, we have advised the Australians that they would not be liable for providing the wing box fix to their 24 airplanes, if the ceiling price was exceeded.

Mr. ANDREWS. Is that their full buy?

General JEFFREY. Yes, sir.

Mr. ANDREWS. They plan no additional buys?

General JEFFREY. Not that I know of.

Mr. ANDREWS. It will get down to where the only customers for the F-111 will be Air Force and Australia.

General JEFFREY. Yes, sir.

Mr. LIPSCOMB. General, who picks up the difference between the Australian F-111 unit price and the U.S. F-111 unit price, and how is this financed? You are not turning yours out for $5 million-plus a copy.

General JEFFREY. After peculiar changes, material and labor escalation, and so forth, has been added to the ceiling, then if the cost exceeds that price, I would say in my opinion the Australian Government got a mighty good deal on their airplanes.

Mr. LIPSCOMB. Got a deal with whom?

General JEFFREY. The U.S. Government.

Mr. LIPSCOMB. Do you mean the U.S. taxpayers are subsidizing the aircraft that the Australians buy? Is that what you imply?

General JEFFREY. Yes, sir.

General PITTS. When the original government-to-government initiated agreement was made with the Australian Government, it committed us to a pricing arrangement somewhat different than the one now in effect. In the initial agreement dated October 19, 1963 the basic F–111A aircraft for the Australians was to be priced at the overall average per aircraft cost for the total F–111 program to be determined on the day the last of the 24 aircraft is delivered. After the government-to-government agreement on the sale of F–111's to the United Kingdom the agreement with the Australians was revised to virtually the same terms as the U.K. sale—that is where the $5.95 million unit cost comes in.

Mr. LIPSCOMB. What is the difference between the unit cost of the Australian version of the F–111 and the U.S. version as estimated now?

Colonel BUCKINGHAM. I have a current estimated cost. I am not familiar with the precise differences between the two airplanes, but the gross flyaway cost, is $6,367,000 per aircraft. A small portion of that, of course, would be attributed to Australian peculiar items with which I am not familiar.

General JEFFREY. That would not compare to the $8 million unit flyaway cost for the U.S. airplane because the latter includes the Mark II Avionics and other U.S. Air Force peculiar changes to the basic F–111A aircraft.

Mr. ANDREWS. Eight million dollars even?

General JEFFREY. $8,015,000 average unit flyway cost for all our airplanes at this time—average over the total production program.

Mr. LIPSCOMB. On this particular sale therefor the American taxpayers pay how much per aircraft for the Australian version?

Colonel BUCKINGHAM. The C would be more like an A or E in the fiscal 1967 buy, our unit gross flyaway for that year's quantity of aircraft is $6.552 million. So you are comparing the $6.367 million with the $6.552 million during that same comparable time period. I think that would be a closer comparison. There is no assurance at this time that the ceiling price as adjusted for escalation of labor and material prices, and for peculiar configuration costs will be less than $6,367,000.

Mr. LIPSCOMB. I hope you are not trying to separate an A buy and B buy and D buy. This is all one ball of wax, isn't it? You and the contractor haven't even got your model A's flying yet, have you?

Colonel BUCKINGHAM. We have accepted a good many of the "A" aircraft, sir.

Mr. LIPSCOMB. Where are they now?

Colonel BUCKINGHAM. General Jeffrey addressed himself to that the other day; I believe most of them are at Nellis Air Force Base, Nevada.

Mr. LIPSCOMB. You can't cost them out yet and compare. You can't separate the F–111 program into buys yet?

General JEFFREY. As I understand it, Mr. Lipscomb, you are suggesting that it would be more proper to use the all-years flyaway cost of the F–111 as the figure with which to compare this, and this was the figure that I gave you there initially.

Mr. LIPSCOMB. When you get your total inventory, then you will know what they cost you and you will be hard pressed to convince

me that your A buy is cheaper than your D and E buy. It is all a part of the same.

General JEFFREY. If you look across the board at the F–111, you would have to average it out across the board.

F–111 OBLIGATIONS AND EXPENDITURES

Mr. LIPSCOMB. Will you place into the record, at this point, a chart similar to the one on page 238 of part 66 of fiscal year 1969 hearings, that has to do with appropriations, obligations, expenditures, for the F–111 program?

General JEFFREY. Yes, sir.

Mr. LIPSCOMB. That is A, B, C and K and the FB–111.

General JEFFREY. And E?

Mr. LIPSCOMB. And E, yes; that is right.

General JEFFREY. Yes, sir.

(The information follows:)

FISCAL YEAR 1969 AND PRIOR YEAR PROGRAMS—OBLIGATIONS AND EXPENDITURES

[In millions of dollars]

	Program	Mar. 31, 1969		June 30, 1969		June 30, 1970	
		Obligations	Expenditures	Obligations	Expenditures	Obligations	Expenditures
F–111 A/C/D/E/K:							
R.D.T. & E. (includes RF–111–D)	1,469.4	1,428.1	1,337.2	1,459.8	1,386.8	1,469.4	1,459.6
Aircraft procurement	2,779.9	2,446.3	1,948.1	2,566.0	2,200.0	2,730.0	2,600.0
Total	4,249.3	3,874.4	3,285.3	4,025.8	3,586.8	4,199.4	4,059.6
FB–111A:							
R.D.T. & E.	156.9	121.6	94.2	156.0	99.8	156.9	149.1
Aircraft procurement	882.5	752.3	577.8	800.0	650.0	855.0	800.0
Total	1,039.4	873.9	672.0	956.0	749.8	1,011.9	949.1

Note: The foregoing amounts on the F–111 A/C/E/D/K include the currently estimated cancellation costs ($25,800,000) to the United Kingdom. It should also be noted that the obligation and expenditure estimates in the June 30, 1970, column reflect only the activity against fiscal year 1969 and prior programs to accord with the program values (through fiscal year 1969) included in the "Program" column.

Mr. LIPSCOMB. At this point it seems if you keep negotiating another 6 months with the British we are going to owe them money the way it is going.

COST BREAKDOWN

Mr. ANDREWS. Break down the $599 million requested and indicate the various major areas of cost such as airframe, engines, electronics, and so forth.

Colonel BUCKINGHAM. The unit airframe is $6.357 million; allowance for engineering change orders (ECO) amounts to $312,000 per aircraft; the engines, two engines per aircraft, a total of $1,620,000 for the two; electronic Government-furnished aeronautical equipment, $142,000; and other Government-furnished aeronautical equipment for $109,000, gives a unit recurring flyaway of $8,540,000 for a total recurring flyaway of $580.7 million.

We have $1.2 million in tooling, $8.3 million for training items, aerospace ground equipment for $44.4 million, and technical data for $2.5

million, which gives us a total of $637.1 gross weapon systems cost and we subtract an advance buy that was provided to us in fiscal 1969 of $37.3 million, to net the $599.8 million, sir.

Mark II Avionics System

Mr. Andrews. What is the total cost and unit cost of MK–II avionics systems?

General Jeffrey. Sir, the unit cost of MK–II avionics system, we estimate at the present time to be approximately $2 million per system. At the present time it appears, and the contractor has estimated that the cost will be approximately $450 million for 210 sets of MK–II avionics. These are the 210 sets that are on contract. We agree that it probably will cost somewhere in this neighborhood to build them.

Mr. Andrews. 210 sets at $2 million a set would be $420 million total cost.

General Jeffrey. I haven't included the research and development effort and the mix of FB–111 (MK–IIB) and F–111D (MK–II) sets in the contract.

Cost history of mark II

Mr. Andrews. What is the cost history of the MK–II avionics system? What was the target price and target cost in the original contract with Autonetics?

General Jeffrey. For 210 sets, the target price was $145 million. These 210 sets included 96 sets for F–111D airplanes, 50 sets for F–111K airplanes, and 64 sets for the FB–111, including the R. & D. for them all. Thus far we have been able to trace Air Force-directed changes to the Autonetics contract that would raise the ceiling on this contract to $196 million. When taking into consideration the fact that this MK–II avionics system, which is being produced by Autonetics, is now being procured on a subcontract to General Dynamics, and the General Dynamics cost associated with installation, the integration of this system into the F–111 raises the ceiling to the U.S. Air Force from $196 million to $245 million.

At the present time this is the extent of the Government's liability on this program as near as we have been able to trace it to date. I indicated that the contractor—this is Autonetics—has estimated that the cost to produce these systems is apt to be in the neighborhood of $450 million; even though I indicate that the extent of Air Force liability at this time is $245 million.

I indicated also that the Air Force agreed to this approximately $450 million estimate.

Now, to what extent the contractor will be able to attribute any of that cost growth between the 245 and 450 to the Government is up to him to prove, and up to this time he has not proven that. I suspect some of this will be traceable to the Air Force. I suspect the $450 million is a high figure.

Mr. Andrews. Let me see if I understand it. The question is what is the target price. You gave me $145 million.

General Jeffrey. Yes, sir.

Mr. Andrews. Then the question is your estimated cost today. You gave me $196 million.

General JEFFREY. Estimated cost today, sir, I gave you $450 million.

Mr. ANDREWS. But you did give me a figure of $196 million.

General JEFFREY. I gave you the $196 million figure as a figure to which we have been able to trace changes to the contract as a result of Air Force direction.

Mr. ANDREWS. Then you gave me a figure of $245 million.

General JEFFREY. A figure of $245 million, which is the extent to which that $196 would be raised as a result of General Dynamics' effort in this program. The $196 figure was an Autonetics ceiling.

Mr. ANDREWS. Then you gave me $450 million?

General JEFFREY. Yes, sir.

Mr. ANDREWS. Now, let's get back to the original $145 million figure. The question was, what was the target price and target cost of the original contract with Autonetics. Is that figure still $145 million?

General JEFFREY. The target price was $145 million and I believe you asked for the target cost. The target cost with Autonetics was $132 million. I haven't given you that figure before. I didn't realize you asked for it.

Mr. ANDREWS. What I am trying to do is find out how much this program has increased. I am looking at an original figure here of $145 million that you gave me, and the latest, $450 million.

General JEFFREY. Estimate.

Mr. ANDREWS. Estimate of the final cost.

General JEFFREY. Of what—the cost of the Government and to Autonetics?

Mr. ANDREWS. What we want to know is, what did you originally expect this system to cost?

General JEFFREY. Originally we expected this system to cost the figure that I gave you, $145 million.

Mr. ANDREWS. What date was that?

General JEFFREY. This was in June 1966.

Mr. ANDREWS. And here in May 1969, nearly 3 years later, the estimated cost of the system is what, the $245 million figure or the $450 million that you mentioned?

General JEFFREY. It is the $450 million, sir.

Mr. ANDREWS. So then the cost estimate of this system in 3 years has gone up roughly $300 million?

General JEFFREY. Yes, sir.

REASONS FOR COST INCREASES

Mr. ANDREWS. Now, let's talk about the $300 million increase. To what is that attributed?

General JEFFREY. I attribute that to several things.

Mr. ANDREWS. Can you break it down?

General JEFFREY. Yes, sir.

One, a reduction in the quantity of the MK II avionics systems which has affected the rate of delivery in the contract.

Mr. ANDREWS. How many were you originally talking about?

General JEFFREY. We originally talked about 761 sets. When the contractor bid on this thing, that is what the F–111D, the FB–111 program and the K program——

Mr. ANDREWS. 700 and what?

General JEFFREY. 761 sets.

Mr. ANDREWS. How many sets are we talking about now?

General JEFFREY. We are now talking about ——— sets. I am just adding up there the F–111D airplanes which are currently included, and expected to have the MK II avionics, and there are ——— of them and the 76 FB–111, which is to have the MK II–B avionics in it so if I add those two figures together I get the ———.

Mr. ANDREWS. So we are talking about ——— sets now as against an original estimate of 761 sets?

General JEFFREY. Yes.

Mr. ANDREWS. And the reduction in the number of sets to be purchased is one reason why the original cost increased $300 million in a period of 3 years?

General JEFFREY. Yes, sir; this affected the rate of delivery at the contract quantity.

Mr. ANDREWS. Now, what is the second reason?

General JEFFREY. The second reason I attribute to changes which have been generated into the system by the Government and by the contractor. I can't give you an indication at this time as to just what the increase in cost due to those changes might be.

Mr. ANDREWS. Changes generated by the Government and the contractor?

General JEFFREY. And the contractor.

Mr. ANDREWS. Well now, I can understand why changes generated by the Government would have to be paid by the Government, but what changes generated by the contractor are being paid or will be paid by the Government?

General JEFFREY. I think it is very important that I make this point, and that we understand this point: That $450 million figure that we have discussed is what the contractor estimates it is going to cost to build the 210 sets and he is not saying here who is responsible for paying for this and I am saying it is not the responsibility of the U.S. Government to pay that $450 million. I say this is what it is going to cost him to build those things.

Now, it is going to be necessary for the Air Force and the contractor to negotiate who is going to pay that. We don't intend to pay that $450 million figure.

MARK II CONTRACTOR POSITION

Mr. ANDREWS. There have been allegations made that Autonetics is overrun on this program to a greater extent, over and above the Government's contractual liabilities, to an extent greater than their entire worth of Autonetics, and if the Air Force holds their feet to the fire this will wipe out Autonetics and this is really what is being negotiated, whether or not you are going to wipe out Autonetics.

General JEFFREY. I don't believe this is the case. I believe that the Autonetics Co. will sustain a sizable loss when the negotiations for the contract are completed, but I don't think they would be sufficient to wipe that company out. It is backed by North American Rockwell and I just don't think that would be the case.

We are talking about a cost figure of $450 million, which they estimate will be the cost to completion of that contract. The Govern-

ment, as I have said, finds itself liable right now for $245 million. We expect that to go up. It won't come anywhere near $450 million. I believe the final figure will put them in a maximum loss position, as I see it, somewhere in the neighborhood of ———. There is no effort on the Air Force's part, certainly, to protect them, and in my opinion there is no chance of this thing putting them out of business.

Mr. ANDREWS. General, your contention is that the original $145 million estimate has gone up to $245 million?

General JEFFREY. The Government liability; yes, sir.

Mr. ANDREWS. The contractor's contention is that the original $145 million has gone up to $450 million?

General JEFFREY. He estimates that is what it is going to cost to build it.

Mr. ANDREWS. The Air Force will be adamant in its stand about the $245 million ceiling and it is up to the contractor to prove his entitlement to the difference between $450 million and $245 million?

General JEFFREY. That is exactly what he has been working desperately for the past 6 or 7 months to try to do——

Mr. ANDREWS. I get back to my question of a few minutes ago. I can understand why the Air Force would be responsible for their own modifications. You said the contractor had modifications which add to the cost. You are talking now about their field of contention?

General JEFFREY. Yes, sir.

Mr. ANDREWS. What modifications did they make?

General JEFFREY. I can't identify them, sir, but it is my opinion that they grossly underestimated the technical difficulties associated with building this piece of equipment, and the changes to which I refer are changes that they would have had to make to their original design work, to make the system perform as they bid upon it.

Mr. ANDREWS. If they misread the specs, that is their fault and their responsibility.

General JEFFREY. Exactly.

Mr. ANDREWS. Is it true to say that the modifications that they made in this item were made because of their failure to read the specifications correctly?

General JEFFREY. A failure to understand the problem at the time they bid on it; yes, sir.

Mr. ANDREWS. That is their problem?

General JEFFREY. That is right, sir.

Mr. ANDREWS. That will be the area of contention between Air Force on the $450 million and the $245 million that you contend might be the increased cost?

General JEFFREY. Yes, sir.

Mr. ANDREWS. But even at that, the cost of this program is up ——— if you accept your figures?

General JEFFREY. Yes, sir; that is right.

UNDERESTIMATE OF MAGNITUDE OF MARK II DEVELOPMENT

Mr. ANDREWS. You have given me two reasons for that increase. One of them was a reduced number and the second was changes generated by the Government and the contractor. Are there any other reasons?

General JEFFREY. Yes, sir.

I mentioned a moment ago the contractor underestimating the magnitude of the job involved in developing and building this system.

Mr. ANDREWS. Again, that is his mistake?

General JEFFREY. Yes, but it is No. 3 of the reasons.

Mr. MINSHALL. You said he grossly underestimated.

General JEFFREY. Yes, sir.

Mr. MINSHALL. Did you have a breakout of what these differences would be?

General JEFFREY. No, sir. I have to say this on the basis of judgment in view of the number of changes that have had to be incorporated in the system in order to get it to work and the difficulties he has encountered in making the system work. It indicates he didn't really recognize the magnitude of the job at the time he bid on it.

Mr. MINSHALL. It is difficult for me to understand a company of this size underestimating the magnitude of the job to this degree.

General JEFFREY. It is difficult for me to understand it, too. On the other hand, it is not unusual.

Mr. MINSHALL. It is not unusual?

General JEFFREY. It is not unusual. I am not referring to Autonetics in that case. I say it is not unusual for us to run into people——

Mr. MINSHALL. In what other instances have you run into it? Why would you select a contractor without checking him out more carefully first?

General JEFFREY. Well, sir, in this particular case we are dealing probably, with one of the most competent companies in this field in the United States. The other companies who bid on the Mark II—in the case of the other companies, their proposals, in the estimation of the source selection activity, were not technically as competent or as technically acceptable as this one. This was the best technical proposal and stood the best chance of succeeding.

Mr. ANDREWS. It was an open, competitive contract?

General JEFFREY. Yes, sir.

Mr. ANDREWS. And then negotiated?

General JEFFREY. Yes, sir. It had to be negotiated with General Dynamics.

Mr. ANDREWS. You open the invitations to competition and then negotiate with the ones you select?

General JEFFREY. We carried two or three of them through to signing the contract and then we selected one.

Mr. ANDREWS. You have given three reasons for the increase.

General JEFFREY. No. 4 is an Air Force underestimate.

Mr. ANDREWS. That is your fault?

General JEFFREY. That is our fault. An underestimate of the magnitude of the job.

Mr. ANDREWS. Which included a fewer number of sets?

General JEFFREY. No, sir, I am talking now about the qualitative matter of designing and developing one of them. We underestimated the magnitude of the job to do this.

CONTRACT DATE

Mr. MINSHALL. When was this contract originally entered into?

General JEFFREY. In June 1966.

Mr. MINSHALL. When was it first negotiated and/or renegotiated?

General JEFFREY. The contract was awarded in June of 1966. I would say it was in the process of negotiation and definitization ever since.

Mr. MINSHALL. Did you renegotiate this contract last summer? That is my understanding.

General JEFFREY. We have been attempting to definitize this contract with General Dynamics ever since. It has now been definitized.

Mr. MINSHALL. When was that done?

General JEFFREY. March of 1969 sticks in my mind on that for the formal distribution of the contract, but I believe that the negotiations on definitization were concluded in July 1968. I would have to supply that specifically for the record.

Mr. ANDREWS. This year.

(The information follows:)

July 1968 is the date Mark II avionics was definitized with General Dynamics as part of a negotiation package involving both the R. & D. and production contracts. The formal distribution of the contract was made in March 1969.

General JEFFREY. What this amounts to, Mr. Minshall—and this is an exceedingly complicated thing—the Air Force conducted the competition for the Mark II avionics with General Dynamics' participation. They were not a voting member of the source selection board, but they participated in the selection process. When Autonetics was selected by the Air Force the contract was turned over to General Dynamics. As the result of which, Autonetics was a subcontractor to General Dynamics, the prime contractor. This contract was turned over to them by means of a contract change notice to the F–111 contract.

At that time General Dynamics had a contract with Autonetics for the amount of money I have talked about, a fixed price incentive type of contract. But the Air Force's contract with General Dynamics has been in the process of definitization over all of these years, but it included so many different things other than this—in other words, the lack of definitization of the Mark II really has had a great deal to do with the definitization of the F–111 contract. So when I say that the contract was definitized in July—and I will check on that date—I was talking about the F–111 contract up to that time with General Dynamics, which would have included the cost for the Mark II.

Mr. ANDREWS. General, it sounds like General Dynamics was making a contract for the Government.

I never heard of any such dealing as that.

General JEFFREY. I am not sure, sir, that I have ever heard of any such arrangements.

Mr. ANDREWS. In other words, if that be true, General Dynamics would have the authority to obligate the Government. I would like to know by what authority General Dynamics could do such a thing as that.

General JEFFREY. They are not in a position to obligate the Government on this contract.

Mr. ANDREWS I understood you to say somebody turned it over to General Dynamics to take it up with Autonetics.

General JEFFREY. Yes, sir. I said also that any cost growth over the 245 figure that I have identified, is up to General Dynamics and

to Autonetics. We have absolutely no intention of paying more than that portion that could be attributed to changes that we have made and the initial change order that we signed over to General Dynamics.

POSSIBLE "BUY-IN" ON CONTRACT

Mr. ANDREWS. Do you have any more?

General JEFFREY. I believe, sir, that there could have been an effort on the part of the contractor through the means of corporate decision, to buy into this contract; that is, he decided that he wanted this program bad enough to make a decision to underbid everybody else. I believe this is a consideration.

Mr. ANDREWS. In other words, he wanted the work and therefore he bid the cheapest.

General JEFFREY. Yes, sir. It is difficult to say or speculate on the things that go into a company's decision to do something like this, but I do not think it is something that can be discounted. The competition in the aerospace industry field is fierce. The numbers of systems that we are buying—not the quantities but the numbers of major weapon systems that we are producing are getting less and less—for these people to stay in business they have got to get contracts.

Mr. ANDREWS. In other words, it is getting to be a cutthroat business.

General JEFFREY. Yes. I think they will go to pretty large extremes to get business and I offer this as a consideration.

Mr. RHODES. They do not intend to have a permanent loss, do they, General? Don't they intend to make this up in some follow-on phase of the operation such as in the spare parts? They don't intend to show a net loss on any program they bid.

General JEFFREY. I would say they certainly do not intend to if there is any possible way for them to get around it. I have one other item, Mr. Andrews, and this is economic escalation during the period of the contract.

Mr. ANDREWS. If you had not added that, I would have.

General JEFFREY. I was going to add it.

EFFECT OF ECONOMIC INFLATION

Mr. ANDREWS. What has been the rate of inflationary escalation in the electronics field?

General JEFFREY. May I defer to the budget people on this?

General PITTS. The figure in my mind is 6 to 6½ percent per year during the last 4 years.

Mr. ANDREWS. Six to 6½ percent?

General PITTS. Six to six and a half percent. So about 25 to 27 percent in the last 4 years.

General JEFFREY. They use the figure somewhere in the neighborhood of 25 percent.

Mr. ANDREWS. We were told the other day that in certain areas of ship construction the inflationary rate had been 25 percent a year.

Mr. LIPSCOMB. To finish this record, General Pitts, wasn't some of that escalation cost included in the original negotiations? You do not put the whole six and a half percent on it.

General PITTS. No, sir. I am thinking specifically of the C–5 contract.

Mr. LIPSCOMB. I am talking about this contract.

General PITTS. Yes, sir. I do not know in this contract specifically. I can get that and supply it.

General JEFFREY. I can find that out, sir, and provide it to you. I would be reasonably sure that some percent rate of escalation would have been included in the original contract. It probably would have been somewhere in the neighborhood of 2 percent but I will have to check that for sure. What we will be talking about here is escalation over and above what is included in the contract.

Mr. LIPSCOMB. You are figuring 6½ percent over and above.

General PITTS. No, sir; not over and above the 2 percent. In other words, up to the 6 or 6½ percent. A figure that we would call abnormal escalation.

(The information follows:)

PERCENT INCREASE FOR INFLATION INCLUDED IN THE ORIGINAL F–111 CONTRACT PRICE

The contractor, in arriving at his proposal, generally includes a factor for economic escalation. The contractor's proposal contained pricing based upon a 2.5 percent per year escalation factor for wage employees and 3.8 percent for salaried employees. The percentage which was allowed them by the Air Force was 2.5 percent for wage employees and 3 percent for salaried employees.

Mr. MINSHALL. I have seen a lot of programs come before this committee, but I have never seen one characterized with so many foulups with the F–111A, B, C, and D and the MK–II part of this program Maybe we ought to scrub the whole concept and start from scratch.

General JEFFREY. It has had its problems.

Mr. MINSHALL. It sure has.

General MCNICKLE. The DOD gave the management of the program to the Air Force in December of last year.

Mr. MINSHALL. They gave you a hot potato.

General MCNICKLE. It responded to executive management meetings with the Secretary of Defense, and in December the Deputy Secretary of Defense decided not to have any more of those. General McConnell first attended a meeting in February.

Mr. MINSHALL. As you know, we smelled a rat in this whole F–111 program. But the generals said no, no, it has great prospects. It seems like we were right.

Mr. ANDREWS. General, we have some other questions on Autonetics contract. You might want to refresh your memory on some features of the contract.

General JEFFREY. Yes, sir.

Mr. ANDREWS. The committee will adjourn until 10 o'clock tomorrow morning.

TUESDAY, MAY 27, 1969.

CONCURRENCY OF R. & D. AND PRODUCTION OF MARK II

Mr. MAHON. The committee will come to order.

We will continue with the Air Force procurement hearing.

When the hearing adjourned yesterday, we were in the midst of discussing the Mark II avionics system.

Was the production go-ahead on the Mark II avionics system given before completion of the development and testing program?

General JEFFREY. Yes. The production go-ahead was given about 1 year after contract was awarded.

Mr. ANDREWS. How much flight testing had been accomplished at the time the production go-ahead was given?

General JEFFREY. No flight testing had been accomplished at the time the production go-ahead was given. However, individual component ground testing had been accomplished. We believe that the risks associated with the production go-ahead were reduced as a result of this ground component testing and also as a result of the fact that the problems associated with this development had been analyzed for somewhere in the neighborhood of 2 to 2½ years prior to the time this contract was awarded.

Mr. ANDREWS. Tell us something about the Mark II avionics system. Describe the system for the record?

General JEFFREY. The Mark II avionics system is fundamentally the bombing and navigation system that is included in the F–111D airplane. A version of the Mark II avionics system, a simplified version, is included in the FB–111. Addressing the Mark II first, the Mark II avionics system provides improved bombing accuracy over its predecessors the Mark I, which was included in the F–111A and the F–111E. It provides an improved navigation capability over the Mark I.

Mr. ANDREWS. How much money was spent in research and development for the Mark II? How much has been spent as of today?

General JEFFREY. Approximately $150 million.

Mr. ANDREWS. Just for R. & D.?

General JEFFREY. Yes, sir.

Mr. ANDREWS. How much has been committed or obligated to date on production?

General JEFFREY. As I indicated to the committee yesterday——

Mr. ANDREWS. You said yesterday $145 million.

General JEFFREY. The $145 million was the target price at the time of source selection.

Mr. ANDREWS. Now, it is up to roughly $250 million according to your estimates; according to the contractor's estimates, $450 million.

General JEFFREY. Yes, sir.

The Government, for production, would be liable for the difference between the $150 million R. & D. cost I mentioned a moment ago and the $245 million ceiling which would represent about another $100 million.

Mr. ANDREWS. It is a pretty expensive system.

General JEFFREY. This is an expensive system; yes, sir.

Mr. ANDREWS. Have you received any finished systems yet?

General JEFFREY. There are three Mark II systems, or variations of Mark II systems in R. & D. test airplanes at the present time. Two Mark II systems and one Mark II–B system. The two Mark II systems are installed in F–111A airplanes and the one Mark II–B system is in one FB–111 airplane.

CHANGES FROM ORIGINAL SPECIFICATIONS

Mr. SIKES. How do the current performance specifications of the Mark II system compare with those in the original contract? In other words, has there been any modification upward or downward?

General JEFFREY. There have been a number of small changes to the specifications, Mr. Sikes, that were incorporated——

Mr. SIKES. Would they have the effect of lowering the performance requirements?

General JEFFREY. Only to a minor degree, sir.

Mr. SIKES. What do you mean by "minor degree?"

General JEFFREY. The antenna gain has been modified slightly, identification friend or foe (IFF) performance and the side lobe strengths have been changed. There has been a slight increase in weight. The range of the radar has been reduced slightly in the clear and in clutter. I have a detailed list of those things which we can provide for the record.

Mr. SIKES. I would like to have that detailed for the record.

(Classified information was furnished.)

Mr. SIKES. Does this have the effect of lessening in any way the desirability of the system? Are you going to obtain significantly more out of the system even with the reduced specifications than you presently have in the systems in inventory?

General JEFFREY. Yes, sir. There is no question about that.

COST INCREASES DUE TO GOVERNMENT CHANGES

Mr. SIKES. How much of the increased cost of the Mark II avionics system has been found to be a result of Government changes?

General JEFFREY. We have identified approximately $20 million as being attributable to changes that have been generated by the Government.

Mr. SIKES. Was this the finding of the Air Force cost analysis team in 1967?

General JEFFREY. This was a finding of a cost trace effort that was conducted in the latter part of 1967 and the early part of 1968.

Mr. SIKES. It is alleged that there was a finding that the changes were not the responsibility of the Government but of the contractor. Has this been overturned in any way? Has there been an analysis of this type which has not been considered valid at this point?

General JEFFREY. I know of no cost analysis since that time that has invalidated this information.

"SHOULD COST" SURVEY

Mr. SIKES. Was a "should cost" survey made of Autonetics as ordered by Deputy Secretary of Defense Nitze?

General JEFFREY. There was an exchange of correspondence between Secretary Nitze and the Secretary of the Air Force that related to a "should cost" survey wherein the Secretary of Defense indicated his desire that in connection with the conduct of such a survey that we look into certain things. It was suggested that it be conducted in a manner similar to that conducted by Mr. Gordon Rule on the TF-30 engine at Pratt & Whitney.

In the Secretary of the Air Force's response, he indicated to Mr. Nitze that the effort which the Air Force had underway at that time, in his opinion, would effectively accomplish the purpose and intent of what Mr. Nitze had recommended, or suggested, in his memo. This, therefore, was the course that was followed.

We believe that even though a specific "should cost" analysis was not made, we effectively accomplished the same purpose.

Mr. SIKES. Will you provide copies of that correspondence for the record?

General JEFFREY. Yes, sir; we will provide those copies for the record.

(The correspondence follows:)

MARK II—CORRESPONDENCE RELATING TO COST TRACE

MEMORANDUM FOR THE DEPUTY SECRETARY OF DEFENSE
NOVEMBER 21, 1967

Subject: F-111 negotiations and Mark II cost.

I agree wtih your concern in the cost of the F-111 Mark II avionics program as stated in your memorandum of October 28, 1967. The issue of Mark II cost is also one of continuing concern at all levels of management within the Air Force. We have taken action to insure that every reasonable effort is made to protect the interest of the government in the negotiation of the General Dynamics/Forth Worth proposal which includes the Mark II task element. I agree completely that our efforts in this regard must be continued without letup, and where necessary, reinforced by additional support and techniques.

The current status of our activity in preparing for negotiation with the contractor is in the fact-finding phase with some 200 F-111 SPO, Defense Contract Audit Agency (DCAA), and Air Force Plant Representative Office (AFPRO) personnel involved. This activity, which will continue through December 1967, will develop the detailed information required by the SPO team in preparing the government's negotiation objectives. The negotiation team which is assigned directly under the system program director includes some of the most capable and experienced personnel within the Air Force in the areas of engineering, cost analysis, pricing, and negotiation. However, I have requested an immediate review with the system program director of the team composition in terms of functional skill areas covered, the number of personnel assigned, as well as the experience level. I intend to see that the SPO team is structured to accomplish the task for which the program director has been charged. In addition, action has been taken to insure that participation from the highest management levels will be provided when needed to achieve a specific objective.

In particular, specific attention will be given to the Mark II portion of the proposal to insure that Autonetics plantwide experience including Minuteman is reflected in the cost baseline. More importantly, the factfinding team has been instructed, not only to review the contractor's proposal, but also to develop its own independent estimate, such as that accomplished prior to source selection in the C-5A program. This estimate will be based upon the independent assessments of our engineers, cost analysts, and procurement specialists; it will reflect the elimination of avoidable contractor inefficiencies and will be compared with the costs of similar avionics packages previously procured by any of the services. Finally, this Air Force estimate will be the basis for our Mark II contract price negotiation objective.

The current schedule of activity will establish the Government's negotiation objectives in the January-February 1968 period. A formal status review of the team's progress is now scheduled to be presented to my staff on December 13, 1967, as a preliminary assessment of the baseline data on which the Government's negotiation objectives will be developed. I believe the results of the review will provide a sound basis to report our progress to you.

The present schedule for negotiation of the complete proposal package anticipates final definitive action by mid-1968. However, recognizing the complexities of the task and specifically the issue of Mark II cost including the need for a valid technical and cost track from the June 1966 Autonetics baseline to the present, some delay in this schedule may occur. While I am concerned that delays in definitizing this contract supplement tend to reduce the contractors' financial risk, the need for a thoroughly scrubbed cost position is mandatory.

The problem of tracking the Autonetics statement of work and associated cost in the current General Dynamics/Fort Worth proposal to the June 1966 Autonetics proposal continues to receive specific attention. The requirement to establish a valid track in terms of technical tasks and cost is basic to the negotiation

and has been, and remains, a firm team action. However, I do agree that a separate technical team to track the technical changes independently from the SPO team would be a major value to the factfinding and negotiating team in developing a strong position on this vital issue. Action is underway to establish such a technical team.

The identification of changes that may occur subsequent to the proposal which is to be negotiated will be provided at the final review of the prenegotiation position. It is imperative, however, that negotiations proceed on the basis of the configuration which corresponds to the cost base included in the prenegotiation position, since it is not considered practical to conduct factfinding and negotiations on a changing technical or program baseline.

The identification of costs in the proposal as GD/FW Mark II cost is a requirement already placed on the team. It was agreed, however, that in some task areas, the identification of cost would, of necessity, be accomplished by allocation rather than a precise estimate of completely segregated cost.

The issue of a meaningful cost reporting system has had continual management emphasis since inception of the F–111 program. We have recently completed an in-depth survey of management controls presently employed by General Dynamics for cost planning control and reporting (C/SPCS). Preliminary findings indicate numerous areas in which General Dynamics' internal system will not meet our criteria for a cost information and control system. We have directed General Dynamics to implement a well-defined system and to incorporate the C/SPCS specification in the production contract. General Dynamics has not yet accepted this requirement. As you know, the C/SPCS requirement is also an issue with several other companies. Autonetics was given similar requirements in the Minuteman program, but tests of their internal systems show failure to meet the criteria established. We are continuing to emphasize the requirement with General Dynamics and Autonetics to establish meaningful cost reporting and performance measurement procedures.

You requested the Air Force consider an approach similar to the team approach being used in the TF–30 engine negotiations. In this regard, I find that considerable similarity now exists between the Navy TF–30 team and the SPO team organization and negotiating approach with the basic difference being the level at which negotiation responsibility is placed. I believe that the project concept provides an operating structure with a concentration of skills, experience, and program knowledge collectively responsive to a single program director whose charter is the responsibility for all program elements. This basic project structure forms the nucleus of the SPD negotiating team. The full team is formed by including experts trained and experienced in the critical skills of engineering, cost analysis, prising, and negotiations. The TF–30 team approach serves much the same purpose as the SPO structure in focusing resources and experience needed to accomplish the prenegotiation and negotiation tasks. As you are aware, the Air Force has provided the Navy a number of specialists to work on their team. I do not believe that placing the responsibility for negotiation of this contract supplement at the major command or higher levels is necessarily an advantage, since the participation of higher levels is immediately available to achieve specific objectives or if necessary, to establish the objectives. As I have stated, I intend to insure that the SPO team has the skills in the numbers required for the program director to accomplish his responsibility. Moreover, our approach in the actual negotiations will be to utilize fully the data developed in our independent estimate as well as the careful analysis of the contractors' proposal in order to obtain a reasonable price.

I propose that responsibility for the negotiation remain with the system program director with the factfinding augmentation outlined above, and that we continue to the point of establishing a prenegotiation position. The December 13, 1967 review will provide a closer look at some of the preliminary results and the final prenegotiation position will be reviewed prior to initiating negotiations with the contractor. The adequacy of the prenegotiation efforts related to the Mark II portion of the proposal can be established based on specific conclusions presented by the SPO team with full data available for analysis. Where weak areas are identified in the cost supporting data, further specific effort can be directed in the context of the complete negotiation action. Formal negotiations with the contractor will proceed only when the negotiation objectives have been approved.

(Signed) HAROLD BROWN.

MEMORANDUM FOR THE SECRETARY OF THE AIR FORCE (UNDATED)

1. The issue of cost in the Mark II avionics program has been one of continuing concern at all levels of management within the Air Force and as stated in your memorandum of October 31, 1967, requires major attention. We have taken action through AFSC and the F-111 SPO to insure that every reasonable effort is made to protect the interest of the Government in the negotiation of the contractor's proposal which includes the Mark II task element. I agree completely, that our efforts in this regard must be continued without letup, and where necessary, intensified by additional support.

2. In reviewing the several elements of the CSD memorandum I am concerned that the true scope of the current Air Force effort involved in the factfinding may not have been sufficiently emphasized by AFSC when the factfinding and negotiation plan was briefed to Secretary Charles and Secretary Marks prior to the start of proposal evaluation activities. Some 200 F-111 SPO, AFPRO, and DCAA personnel, including much of the best talent available within AFSC as well as Mr. W. George and Mr. E. Fitzgerald, are involved in the factfinding process. This effort is in support of the SPO negotiation team and will provide price data which the team will further evaluate in preparing the Government's negotiation objective. I agree fully that responsibility for the negotiation and including the evaluation of all pricing information must remain in the charter of the system program office and specifically remain the responsibility of the system program director. In this regard, I believe it imperative to the success of the negotiation to give the program director complete support at all levels to insure he is in a position to accomplish the task successfully. As such, I have requested that the commander, AFSC, advise me immediately if he should determine that direct participation by senior Air Staff or secretarial personnel is required to achieve specific objectives. I believe such overt support by the highest levels will greatly assist the role of the program director and his team in impressing the contractor that we mean for him to negotiate in earnest.

3. The OSD memorandum proposes that we consider the use of a team effort as now being followed in negotiating the P. & W.A. contract. There is, in fact, considerable similarity between the Navy team and the SPO team approaches with the basic difference being the level at which negotiation responsibility has been placed. The Air Force project concept provides a strong operating structure responsive to the program director, which forms the nucleus for the SPO negotiating team. The full team is formed by including experts trained and experienced in the critical skills of pricing and negotiations. While the project structure provides a natural focus of program skills collectively responsive to a single director whose charter is the responsibility for all elements of the program, the Navy functional concept of management lacks this focus of responsibility and more significantly the concentration of project resources, or experience. Specifically, there is no TF-30 SPO. The TF-30 team approach serves much the same purpose as the SPO in focusing resources and experience needed to accomplish the prenegotiation and negatiation tasks. As to the level at which the prenegotiation activity and the negotiation are conducted, I do not believe that placing this responsibility at the command level or higher is necessarily an advantage in achieving the best possible terms and conditions for the Government. It is essential, however, that we assure the assignment of the best talent available to the program director's SPO team and that he have a clear statement of policy as to his role and his responsibility in conducting the negotiation.

4. The problem of tracking the Autonetics' statement of work and associated cost from the current GD/FW proposal to the June 1966 Autonetics' proposal is as you noted receiving specific attention. Notwithstanding, we recognize the complexity of the task as well as the general reluctance of Autonetics to provide the required data. This issue has previously been discussed with the contractors individually and collectively by DCS/S&L and at the secretarial level. The requirement to establish a valid track in terms of technical tasks and cost is basic to the negotiation and has been and remains a firm team action. I agree that an independent technical assessment to track the Mark II system changes from the June 1966 baseline to the present configuration would assist the negotiating team in their ultimate determination of cost allocation even though this technical evaluation is being accomplished by a technical group currently under the program director. Appropriate action is being taken.

5. In addressing the item of alternatives to provide the higher management levels with increased cost visibility into the Autonetics' plant-wide activities by

a separate team under a senior member at the command level, we are faced with the problem of accepting a further delay in the negotiation of the total General Dynamics proposal. The pricing task by the DCAA and the AFFRO at Autonetics has been completed and the package recently forwarded to the SPO for evaluation by the negotiation team. In response to your request for such an approach, the following two alternatives would provide the mechanics for achieving the review objective. In addition, a third alternative is included which builds further on the present SPO team approach.

(a) Alternative 1. Designate a senior member in AFSC to form a special team to review the Mark II pricing data as well as Minuteman costs on an Autonetics plantwide basis. This team would identify any specific areas where the Mark II pricing analysis as submitted to the SPO required further effort. Upon completion of any further effort the AFSC team chief would report the status to you prior to further action by the SPO negotiating team. The SPO would proceed with negotiations following appropriate review, and approval. This special AFSC team must rely in part on experts from the existing F–111 SPO team and Minuteman teams since a completely separate team of the caliber of the existing teams cannot reasonably be established with the resources available.

(b) Alternative 2. Designate an AFSC team as in Alternative 1, and initiate a fully independent pricing review of the Mark II proposal and major Minuteman cost figures. Following the report to you the data would be provided the SPO team.

(c) Alternative 3. Continue to hold the system program director responsible for the factfinding and negotiation. Review with the system program director the composition of the SPO team in terms of the functional skill areas, the resources available in these areas to accomplish the task and the costing and estimating techniques to be used in developing the price objectives. The additional skilled personnel required to insure necessary coverage in the critical areas would be provided.

6. Each of the alternatives 1 and 2 would result in delays in both the F–111 and Minuteman negotiation schedules since both of the SPO teams must await the results of the special team actions and the higher level reviews. While delays in completing the prenegotiation and negotiation activity may be encountered in the normal course of dealing with the contractor, Hq AFSC and the Air Staff strongly support the view stated by the System Program Director that a delay is not warranted at this time. Since a delay is inherent to any alternative to establish higher level or separate reviews, it would appear reasonable and more effective to continue the present course through to the prenegotiation position with the added capability provided in alternative 3. A complete review of the data and negotiation objective can be conducted at appropriate levels prior to negotiation. The adequacy of the prenegotiation action and results related to the Mark II position can be established based on specific conclusions presented by the SPO team with full data available for analysis. Where weak areas are identified in the cost-supporting data further effort can be directed in the context of the complete negotiation action, and with specific attention to the deficient element. Any delay in the final negotiations at that time would be no greater and probably less than a delay caused by either of the alternate approaches 1 and 2. As such, I strongly recommend that we elect the Alternate 3 approach and continue with the factfinding and pricing activity through to the determination of the Government's negotiation objectives.

7. I have included a proposed reply to the Deputy Secretary of Defense memorandum.

(Signed) J. P. McConnell,
General, USAF, Chief of Staff.

MEMORANDUM FOR THE CHIEF OF STAFF

October 31, 1967

Discussions during the past several days have revealed a growing concern on the part of OSD over the cost growth and the lack of cost traceability to date in the various Autonetics Mark II proposals. The attached memorandum from Secretary Nitze requests that a number of specific actions be taken in the cost study, now being conducted by the Air Force, as a basis for contractural negotiations on the Mark II program. Because of the problems encountered to date. Secretary Nitze has also suggested that we utilize a team approach similar to that now being used in the Pratt & Whitney TF–30 engine negotiations. However, he has indicated that alternative approaches may be better adapted to achieving our overall objectives.

I do not believe that it would be prudent to change our present approach of holding the F–111 SPO responsible for the contractual negotiations on the Mark II program unless there is good reason for doing so. However, in the fact-finding study, and most particularly in the case of developing a cost baseline at Autonetics, it would seem beneficial for the Air Force to consider Autonetics on a plantwide basis, including the Minuteman activity, for which there are similar concerns as to Autonetics cost. From this point of view, and in order to assure generally high-level visibility and participation in this important activity, it would be appropriate to place the overall responsibility for the cost studies at Autonetics at AFSC level. The AFSC study director should, as Secretary Nitze requests, assure the use of the best available cost analysts and industrial engineers.

I recognize that the SPO has directed that General Dynamics provide the cost traceability from the basic June 1966 Autonetics proposal to the present proposal. However, in order to provide the SPO with a solid basis for conducting the negotiations, it will be essential that an Air Force technical group, as well as a cost study group, evaluate the responsibility for the changes and their attendant costs. This will serve to protect the Government's position relative to the proposal which led to the original selection of Autonetics and its reconciliation with the current definition of responsibilities in the Mark II avionics program.

Therefore, in providing the status report and plan of action requested by the Deputy Secretary of Defense, I would like to review, as one alternative approach, an enlargement of the present cost study group, which would place this activity under a senior AFSC full-time study director, who would insure that all of the plant activities at Autonetics, including Minuteman, are addressed in the cost analysis. The AFSC study director should report his findings to me prior to the initiation of negotiations for the Mark II portion of the F–111 program. The impact of these findings on Minuteman cost projections should also be reported.

(Signed) HAROLD BROWN,
Secretary of the Air Force.

MEMORANDUM FOR THE SECRETARY OF THE AIR FORCE
OCTOBER 28, 1967

Subject: Mark II Avionics.

I know that the Air Force is now preparing for negotiations with General Dynamics/Fort Worth and Autonetics to definitize the Mark II contract supplement. However, I am concerned about the reports on Mark II costs and Autonetics' attempt to reprice the program without regard to their original contractual commitments.

It is my understanding that the Air Force is conducting a "should cost" study of the proposed Mark II program. I am desirous that this approach be used to identify areas for reduction in Mark II costs and that the results of this study be used as the basis for contract negotiations. Accordingly, I request that the following actions be taken in the Air Force "should cost" study:

(1) Insist that Autonetics, through General Dynamics, provide the Government with cost information on individual changes supported by detailed cost estimates.

(2) Establish a group of Air Force technical people to evaluate responsibility for these changes and their attendant costs.

(3) Identify and evaluate all known changes, at the time of initiating negotiations, for incorporation into the contract.

(4) Identify separately all General Dynamics' costs clearly attributable to Mark II and insure that these costs are segregated from the cost of the work already on contract.

(5) Identify contractor inefficiencies which can be eliminated through improved management control.

(6) Use the best available cost analysts and industrial engineers in this exercise.

In mapping your Mark II negotiation strategy, be sure to include the following points:

(1) Through the prime contract with General Dynamics, make certain that Autonetics is held to its original proposal plus customer-responsible changes, or failing this, that General Dynamics is held responsible.

(2) Insure that the negotiation proceeds from the "should cost" analysis and not from projections of historical costs.

Concurrently, insure that meaningful cost reporting systems, which measure actual costs against planned costs, exist at both General Dynamics and Autonetics. These systems must meet the Air Force criteria for acceptable planning and control systems.

By November 3, 1967, I would like from you a status report on the status of your prenegotiation efforts to date and your plan of action for meeting the requirements set forth herein. In this regard, I suggest that you consider utilizing a team approach similar to that being used in the Pratt & Whitney TF-30 engine negotiations.

If you consider that our overall objectives can be better met by approaches different from those outlined above, please provide me with your recommended alternatives.

PAUL H. NITZE.

PRICE OF MARK II SYSTEM

Mr. SIKES. What is the present ceiling price, in total and by unit, for the Mark II system?

General JEFFREY. The present ceiling price for the Mark II system, as I testified to the committee yesterday, is $245 million. This is the ceiling price for the total system.

Now, in breaking this out by unit, we calculate that the unit—since we are talking about basically two systems when discussing the Mark II, the Mark II in the F-111D and the Mark II-B, which is in the FB-111, the B being a simplified system—the Mark II system unit cost is approximately $750,000 and the Mark II-B, $250,000.

Mr. SIKES. For the record, provide information showing when and under what circumstances the ceiling was increased. Include in this all spares and other costs necessary to the program.

General JEFFREY. Yes, sir; we will do that.

(The information follows:)

MARK II CEILING PRICE INCREASE

During the preparation of the negotiations, which led to the July 1968 definitization of Mark II and the F-111D in both the R. & D. and production contracts, the Government made an intensive effort to ascertain changes to the baseline configuration of Mark II which had been made by the Government. They were able to trace a number of these, the total cost of which was $20 million. This increase in target cost translated to a target price of $167 million and a ceiling price of Autonetics of $196 million. The ceiling of $196 million was made a target cost of General Dynamics on the basis of the technical difficulties being encountered by the subcontractor, the responsibility of General Dynamics in guaranteeing the performance of the Mark II system when installed in the aircraft and their further responsibility to trace to the satisfaction of the Government any cost increase of the $196 million. Therefore, the program figures for target price and ceiling between the Air Force and General Dynamics become $213 million and $245 million, respectively. AGE, training, data, spares, and changes subsequent to the July 1968 definitization are not included in these ceilings since they have not yet been definitized. An increase of $302 million to the Autonetics target price is estimated to be required for these tasks. Estimates for these tasks have been included in budget submissions and approvals beginning with fiscal year 1967.

Mr. SIKES. What has been the effect of the cutback in the F-111 program on the cost of the Mark II?

General JEFFREY. As I indicated yesterday, the cutback in the numbers of F-111 have, in my opinion, resulted in an increase in cost of the Mark II. I indicate again to the committee that the cutback will affect the cost of the contract since the production rate and the mix of the airframes themselves were affected.

Mr. SIKES. If you can estimate the effect in dollars, please do so for the record. Also for the record tell us to what extent—if you can

estimate it—the additional experience that has been gained will reduce the cost of future procurement of the Mark II system.

General JEFFREY. All right, sir; we will provide that.

(The information follows:)

EFFECT OF F-111 CUTBACK ON MARK II COST

The cutback in quantity, rate, and mix of the Mark II/IIB systems will increase the average unit cost of the systems to be procured. A specific dollar value cannot be estimated, but the increase will probably be between 10 and 25 percent. Valuable experience has been gained as a result of the technological advances attained in the Mark II system. This will contribute to reduced costs of the follow-on F-111D procurement by the normal learning curve process and will reduce cost of other weapon systems which use a part or all of Mark II since the development costs will not have to be duplicated. For example, we are involved at this time in assessing the role of Mark II in the AMSA. The extent of the reduction of cost of follow-on F-111D procurement or in future procurement for other aircraft cannot be specified.

Mr. SIKES. How many F-111 aircraft have been constructed without the Mark II? Are retrofits planned for those aircraft?

General JEFFREY. There are 235 airplanes that have been or will be constructed without the Mark II avionics and there is no plan to retrofit those airplanes with the Mark II.

Mr. SIKES. How many procurement aircraft now have the Mark II installed?

General JEFFREY. There are no procurement airplanes in terms of operational production airplanes that have the Mark II installed at this time.

Mr. SIKES. Have any Mark II systems which do not meet all the contract specifications been installed in operational aircraft?

General JEFFREY. No, sir. No systems that fail to meet operational specifications have been installed in operational airplanes. I mentioned that we do have three systems installed in test airplanes at this time.

Mr. SIKES. What modification programs related to the Mark II are in being or are contemplated?

General JEFFREY. There are no modifications at this time and there are none planned for the future.

Mr. SIKES. Are there additional questions on the Mark II?

C-5A AIRCRAFT

The public controversy on the costs of C-5A program is well known. On one side are allegations that the Air Force withheld information on cost overruns on the program from the Congress, gave the aircraft manufacturer a contract under which his profits rose with program costs, and that the program will cost $2 billion more than was originally estimated.

On the other hand, defenders of the program have contended that cost overruns will be $882 million, that the contract is one of the best ever made by the Government, and that cost information was not withheld from the Congress.

The funding request before the committee today is the sum of $758 million which includes $481 million for the procurement of 23 additional aircraft, $52 million for advance procurement, and $225 million for cost overruns in fiscal 1969 and prior years.

I believe you are prepared now to give us a briefing on the status of the C–5A and the cost problems that have been associated with it.

General JEFFREY. Yes, sir.

Mr. SIKES. Will you proceed?

General JEFFREY. Yes, sir.

Mr. SIKES. How do you propose to do that?

General JEFFREY. I have some Vu-graphs that I would like to present. I will comment on them briefly as we proceed.

I plan to discuss very briefly the aircraft requirements, the status of the development, discuss the provisions of the contract, the price adjustment formula that was included, and I intend to discuss the options included in the contract, discuss the position of the contractor at intervals during the contract term and discuss also our estimate made back in 1964, vis-a-vis, our current estimate.

Finally, I will indicate briefly the current position of the contractor with respect to his bid.

Will that be satisfactory?

Mr. SIKES. That will be satisfactory.

General JEFFREY. If the committee would permit, I would like to stand so I will be a little closer to this.

(Vu-graphs referred to below by General Jeffrey follow:)

Several Vu-graph pictures illustrating the configuration and performance capability of the C–5A are not reproducible. In lieu thereof the attached performance sheet is furnished.

C–5A MISSION

Provide fast reaction capability through airlift of combat and support units of all services under war or emergency conditions.

Airlift military logistics supplies including ballistic missiles and items of outsize equipment.

C–5A FLIGHT TEST PROGRAM

Current status

Five aircraft delivered to flight test 90 flights 260 hours.

Results to date

Flight characteristics good—stall tests completed performance good—achieved .85 mach at 35,000′ engine performance—excellent.

Problem to date

Normal development problems, no major problems.
Contract covered 8-year period (1965–73).
Necessary to provide for undue risks to contractor and the Government.
All contractors bid to and signed firm contracts—in competition.

SUMMARY OF CONTRACT PROVISIONS

Total system responsibility.
Correction of deficiencies.
Control of changes.
Changes in law (labor).

Economic fluctuations.
Priced options for additional aircraft.
Incentives—cost, schedule, performance.
Price adjustment formula.

C-5A TOTAL PACKAGE CONTRACT—ALL R.D.T. & E. PRODUCTION SUPPORT COMMITTED IN COMPETITION ON FIXED-PRICE INCENTIVE CONTRACT

	Contract options	Program (6 squadrons)
R.D.T. & E. and run A	58	58
Run B	57	57
Run C	85	5
Total	200	120

	Millions
58 aircraft/R. & D. and run A (Lockheed):	
Target cost	$1,278
Target profit	128
Target price	1,406
Ceiling	1,662
15 aircraft/R. & D. and run A and run B (Lockheed):	
Target cost	$1,769
Target profit	176
Target price	1,945
Ceiling	2,299

PRICE ADJUSTMENT CLAUSE

Contractor entitled to adjustment in run B costs if run A costs exceed the run A ceiling (or downward adjustment if costs are less than 90 percent target cost).

Designed to prevent exceedingly large losses or windfall profits due to risks involved in pricing production before development and long-term period of performance.

REPRICING ADJUSTMENT FORMULA

$$\frac{\text{Actual cost}}{\text{Target cost}} - \text{ceiling percent} \times \frac{1.5}{2.0} + 100 \text{ percent} = \text{target adjustment factor.}$$

Target Factor × target cost (B) = new target (B).

New target (B) × 130 percent = new ceiling (B).

AIR FORCE ESTIMATE FOR LOCKHEED, 1973

	Cost to produce	Contract ceiling	Estimated deficit
R. & D. plus A	$2,435	$1,764	−$671
Run B	1,018	1,404	+386
Total	3,453	3,168	−285

COST PROBLEM CAUSES

1. Lockheed bid underestimated.
2. Technical optimism.
3. Economic inflation and increased aircraft production.

C-5A PROGRAM
AIRCRAFT WEIGHT

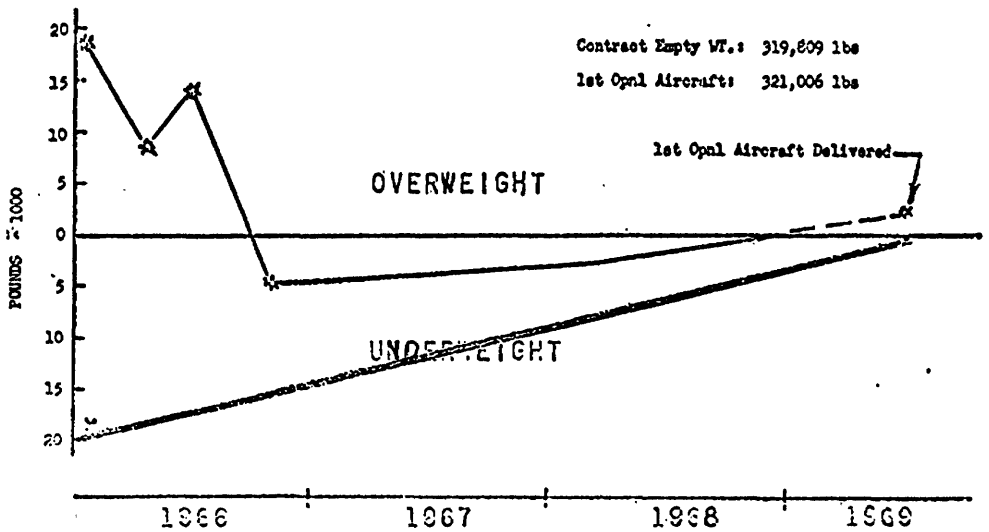


FIGURE 6A

COMPARISON OF ESTIMATES

[Dollar amounts in millions]

	October 1964 technical development plan	October 1968
R.D.T. & E.	$980	$1,002
Production	2,136	3,346
Total	3,116	4,348
Adjustments:		
Inflation		500
Larger Aircraft		350
Technical difficulties		382
Total		1,232

COMPARISON OF ESTIMATES

[Dollars in millions]

	October 1964	October 1968
	3,116	$4,348
Initial spares	307	482
Replacement spares		189
Support (Comm age and Mods)		106
Subtotal	307	[1] 777
Total		5,125
[1] Use of AFLC figure, 839; military construction, 15		5,202

	Original contracts		Adjusted contracts [1]	
	Target price	Ceiling	Target price	Ceiling
Lockheed	$1,946	$2,299	$2,658	$3,169
G.E.	581	684	647	754
Additives [2]	458	471	425	425
Total	2,985	3,454	3,730	4,348

[1] Repricing formula and abnormal escalation.
[2] Funds for 5 run C aircraft, contract definition, ECO, GFAE, etc.

General JEFFREY. This is an actual picture of the C–5 airplane.

I wanted to show this comparison of the C–5, the C–141, the C–130, and the C–140. They are all airplanes made by the Lockheed Co. at Marietta, Ga. These are scale representations of the relative sizes of these airplanes.

This is a photograph of the TF–39 engine which is used in the C–5A airplane, built by General Electric at Evendale, Ohio. It produces a thrust of 41,000 pounds. It has a diameter of approximately 8 ft. It has a bypass ratio of 8 to 1, where the fan produces eight times as much thrust as the jet engine.

Mr. ANDREWS. How many engines has the C–5A?

General JEFFREY. It has four engines of this size.

This is the most powerful engine that had been developed in this country and probably the most powerful single unit that had been developed anywhere in the world at the time it was put on the C–5.

Then, when Boeing built the 747, they took the Pratt & Whitney competitor for the C–5, and with some modifications installed it in the 747, so it is an engine of comparable thrust.

THE MISSION

I mention this specifically because it has been alleged or implied that the C–5 has been built as a competitor to commercial airliners which are designed to carry a larger number of passengers. This is not true. This airplane is to provide us with a quick reaction capability to haul Army equipment in places where it might be needed.

This was designed to illustrate that concept. The airplane will carry 83 passengers, this being a typical Army load. The passengers in question would be those people needed to drive the equipment on and off of the airplane at point of departure and at the destination and get it moving.

THE BASIC REQUIREMENTS

This is the inboard profile. This photograph is taken from the top and does show the passenger locations, or accommodations.

This is looking at the airplane from the side. It shows the cargo compartment with the aft pressure bulkhead, the front pressure bulkhead, and the passenger accommodations above the cargo floor. The cargo compartment, as well as the passenger compartment, is pressurized. Pressurizing the C–5 is facetiously referred to as like pressurizing a barn or an aircraft hangar.

This indicates how typical Army loads might be distributed throughout the airplane and what the special load might be with helicopters, tanks, trucks, et cetera.

The airplane will carry 99 percent, or better than 99 percent, of all of the Army's heavy equipment.

This indicates that the airplane has a capability to take off and land in a very short distance. It has 28 wheels, so that it can land on a grass field without sinking. The landing gear has a kneeling feature so that the airplane can be kneeled to make the ramps, truck bed height on rough ground. The airplane opens up in the front and the back to provide a drive-through capability so that the cargo can be driven on at the back and pulled off at the front.

This is a typical payload/range comparison, or profile, comparing the C–5 payload and range with the C–133, which, until the C–5 came along, was the biggest airplane the United States had in its inventory and the biggest payload-carrying airplane that the United States had.

The C–141 and the C–130. Now, to illustrate here, you can see at a distance of 5,500 miles, this airplane would carry a payload of 100,000 pounds.

Looking up here at the normal load factor of 2.5 g.'s, which is the normal load factor at which the airplane would be flown, at this point of 220,000 pounds it would carry it for a little over 3,000 miles.

The airplane at a reduced load factor of 2.25 g.'s, which is a safe condition but one under which we would not plan to operate continually, the airplane could carry 265,000 pounds for a distance of approximately 2,700 miles.

This is a typical mission profile for the C–5 on a 5,500-mile mission with a 100,000-pound payload taking off with this sort of takeoff distance, 7,500 feet, and this is on a tropical day. It would be less than that under cooler conditions. It cruises at a speed of 440 knots, can climb to a 40,700 foot altitude, and be able to land in a distance of 3,550 feet.

These figures here have to do with fuel reserves, the military specifications for fuel reserve at the time that the airplane lands. It would allow a return of 1,000 miles without being refueled.

Five airplanes have been delivered with this number of flights, 90 and 260 hours flown to date.

The results are indicated here. The airplane stalls very nicely, falls straight through with no detected undesirable characteristics, and these are under varying load conditions, power on and power off.

It has achieved or exceeded its specifications with regard to speed. The engine performance has been very good. As a matter of fact, in flights to date, even though most of them have been with YF engines or the early prototype models, there have been no in-flight emergency conditions, or no unsatisfactory engine conditions.

All of the engines performed perfectly on all of the flights.

The development problems, we believe, have been normal. We have had problems in attempting to pressurize the airplane because it is so big. There are a lot of holes in it and we just have to break these down, or the contractor does, and see that they are stopped up. This is not an unusual problem with a big airplane and it generally takes some time to get this done.

We have encountered problems associated with the pressure doors fore and aft, being able to hold the pressure, considering their size, and some redesign effort in this regard has been necessary but nothing unusual.

During the development of the airplane there were landing gear problems. Also these have been corrected and at the present time are under control.

Now, from a technical viewpoint, we see no significant problems ahead of us.

In summary, regarding the airplane performance, it is meeting or exceeding specifications in every regard. I would say this is probably the first time that we have developed an airplane and had it so this could be said about it this early in the airplane's life.

CONTRACT PROVISIONS

Now, to get to the contract, I would like to request that the committee bear in mind that this contract covered an 8-year period. This was the first time that anything of this nature had been tried. It was, therefore, necessary to attempt to provide for undue risks that might result in excess losses to the contractor during this period and also excess profits or losses to the Government.

Attempt has been made to incorporate provisions to cover these features in the contract.

I would like to emphasize that nothing was changed after the contract was awarded. All of the contractors bid against the same request for proposal. The provisions included in the Lockheed contract were included in the other bidders' contracts. It was all in competition and all signed a contract with the same provisions prior to the time that the award was made in October 1965.

This is a very brief summary of some of the significant provisions of the contract. I want to emphasize that Lockheed was given total system responsibility. In other words, the only significant piece of Government-furnished equipment in the C–5 was the engine, which was contracted separately by the Government to General Electric Co.

On the other hand, for the first time Lockheed was made responsible for the performance of the airplane even though the Government provided the engine. This was insisted upon and arrangements were made between Lockheed and General Electric whereby the responsibility would be shared between them in case either the engine didn't perform or in case the airplane itself didn't perform. The Government was not in a middleman position.

With regard to correction of deficiencies, the contractor was responsible for fixing anything that occurred to an airplane within 6 months after its delivery at no change in contract price.

As regards control of changes, it has been indicated, and I agree, that the contracts were often bid low with the hope of getting well on changes. One, the Government would hold its changes down and provisions were made in the contract whereby, as contractor-generated changes occurred, the more costly the changes, the less the profit he would receive on them.

Provisions were made for changes in the law that were unforeseeable. Options were included for additional numbers of airplanes.

Incentives were included regarding cost, schedule, and performance. With regard to cost, there was a sharing ratio such that the more the contractor went over the target cost, the less would be his profit.

With regard to penalties related to schedule, for the first 16 operational airplanes each one that he fails to deliver on schedule would cost him $12,000 a day up to a maximum liability on his part of $11 million.

With regard to performance, he was to be paid for performance that he was able to achieve that exceeded the specifications.

With regard to penalties, defaults were included as a provision and there was also included a price adjustment formula to take care of unforeseen circumstances such as a war, et cetera.

This was the first total-package contract to be awarded by the Air Force and certainly one of this size for any sort of weapon system. The total package means that all research and development and production was included in one contract. This was what stretched it over such a long period of time.

This was, rather than a cost-type contract which we had used in past years as a means of contracting for a weapon system, was a fixed-price-incentive contract, and I think it is very significant, and it hasn't been remembered by all of those who might have been critical of the program. It has had to do with our relations with the contractor during the building of the airplane.

The contract included options as indicated. R. & D. and production run A, 58 airplanes. Production run B, 57. Production run C, 85, for a total of 200 airplanes.

Now, the program calls for six squadrons of 120, five of which would have to come from production run C.

In order to be sure we are on the same frequency, I wanted to mention that with regard to this fixed-price-incentive contract we had a target cost, the target cost being that figure that the conractor indicated that he could build this airplane for; a target profit which represents approximately 10 percent of this figure. This is the profit that he would achieve, all else being equal, if he was able to build the airplane at this cost. The target price would be the target cost plus the target profit and then a ceiling which represents 130 percent of the target cost.

The ceiling is put in the contract to take care of unforeseen circumstances, as I have discussed previously.

Now, these figures relate to production run A, plus R. & D., 58 airplanes, and they concern the Lockheed Co. only. It does not include General Electric and certain Air Force add ons which I will discuss later.

EFFECT OF PRODUCTION RUN B ON CONTRACTOR DEFICIT

When production run B is exercised, using the repricing formula, the contractor then is for 115 airplanes and these are the new target cost, profit, price, and ceiling figures. The ceiling being the maximum extent to which the Government is liable.

I would like to reemphasize to the committee that, up until production run B was exercised, we were talking about these figures, but when production run B was exercised, these are the figures for the 115 airplanes and production run A goes out of the picture.

We are concerned about the price adjustment clause. This protects the Government and the contractor against unforeseen circumstances or unforeseen risks.

This is the repricing formula that was to be applied in case any one of the contractors, whoever got the bid for the airplane, exceeded the ceiling. We are prepared to go into this repricing formula in more detail and will, if the committee desires, at the end of my presentation. I just wanted to show here what it is.

Now, this indicates a Lockheed position at the end of production run A and at the end of the contract after the repricing formula has been applied. We estimate the cost to produce the airplanes, $2,435 million. This is the contract ceiling and the difference is this (indicating). So, we project at the end of production run A (June 1971), Lockheed will be in a $671 million deficit position. I am referring here to an overceiling condition.

With the exercise of production run B, the application of the repricing formula, taking production run B by itself, Lockheed would be in a plus position of $386 million and if we subtract this from this, we project that Lockheed will be in a net deficit position of $285 million in 1973, at the end of the 115-airplane contract.

Mr. MAHON. Will you explain exactly what production run B was on the previous chart?

General JEFFREY. Will you go back to the previous chart, please?

(Previous chart shown.)

Production run B included 57 C–5 airplanes. The option was to be exercised in January 1969. It was exercised at that time.

Mr. SIKES. Why don't you go to the chart immediately before that? I think it would help the explanation.

General JEFFREY. Go to the one before that, please.

Mr. SIKES. The one that shows the production run.

(Chart shown entitled "C–5A total package contract.")

General JEFFREY. This shows production run B. This would be the fiscal year 1970 through the fiscal year 1972 buy.

Mr. SIKES. When was this contract option exercised?

General JEFFREY. This was exercised in January of this year.

Mr. SIKES. What is the status now before Congress of the additional authorization required for run B?

General JEFFREY. It is included in the 1970 budget, sir.

Mr. SIKES. Is additional authorization required for the aircraft that are in run B?

General JEFFREY. Yes, sir.

Mr. SIKES. Additional authorization is required?

General JEFFREY. Yes, sir.

Mr. SIKES. And funding is required?

General JEFFREY. Yes, sir.

Mr. MAHON. In the total amount of——

General PITTS. $758 million, sir.

General JEFFREY. The chairman asked about the 1970 budget.

General PITTS. $758 million. That is broken out into two figures: $533 million for the fiscal year 1970 program cost, and an amount of $225 million identified in the budget submission for over-target cost for prior years.

Mr. MAHON. Do you have the prior years on that?

General JEFFREY. We have this broken up, Mr. Chairman.

Mr. MAHON. Very well, just submit it here.

(The information follows:)

C–5A over-target prior year costs

The prior years breakdown on the $225 million requested in fiscal year 1970 is as follows:

Fiscal year:	*In millions*
1967	$40
1968	80
1969	105
Total	225

The above amounts represent the unfunded target to ceiling requirement in the years indicated and are independent of the run B formula adjustments.

(Chart shown entitled "Cost Problem Causes.")

General JEFFREY. I would like to indicate what we believe to be the causes for the cost growth in the C–5 airplane. I believe that in Lockheed's bid they underestimated the magnitude of the job and underestimated the costs associated therewith.

Mr. ANDREWS. That is the same problem you had with the Mark II system, isn't it?

General JEFFREY. Yes, sir.

OTHER AIR FORCE SYSTEMS WHERE CONTRACTOR UNDERESTIMATED JOB

Mr. ANDREWS. How many other systems have fallen into that category, General? Would you supply them for the record?

General JEFFREY. I don't know that I could give you a figure on this. We could study it and attempt to.

Mr. ANDREWS. I wish you would and include something in the record about it.

(The information follows:)

We have studied the situation in an attempt to answer your question and have concluded that we cannot identify those contractors who experienced part of their cost growth because they underestimated their costs. However, in an effort to close in on your question in another way, I have the tabular results of a study which I would like to insert for the record with accompanying explanation.

CONTRACTS CLOSED, JANUARY 1959–JUNE 1968

[Dollar amounts in billions]

	Number of contracts	Adjusted target cost	Final cost	Percent over (under) target cost
FPI contracts	507	$12.43	$12.06	(3.0)
CPIF	110	2.23	2.19	(1.8)
Total incentive contracts	617	14.66	14.25	(2.8)
CPFF contracts	2,088	7.44	7.67	3.0
Total all contracts	2,705	22.10	21.92	(.8)

A review of the cost-plus-fixed-fee (CPFF) contracts and incentive contracts of all types closed during the January 1959 to June 1968 time period reveals the following pertinent information:

The adjusted target cost of the 2,705 contracts total was slightly in excess of $22 billion. The final cost (i.e., final settlement) was slightly less than $22 billion, which represents approximately eight-tenths of 1 percent under-target cost to the Government. The 2,088 CPFF contracts amounting to approximately $7.67 billion overran the adjusted target cost by 3 percent. The 617 incentive contracts of all types representing $14.25 billion reflected a 2.8 percent under-target final cost.

As used herein, adjusted target cost is the basic target cost adjusted for authorized changes. The difference between adjusted target cost and final cost on CPFF contracts is overrun or underrun; on incentive type contracts, it is over-target or under-target.

CAUSES OF COST INCREASES

General JEFFREY. As I mentioned yesterday in regard to the Mark II avionics, the competition in this field, in the aerospace industry, is fierce. The number of systems such as the C–5 and other big weapon systems that we are building are less and less in number, so there is a fierce competitive environment with considerable benefit from a contractor's viewpoint, I believe, in order for the contractor to stay in business and it might affect his judgment in this regard.

Mr. DAVIS. How many potential bidders are there on something of this size and how many bids actually were there on this?

General JEFFREY. There were eight initially and this was narrowed down to five, then to four, and finally to three, Douglas, Lockheed, and Boeing.

Mr. DAVIS. When you say eight, are these the eight companies in the entire country that were potential bidders, that would have the capacity to produce something like this?

General JEFFREY. Yes, sir.

We believe that the company underestimated the technical problems associated with doing this job. I have mentioned that before. We believe that economic escalation, the cost of living, has contributed materially to this problem. We believe that the war which came along, the Vietnamese war, after this contract had been awarded, and an associated big increase in commercial airplane production along about this time, ran the cost of the C–5 up. The number of commercial airplanes being produced, the 727, the 707, DC–8's, DC–9's and this sort of thing were at their peak and this affected this cost figure.

(Chart shown entitled "C–5A program, aircraft weight.")

I indicated technical optimism on the part of Lockheed in bidding on this program. This chart is supposed to illustrate this point. Normally, an airplane at the time development was began, an airplane of this size should be about 20,000 pounds under the contract weight which in this case was 319,000 pounds. The weight would increase at a rate of about 2 percent per year to arrive at contract weight at about the time of delivery of the first production airplanes.

In the case of the C–5, after the contract award, the projected weight of the C–5 was some 18,000 pounds overweight and Lockheed had to work it down from there and has done an admirable job in this connection and is now proceeding along a weight curve like this and we would expect they might be overweight somewhere in the neighborhood of 1,500 pounds at the delivery of the first airplane. But it is an illustration of how they missed the technical problem.

(Chart shown entitled "Comparison of estimates.")

We finally discussed at length various cost estimates. For the committee's consideration, I would like to present our first cost estimate on the C–5 made in October 1964, and our October 1968 comparison which is at this time current. These represent the figures.

The airplane, estimated at this time, should be developed and produced for $3,116 million. The airplane upon which we based our estimate—and this was 1 year before the contract was awarded—this was a 645,000 pound airplane. This was a parametric study. It looked like at the time that an airplane could be built to do the job required for approximately that weight.

Mr. LIPSCOMB. When you speak of "we," do you mean the Air Force?

General JEFFREY. Yes. This is an Air Force estimate and this is an Air Force estimate (indicating).

Mr. LIPSCOMB. Both of them?

General JEFFREY. Both of them are Air Force estimates.

During the 4-year period this estimate has increased to this figure. In subtracting these two, we arrived at a difference of $1.232 billion.

In looking back to see how did we miss the estimates, to what could we attribute this increased cost growth in our estimates, and bearing in mind the fact, as I mentioned a moment ago, concerning underestimating the technical, underestimating the cost, and economic escalation, we arrived at this general breakout as to the reasons for the difference in the estimate. The larger aircraft figure reflected an airplane that Lockheed proposed, which was at a weight of 728,000 pounds as compared to the 645,000-pound airplane upon which our initial estimate was made.

(Chart shown entitled "Comparison of estimates.")

Now, the press has referred to a $2 billion overrun. I would like to indicate to you gentlemen how this figure was arrived at and what went into making it up.

I mentioned a moment ago the $3,116 million 1964 parametric estimate, or an estimate on a parametric airplane. A 645,000-pound airplane that we had made.

I indicated that this is our current estimate of the ceiling and the contract so we start with these two figures.

Back at this point in time, we made an estimate of what the initial spares for the airplane would be. This was the figure. There was no estimate made of replenishment spares and no estimate of modification and other support. So in the support area we had made an estimate of $307 million. This was not included as part of the Lockheed contract. But it was an estimate. Over here our spare figure had increased to $482 million. This is our estimate of the initial spares to support this airplane. Included in this figure is $87 million for the directed wartime increased flying rate over that we had considered back here.

The difference, if we subtract the $87 million from $482 million would indicate what has happened to the spares during this period. This would be a more clear identification of the spares that were needed and an increase in the cost of the spares.

Replenishment spares are this figure, $189 million, common AGE support and aircraft modification $106 million, add up to a currently approved program of support for the airplane of $777 million.

General RIEMONDY. To clarify this a little further, this is a real important point, these figures here below the initial spares are actually cost to operate the program from 1969 through 1974. They are a 5-year cost projection associated with spares and modifications which we might be expected to make to the airplanes after we start flying them.

The initial spares here are what we would initially lay in when we activate our bases to provide operation of those airplanes at those particular locations for about 3 months on a given operating program and then to provide additional spares to lay in levels to protect our production lead time, so we would have time available to start replenishing those things which would wear out, which we would then buy in the replenishment area. So really these kinds of costs are costs to operate the airplanes as distinguished from cost to acquire the 120 airplanes.

General JEFFREY. There is a high probability that most of these spares would be contracted separately.

General RIEMONDY. This is correct.

In the $482 million there is $87 million for spares which we plan to put on the shelf in order to fly a wartime program of ———.

That is a wartime program in our war planning. Additionally, as General Jeffrey indicated, if we would treat with the $482 million, roughly 54 percent of these dollars are associated with buying the spare engines which we will buy from GE and for the most part the engine spares that go with them which we will also for the most part buy from GE. Additionally, then, the remaining spares that are in here, while we will initially buy the spares from Lockheed, inasmuch as under the total package concept they are responsible for designing and providing all the subsystems to the airplane, we will buy those spares, which are peculiar spares which are not in our Federal stock cataloging system at present. As we provision these spares and identify what they are, we will undoubtedly buy them from Lockheed. We will also buy the reprocurement data so that when we go out with the second and third buys, we will be in a position to compete the spares. Those spares which have high reliability factors will probably be bought directly from the vendors from whom Lockheed is buying them at the present time. So a very small portion of these dollars, and a very small portion of these dollars, (pointing to chart), could conceivably go to Lockheed.

COMPUTATION OF OVERRUN

General JEFFREY. The support costs were added to the 1964 aircraft estimate in arriving at the $2 billion overrun that we have read about. Adding, however, our actual support program to the current estimate would give us $5.125 billion. The figure of $5,202 million has been quoted.

In order to arrive at this figure, we found that it was necessary to use $839 million as a support figure rather than $777 million. The $839 million represented an internal figure which was the result of an analysis made by the Air Force Logistics Command, which we have not approved. We do not plan to approve it. Including military construction of $15 million, we would arrive at $5,202 million. If we subtract the initial airplane cost for the 645,000 pound airplanes of $3,116 million, we get the figure that was referred to in the press.

In summary, these are the bid prices. For Lockheed this is the figure I used earlier, the target price of $1,946 million. General Electric, $581 million. Air Force additives which include five aircraft in run C which were not included in the other figures for $458 million. This includes change orders that might be anticipated over the years to come. We end up with an initial bid price of $2.985 billion, with the ceiling of $3.454 billion; $4.348 billion is the same projection we had

on the preceding chart. So if we subtract $2.985 billion from $4.348 billion, we end up with a weapon system cost growth of around $1.3 billion. If we subtract, and we believe we should, abnormal economic escalation of $500 million that occurred or will during this period over which we have no control, and could not have anticipated at the time that the contract was awarded due to the war situation, we would end up with a figure of $863 million which could be considered the cost overrun in the C–5A program.

If we go from ceiling to ceiling, and in the $863 million figure I have gone from initial target price of $2.985 billion to $4.348 billion—if we go from ceiling to ceiling—that figure would be reduced to $600, plus, million. That would be the cost overrun.

That completes my briefing, sir.

"FIXED PRICE" CONTRACT WITHOUT FIXED PRICE

Mr. MAHON. General, is it true that by virtue of the various options, labor law clauses, economic, economic contingency clauses, and so forth, the phrase "fixed price," as used in describing this contract, is meaningless in any usual or normal context.

General JEFFREY. I do not believe so. It certainly compromises the fixed price contracts where we speak of fixed price contracts in their normal context.

The more unknowns there are in a program, in my opinion, the further we should stay away from a fixed price contract. Changes and fixed price type of contracts are incompatible. This contract did permit us to pin down a number of features that otherwise normally would not have been the case in terms of a cost-type of contract. So even though it appears, and it is a fact, that the costs have far exceeded our anticipation and expectation, I firmly believe this is the cheapest way that we could have bought the C–5 airplane, and with any other type of contract the C–5 would have cost the U.S. Government more money.

Mr. MAHON. As I understand your testimony, you tend to describe a cost-plus contract rather than an actual bona fide fixed price contract.

General JEFFREY. Sir, in a fixed price incentive contract, a point that generally is not recognized in that the Government is liable up to ceiling. The contractor is liable for everything above ceiling.

Between target cost and ceiling the contractor's profit is shared with the Government on a predetermined basis. So when he reaches ceiling, he has lost all of his profit. At cost, if he is able to produce the system at cost, he would achieve his normal profit. This type of contract is a lot like a cost contract, in that the Government actually pays the cost up to ceiling. Of course, in a cost-type contract the Government pays everything.

In this type of contract we pay it up to a point and then he pays it from there on.

APPROVED C–5A FORCE

Mr. MAHON. What is now the Air Force conclusion to how many C–5's you want as a total package for which you propose to seek funding?

General JEFFREY. 120 airplanes.

Mr. MAHON. Is that the complete program?

General JEFFREY. This is the program as we know it now, sir.

Mr. MAHON. What was the number when you began the program?

General JEFFREY. 120 airplanes.

We provided for options for another 80 airplanes. This was in case at some point in time all or part of these options could be exercised. It is not intended at this time they be procured.

UNIT COST

Mr. MAHON. It is not quite clear to me what the unit cost will be on each airplane. If you produce the 120 airplanes as now contemplated, what will be the unit cast of the aircraft?

Colonel BUCKINGHAM. It is contemplated the unit gross flyaway cost for the 120 airplanes will be $26.94 million.

Mr. MAHON. Does that include the initial spares and all of the other items that were referred to in the testimony?

Colonel BUCKINGHAM. No, sir. Adding peculiar support to the flyaway to get a gross weapon system cost, that gets us to $29.09 million each and initial spares of $482 million divided by the 120 aircraft will give us a little over $4 million per aircraft.

ORIGINAL COST ESTIMATE GIVEN COMMITTEE

Mr. SIKES. Mr. Chairman, before we leave the figure of total number of aircraft there is a point that should be cleared up, if you will yield to me for a moment?

On March 31, 1965, in hearings conducted by this subcommittee on the fiscal year 1966 "R.D.T. & E., Air Force" budget, the question of the total estimated development and procurement cost of the C–5A aircraft was raised. The sum named by the witness $2.2 billion for a total of 63 aircraft. This is on page 173 of the hearings on R.D.T. & E. fiscal year 1966. I think that should be cleared up rather than leave it appear in the record that the figure given to this committee has consistently been 120.

General JEFFREY. Yes, sir. I would suspect that the 63 figure represented 58 of the initial production run plus five research and development airplanes. We will have to check that.

Mr. SIKES. But the figure was not 120. The information you gave the chairman is that 120 has been the figure from the beginning. You may need to do some research on that, and if so, provide the information for the record.

(The information follows:)

NUMBER OF C–5A AIRCRAFT IN PROGRAM

During the time of the March 31, 1965, hearings, the DOD approved program was for 63 C–5A aircraft for three squadrons. On September 13, 1965, the DOD approved a program of 120 aircraft for six squadrons. This was prior to contract award in October 1965. Thus while three squadrons were originally approved, the six squadron program has been approved by DOD since the beginning of the contract.

(For additional information see pp. 883–886.)

LOCKHEED EMPLOYEES ON C–5A PROGRAM

Mr. MAHON. With respect to the economic impact of a program of this type, approximately how many people are employed by the contractor on this project at the Marietta plant?

General JEFFREY. About 20,000 at the Lockheed plant, sir.

Mr. Mahon. What would be the figure on GE, on the engine?

General JEFFREY. I would have to supply that for the record I suspect in the neighborhood of 4,000 to 5,000.

(The information follows:)

NUMBER OF EMPLOYEES EMPLOYED BY GENERAL ELECTRIC ON C–5A ENGINE

The number of employees at the General Electric Co. is approximately 15,000 of which 7,000 are related to the TF–39 program.

ORIGINAL COST ESTIMATE

Mr. MAHON. With respect to the estimated cost at present I wish you would contrast the original estimated cost in the record at this point.

General JEFFREY. Yes, sir.

(The information follows:)

CONTRACT OF PRESENT ESTIMATED COST AND ORIGINAL ESTIMATED COST OF C–5A

The original estimated cost was dated October 1964 and was based on a smaller airplane with less engine thrust and as a consequence has less payload/range capability than the current aircraft on contract. The October 1964 estimate did not have an allowance for inflation. A comparison follows which excludes spares:

[Dollars in millions]

	October 1964 estimate	October 1968/ current estimate (cost to Government)
Airframe (Lockheed)	$2,240	$3,169
Engines (General Electric)	578	754
AF adds	298	425
Total	3,116	4,348

Note: The October 1968 estimate is a cost to the Government. The cost to produce is estimated at $4,622 million.

Mr. SIKES. General, I would like to have the charts that you have just presented for the record.

General JEFFREY. They will be provided, sir.

(See pages 883–886.)

BIDS OF OTHER CONTRACTORS

Mr. SIKES. You have not given us information on the other bids. They are not necessarily pertinent at this time, but do you have at your fingertips the other bids received for the C–5 contract?

General JEFFREY. No, sir; I do not have this information at my fingertips. We requested of the losing bidders, Douglas and Boeing, whether or not they would have objection, since this has been considered proprietary information, to the release of this information. They have indicated they would not. We are in the process of getting these figures together now.

Mr. SIKES. I would like to have that for the committee's needs when it is available.

(The information follows:)

C–5A CONTRACT BIDS BY DOUGLAS AND BOEING

The bid price of the three competing airframe contractors is shown below. Contracts during competition were signed by the three with an 85/15 flexible share ratio. After contract award and per contract clause this was changed to 70/30.

	85/15 flexible	70/30
Lockheed	$1,885,700,000	$1,944,800,000
Douglas	1,972,300,000	2,031,700,000
Boeing	2,215,800,000	2,320,000,000

Note: The figures include R.D.T. & E., production runs A and B.

PROBLEM OF UNDERBIDDING

Mr. SIKES. I think we might discuss very briefly the problem of underbidding. There seems to be a strong feeling that Lockheed underbid, whether this was deliberate—or overoptimistic, it is not possible to say. But, having underbid they presented a better appearing package than the other bidders. The Air Force, just as in the case of other Government agencies, if it refuses to accept the lowest bid from a responsible bidder, is subject to criticism. If you do accept the lowest bid, and it is too low, then you have the question do you have a responsibility to make changes which will have the effect of bailing the company out. Do you want to discuss that problem?

General JEFFREY. Sir, speaking in a bit broader context——

Mr. SIKES. This does not apply to this contract only. It applies to a lot of contracts.

General JEFFREY. Yes, sir.

I would attempt to address this situation from a broader viewpoint. The competition in this field, as I mentioned a bit earlier, is fierce at this time. I anticipate that this competition or competitive environment will become more intense as we go along. The systems are becoming more expensive. The numbers of them that we are able to produce are becoming less and less. The industries are looking to their future.

They would look to potential business. In other words, if we—the contractor—get this contract, is there a possibility that we could convert this into commercial buys. If we can keep all of our people working on this, and it is worth something to keep this base together, follow-on orders from the original buyer will contribute to a desire of industry taking some additional risk.

In the past we have all known that contractors have been able to come out of some very dismal situations through changes that have been generated by the Government due to various reasons. Maybe we—the Government—could not define the product too well, or maybe the systems were quite sensitive. I think this is still in contractors' minds. They think when they get one of these systems that we are going to change it and they are going to get well at least to some extent through this means. We have always been known to furnish large quantities of GFAE. GFAE can be the death knell of a fixed-

price contract. If the Government fails to provide it on time, or if the Government fails to provide it in a way that it works, the contractor is then in a position to charge the Government for his delay and his failure to perform.

There are also complicated interfaces when we are building something that he has to install in his airplane. I would like to say in regard to the C–5 in anticipation of this sort of situation, there were essentially no Government generated changes in the C–5. As a matter of fact, I personally headed a senior configuration control board which was aimed at seeing that the Government did not generate any changes to the C–5 airplane.

Mr. ANDREWS. Wasn't that written into your contract?

General JEFFREY. I am talking about Government-generated changes now. The earlier remarks were related to the contractor-generated changes. I think our changes to date have been less than 1 percent of the contract. I believe another factor that contributed to this has been the fixed price type of contract.

We have gone during this period of reducing the number of systems from cost type contracts to a fixed-price contracts.

I believe our Government people as well as contractor people have lived in a cost type environment for so long that they tend to think in terms of cost. So I am not sure that they really know what they are getting into when they bid into a big fixed price contract. Additionally, here was a total package arrangement which covered a great number of years. In past years we had dealt with this problem on a year by year basis. I think this is significant because this shows up 3 or 4 years of problems all at the same time. Historically this could not be done because we were nibbling away at it piece by piece. I do not think the contractors recognized what they were getting into in this regard, or contractors in general, when they bid on things of this nature.

I have one final comment. I think that contractors might and probably would consider seriously risking buying into a big program in order to get the business, and in order to stay in business. They simply make a corporate decision, after they have gone through everything and done the best they can, they cut off *x* number of dollars in the hopes of getting this business.

Mr. ANDREWS. That is about the same statement you made yesterday.

General JEFFREY. Yes, sir.

Mr. ANDREWS. Did I understand you to say that contractors deliberately bid low with almost certain knowledge that changes will be made or some provision will be made to bail them out of the low bid?

General JEFFREY. I suspect that; yes, sir.

Mr. ANDREWS. You have said these businesses are highly competitive, and I am sure they are. But when you continually bail the contractors out who come in and deliberately make low bids just to get the business, aren't you adding to the cut-throat competitiveness of the industry?

General JEFFREY. It is certainly not our intention to bail these people out.

Mr. ANDREWS. But the record shows that most are bailed out. Have you read this report, "The Economics of Military Procurement" by

the Subcommittee on Economy in Government of the Joint Economic Committee of the Congress?

General JEFFREY. No, sir; I have not.

Mr. ANDREWS. I would like to read you one paragraph on page 21 in line with what you have said.

Not only were the price increases made possible by the repricing formula, but the cost overruns which are resulting in the higher prices may very well have been encouraged by the existence of the formula and by the nature of the formula. For the mere fact that a repricing provision existed in the contract constituted a built-in, get-well remedy for most any kind of cost growth. According to this provision, the price of the second increment, run B—talking about the C-5—could be increased on the basis of excessive actual cost on the first increment, run A. The modification, if any, of the incentive feature of the contract is thereby largely nullified, provided the contractor is confident that the Government will exercise a higher price.

General JEFFREY. I am aware of that discussion, even though I had not read that particular testimony. It is consistent with things that have been said regarding this contract. Of course, as the remarks were qualified there in the end, if the contractor was aware that the Government intended to exercise the option, this certainly would have some effect or could have effect on what he might do.

In this case even though the option has been exercised we have only indicated to him that we intend to buy 23 airplanes. It has been alleged that there is a negative incentive through the application of this formula in this contract. I believe that there would be a negative incentive to the contractor with this formula, but it wouldn't become effective until somewhere after the 33d airplane in production, run B. So we have only indicated to him and obligated ourselves to buy a lesser number of airplanes than that. He has no knowledge whatsoever of our intention to buy more airplanes than the 23 that we now have.

Mr. ANDREWS. He has high hopes.

General JEFFREY. He has high hopes.

Mr. SIKES. General McNickle, I would like to have your comment on this situation, one which is of major concern to this committee. We are very definitely seeking to protect the taxpayers' interests. If in fact there is a built-in situation which permits a manufacturer to bid too low, get a contract, get bailed out by change orders, modifications, and purchases of spares, or by additional contracts, we are pretty well trapped insofar as keeping costs down is concerned. What is your thinking on the problem? What can be done that is not being done to give more protection to the taxpayer?

General MCNICKLE. Mr. Sikes, each contractor was aware, in advance, that there would be a repricing formula. However, I think that we are protected by being able to hold back on committing to a follow-up production option, as we have done in this case. We have only said that we are going to pick up a part of run B. We are only going to commit ourselves—with your approval—to the fourth squadron of run B and we are holding back on the fifth and sixth squadrons until a later date. Under these conditions the contractor cannot afford to become overconfident. In addition, we would hope that the contractor would be able to cut down on some of his costs and that there would be a smaller loss than our present estimates indicate. If he can reduce costs and thereby reduce his loss, that would be fine for both of us. The one thing we have not addressed is the reputation of the company.

It is my personal opinion that a successful company like Lockheed, Boeing, or Douglas, are not going to exercise any kind of corporate decisions which will affect their ability to compete on future buys from the Government, or their standing in the business community, or with their stockholders, by arbitrarily doing something that would increase their costs and reduce their profits in the long run. The only way then can service is by winning a contract award. Their performance on each contract is evaluted and if something like this happens, they can find themselves in serious trouble with the Government and their stockholders.

Mr. SIKES. Have there been any instances where the contractors have been put on a black list because of what appeared to be unscrupulous practices to obtain business?

General MCNICKLE. Yes, sir, not many large ones.

General JEFFREY. Yes, sir, large ones.

General MCNICKLE. General Jeffrey tells me we have.

Mr. SIKES. Do you have a list of those companies?

General JEFFREY. We have a list of those companies.

General MCNICKLE. But, Mr. Sikes, I should point out that contractors are going to continue to take risks. There is no doubt about it. In fact, it is estimated that Boing will have to sell 200 747's in order to break even. Any point before that and their sales will not cover their costs. If they cannot reach break even they may say they will stop the program. They are going to have to take risks to keep in business.

I do not think this is peculiar to the aeronautical business.

General JEFFREY. Mr. Sikes, may I offer an observation in further regard to what General McNickle has said, specifically in connection with the contractor's incentive to keep costs down as he is building these airplanes. I indicated that at the end of the 120-airplane program that our projections at the present time project him to be out of pocket $285 million. If in fact we stop this contract anywhere short of that, his out-of-pocket position becomes greater. If we were to stop at the end of the 58 airplanes, we indicated it would be $670 million. If we stopped at the end of 23 additional airplanes, about $400 to $450 million, he will be out of pocket. So he has every incentive in the world to try to keep his costs down as long as he is unaware of our intentions.

Mr. SIKES. The committee has a number of specific questions dealing with financing and with various aspects of the procurement program. I think this would be an appropriate time for general questions on the entire C–5A contract.

Mr. Chairman, do you have questions?

Mr. MAHON. Not at this time.

Mr. SIKES. On my right?

SUBCONTRACTORS ON C–5A PROGRAM

Mr. SLACK. I have two or three questions, Mr. Sikes. I would like to know the number of subcontractors on the C–5A. They can provide that for the record.

General JEFFREY. Let me ask Colonel Davis to provide a list of some of the special subcontractors.

Mr. SIKES. For the record will be adequate.

Mr. SLACK. And the total dollars.
General JEFFREY. Yes, sir.
(The information follows:)

LIST OF C-5A SUBCONTRACTORS

There are approximately 2,700 suppliers on the C-5 program supplying services, supplies, and materials presently valued in excess of $800 million through production run "A". A partial list of subcontractors is furnished for the record.

H-268 AND H-339

Item	Source	Type of contract	Award amount
Aft cargo doors	Canadair, Ltd., Montreal, Quebec, Canada	FPI	$5,545,340
Ailerons	do	FPI	3,426,270
All-attitude and heading reference unit	Lear Siegler, Inc., Grand Rapids, Mich	FFP	3,520,504
Antiskid system	Hydro-Aire, Division of Crane Co., Burbank, Calif.	FFP	1,637,775
Auxiliary power unit	The Garrett Corp., AiResearch Manufacturing Co. Division, Phoenix, Ariz.	FFP	3,561,157
Assembly of wing components (outer and center).	Avco Corp., Aerostructures Division, Nashville, Tenn.	FPI	(1)
Inertial Doppler navigation system	Northrop Corp., Electronics Division, Hawthorne, Calif.	FPI	29,802,200
Automatic flight control system	Honeywell, Inc., Minneapolis, Minn	FFP	5,752,951
Central air data computer	Elliott Bros., Rochester, Kent, England	FFP	2,098,748
Center and outer wing box	Avco Corp., Aerostructures Division, Nashville, Tenn.	FPI	59,361,407
Constant speed drive	Sundstrand Aviation, Rockford, Ill	FFP	1,032,291
Conveyor and rollers	Brooks & Perkins, Detroit, Mich	FPI	2,182,619
Electrical generating system	General Electric Co., Waynesboro, Va	FFP	1,195,427
Emergency hydraulic generator	Task Corp., Anaheim, Calif	FFP	325,417
Empennage	General Dynamics/Convair, San Diego, Calif	FPI	4,874,180
Environmental system	The Garrett Corp., AiResearch Manufacturing Co. Division, Los Angeles, Calif.	FFP	6,000,158
Flaps	Kaman Aircraft Corp., Bloomfield, Conn	FPI	10,419,345
Flap actuation system	Steel Products Engineering Co., Division Kelsey-Hayes Co., Springfield, Ohio.	FFP	4,517,330
Flight director computer	Bendix Corp., Eclipse-Pioneer Division, Teterboro, N.J.	FFP	1,060,355
Flight simulator	Conductron Corp., Conductron-Missouri Division, St. Charles, Mo.	FPI	6,676,667
Fuel quantity gaging system	Honeywell, Inc., Aeronautical Division, Minneapolis, Minn.	FFP	654,066
Guidance sybsystem integration	Northrop Corp., Electronics Division, Hawthorne, Calif.	FPI	1,600,000
Engine-vibration system	Gulton Industries	FFP	770,634
Main engine starter	The Garrett Corp., AiResearch Manufacturing Co. Division, Phoenix, Ariz.	FFP	747,883
Main landing gear	Bendix Products, South Bend, Ind	FPI	23,172,950
Main landing gear bogie (effective ship 0014 and up).	Menasco Manufacturing Co., Burbank, Calif	FPI	11,185,611
Main landing gear doors and fairings	Canadair, Ltd., Montreal, Quebec, Canada	FPI	10,419,497
MLG actuation system	Curtiss-Wright Corp., Caldwell, N.J	FPI	6,312,117
MLG brakes and wheels	B. F. Goodrich Co., Troy, Ohio	FFP	13,047,912
Multimode radar	United Aircraft Corp., Norden Division, Norwalk, Conn.	FPI	18,331,021
Nacelles and pylons	Rohr Corp., Chula Vista, Calif	FPI	47,031,645
NLG actuation	Walter Kidde & Co., Inc., Belleville, N.J	FFP	1,024,433
Nose actuation system	Hoover Electric Co., Los Angeles, Calif	FFP	570,981
Nose landing gear	Bendix Products, South Bend, Ind	FPI	6,704,170
Nose radome	Brunswick Corp., Defense Products Division, Marion, Va.	FPI	2,369,375
Inner wing box components consisting of: Front beam. Aft beam (including trailing edge). Upper aft skin panel assembly. Lower aft skin panel assembly. Upper forward skin panel assembly. Lower forward skin panel assembly.	Avco Corp., Nashville, Tenn	FPI	(1)
Pitch trim actuator	Western Gear Corp., Lynwood, Calif	FFP	1,786,568
Primary flight control system	Bertea Products, Irvine, Calif	FFP	3,907,514
Radar altimeter	Litton System, Inc., Silver Springs, Md	FFP	1,035,186
Restraint rails	Teleflex Inc., North Wales, Pa	FPI	3,739,665
Spoiler actuation system	Cadillac Gage Co., Costa Mesa, Calif	FFP	1,940,706
Spoilers	Kaman Aircraft Corp., Bloomfield, Conn	FPI	3,226,770
Tail radome	McMillan Industries, Ipswich, Mass	FPI	168,630
Thrust reversers	General Electric Co., Evendale, Ohio	FPI	20,858,548
Wing leading edge—ribs, slats, and moving islands.	Canadair, Ltd., Montreal, Quebec, Canada	FPI	16,157,841
Wing leading edge, fixed honeycomb panels	Twin Industries, Buffalo, N.Y	FPI	8,216,261

[1] Included in price shown for center and outer wing box.

Mr. SLACK. Then I would like to know what percent of the total amount of the prime contract was in subcontracts.

General JEFFREY. I understand the question, sir, and with your permission, we will provide that for the record.

(The information follows:)

PERCENTAGE OF C-5A PRIME CONTRACT SUBCONTRACTED

The initial prime contract target cost through production run "A" contained the following percentages of subcontract cost.

	Percent
Structural	20
Equipment and electronic	14
Purchased parts and materials	12

Mr. SLACK. For my own information, are the profits of a subcontractor part of the costs of the prime contractor? Is that correct?

General JEFFREY. That is correct, sir.

Mr. SLACK. Then I would like to know for the record how the subcontracts are awarded by the prime contractor.

General JEFFREY. Yes, sir. They are by and large fixed price contracts. Some of them are fixed price incentive contracts similar to the contract that we have with Lockheed.

Mr. SLACK. I realize that it is pretty difficult to answer these questions right now.

(Discussion off the record.)

Mr. SLACK. Does the prime contractor share in the profits of the subcontractor, or does he specifically make a profit on the work of the subcontractor?

General JEFFREY. Yes, sir.

(The information follows:)

AWARDING OF SUBCONTRACT

Prime contractors do not share in the profits of subcontractors. With respect to the question of whether a prime contractor makes a profit on the work of a subcontractor, the prime contractor is paid a profit for the total work covered by his contract, which includes locating subcontractor sources, preparing subcontract purchase requests, providing subcontract specifications and drawings, inspecting and accepting the subcontracted work, and incorporating it into the end item. The cost of the subcontract work thus becomes a part of the cost of the total prime contract effort on which the prime contractor is paid a profit. Only to this extent does the prime contractor make a profit on subcontract work.

DELIVERIES OF C5A AIRCRAFT

Mr. ADDABBO. How many C-5A's have been delivered to date?

General JEFFREY. There have been five C-5A airplanes delivered to date.

COMPARISON OF COSTS IN RUN A AND RUN B

Mr. ADDABBO. In your chart, if I remember correctly, the cost of run B will be greater than the cost of run A?

General JEFFREY. No, sir.

Colonel DAVIS. The original amount of money that was appropriated for run A, which was the fiscal years 1967, 1968, and 1969 buy, is not sufficient now, if we apply the repricing formula which the contractor is entitled to under the terms of the contract. When we apply the repricing formula it establishes a new ceiling. The Government

is then limited to the ceiling. We are requesting in fiscal year 1970, $533 million for 23 aircraft.

Mr. ADDABBO. What would be the unit cost?

Colonel DAVIS. I will have the figure for you in just a minute.

Colonel BUCKINGHAM. On a flyaway basis, it is $23,522,000.

Colonel DAVIS. We are also asking in fiscal year 1970 for $225 million additional to apply back against prior fiscal years. We would propose to do the same thing in fiscal 1971 and 1972.

Mr. ADDABBO. Could you break it down as to what would be the unit cost in 1970 on run A and what will be the unit cost on run B?

General JEFFREY. In answer specifically to your question, I did indicate that the cost to produce production run A was greater than the cost to produce production run B, in my charts. The contract ceiling for production run A was $1,764 million and the ceiling for production run B was $1,404 million. So there is approximately $360 million less in the ceiling.

Mr. ADDABBO. If I remember correctly, that was the ceiling cost, but we had some other costs on the right hand of the chart which went up to $2 billion plus.

General JEFFREY. I will have to thumb my charts to find out which one you are specifically referring to. These are the Air Force estimates of the cost to produce that were reflected in those figures.

Mr. ADDABBO. Would the same underestimating condition be prevalent in most major contractors' business with the Air Force or the Government generally? In other words, would Boeing maybe underestimate, or Lockheed?

General JEFFREY. Yes, sir. The same provisions were made in all of the contracts. Each one was carried through under a competitive environment. I would like to emphasize that nothing in the fundamental basic provisions of the contract with Lockheed is different in anyway than the contract that was signed with Boeing and Douglas.

Mr. ADDABBO. The formula which you showed on the charts was the same.

General JEFFREY. That formula would have been applicable to whoever won this contract. The formula was contained in each contract.

Mr. ADDABBO. Could you supply for the record the number of retired Air Force or Army officers that are now employed by Lockheed?

General JEFFREY. Yes, sir.

(The information follows:)

RETIRED AIR FORCE OFFICERS EMPLOYED BY LOCKHEED

The Lockheed Co. now employs a total of 210 military officers with the rank of colonel or higher. Breakout by service is as follows:

U.S. Air Force	88
U.S. Navy and U.S. Marine Corps	97
U.S. Army	25
Total	210

Mr. ADDABBO. I have no further questions.

Mr. ANDREWS. I don't think, General, you have answered the question that Mr. Addabbo first asked. If you can, I would like for you to tell us what the unit cost of the run A planes, C–5A's would be.

Colonel DAVIS. We have to talk about the unit cost of the run A airplanes if we stop at the end of run A. If we do not stop at the end of run A, we will go back and pick up some of the costs because of the repricing formula.

Mr. ANDREWS. I understand. But could you give us the unit cost of run A if we stop at the end of A?

Colonel BUCKINGHAM. Sir, because we have exercised the option the prices I have and have quoted here are based on the buy of 120 aircraft. I do not have it computed if we stop at the end of run A.

Mr. SIKES. You can supply it for the record.

(The information follows:)

UNIT COST OF C-5 RUN A

The unit gross weapon system cost for the 53 production run A aircraft if we had stopped at the end of run A would have been $28.5 million. This unit cost excludes those costs associated with termination and the advance buy of $72.2 million approved in fiscal year 1969 for long leadtime items associated with run B.

Mr. ANDREWS. Let me ask you this one final question, General Jeffrey. Isn't it correct to assume that the contractor's profit on a per unit basis would be greater on the second run than the first run of the planes?

General JEFFREY. Yes, sir. On the first run we estimate if we stopped it there he would go in the hole $670 million.

Mr. ANDREWS. I believe you estimated with the second run he will go into the hole $285 million.

General JEFFREY. Yes, sir.

Mr. ANDREWS. He does not have a chance of making any money out of this contract?

General JEFFREY. Not in our opinion, no.

AIR FORCE ACCEPTANCE OF OBVIOUS UNDER-COST BID

Mr. SIKES. Mr. Lipscomb?

Mr. LIPSCOMB. General, as I understand it the Air Force made an original estimate in October 1964.

General JEFFREY. Yes, sir.

Mr. LIPSCOMB. What was that figure?

General JEFFREY. $3,116,000,000.

Mr. LIPSCOMB. Is that the estimate made by the Air Force before you put the item out for bid?

General JEFFREY. Yes, sir, that was before we went out with the request for proposal on the airplane. As I recall we went out for proposal in December of 1964.

Mr. LIPSCOMB. Then the proposals went to a number of manufacturers?

General JEFFREY. Yes, sir.

Mr. LIPSCOMB. They turned in their proposals?

General JEFFREY. Yes, sir.

Mr. LIPSCOMB. How close was the manufacturer's proposal to the Air Force estimate?

General JEFFREY. In case of the Lockheed proposal, as I pointed out, including the General Electric engines and including the Air

Force add-ons which would have been a comparable situation, this was $2,985 million, or $130 million less than the 3116 figure, sir.

Mr. LIPSCOMB. When there is a difference such as this between the Air Force, which I believe has good planners and estimators, does the Air Force question why the manufacturer's bid is so much lower than the Air Force's own estimate?

General JEFFREY. This is questioned internally, of course. We are faced with the very difficult problem, let us say, of going to the low bidder and telling him or implying to him that he is low and that we do not believe he can build the airplane for this price. His reaction to this might be to raise his price, which certainly would not be in our interest, and it also could result in him raising it up to the point that somebody else got the bid. So this is the difficult position we find ourselves in, in advising a contractor that we think his bid is low.

In the case of the C–5 airplane, a fact that is not generally known, we went back to each of the three contractors, Boeing, Lockheed, and Douglas, after we had received their proposals, and advised them of technical deficiencies that we considered that existed in their proposals. We gave them an opportunity to correct these deficiencies and repropose as they saw fit. We gave them a short period of time to do this. We recognized that this was a very dangerous sort of thing to do because they could switch their positions in the competition here. In the case of Lockheed they did raise their bid figure after incorporating certain technical changes. They raised their bid figure by somewhere in the neighborhood of $50 million, as I recall. So they had an opportunity to rexamine their proposal in light of certain deficiencies that we pointed out, and reproposed. But we did not specifically tell them that we thought their bid was too low.

Mr. LIPSCOMB. I am not suggesting that be done. What I am suggesting is that at the point where the Air Force can see from its own figures that the contractor's bid is not within accomplishment, isn't this the time the determination has to be made whether or not a contractor is perhaps buying in as they are alleged to do?

General JEFFREY. This would be the time to do that, sir.

Mr. LIPSCOMB. Isn't it so in many contracts of the Department of Defense that when you get proposals in or bids in that you evaluate the manufacturer's bid on the basis of their financial competency, their ability to produce, and a number of other things?

General JEFFREY. Yes, sir.

Mr. LIPSCOMB. Isn't a large defense contractor subject to that same type of investigation and the same type of survey before the contract is awarded?

General JEFFREY. Yes, sir. These things were taken into consideration in connection with the Lockheed bid. We evaluated all of the airplanes that the company had ever built. We evaluated the success that the company had enjoyed over the years with the C–140 and some 800 or 900 C–130's. The C–141 program had been highly successful. We were aware of Lockheed's corporate image and their technical pool of talent, as well as their financial status. It was our estimate at the time that the company had the prerequisite qualifications to build this airplane.

Mr. LIPSCOMB. If this is the case, then, I am compelled to ask: How could the Air Force be so wrong in their estimate of proposed cost?

General JEFFREY. It was not a very good estimate.

Mr. LIPSCOMB. Yours was a better estimate as time has proven. I mean your first one was better than Lockheed's.

General JEFFREY. Yes, sir; but it was still off. We did not include in that estimate economic escalation. We made that estimate in terms of constant 1964 dollars.

Mr. LIPSCOMB. Neither did the manufacturer.

General JEFFREY. He included some escalation in his, about 2 percent.

Mr. LIPSCOMB. How could it be lower than yours, then?

General JEFFREY. That is the reason I said, sir, that our estimate left something to be desired. We were estimating at the time also on a smaller airplane than the airplane upon which he bid.

Mr. LIPSCOMB. The thing is that you had a higher cost estimate on your original in October 1964, than the proposal that came in.

General JEFFREY. That is true, sir.

Mr. LIPSCOMB. No matter what you left out, this is a fact.

General JEFFREY. Yes, sir.

Mr. LIPSCOMB You both left out a lot of things. But still the Air Force was closer to what is actually happening now than was the manufacturer, isn't that correct?

General JEFFREY. That is true, sir.

Mr. LIPSCOMB. Why was not this the time to evaluate whether or not the manufacturer could produce. There must have been a question raised whether or not he could produce.

General JEFFREY. The question was raised, sir. We evaluated the things that I outlined.

The learning curves that he proposed were possibly achievable. He proposed bettering his manufacturing learning curve on the C–141. He proposed bettering his engineering man-hours learning curve on the C–141. We find ourselves in the position of having to argue with a contractor after he has bid, a giant in the industry, on whether or not he can do what he says he can do. I admit that is the time to do it.

General MCNICKLE. Lockheed's position has been that they are not going to show a profit on this contract.

I do not think that the $130 million difference between our estimate and Lockheed's—with their wealth of experience in building large cargo airplanes—would have justified rejecting their bid on that basis.

Mr. LIPSCOMB. The job was not contracted for under the October 1964 figures that we are talking about now.

General JEFFREY. No, sir.

INFLATIONARY FACTORS

Mr. LIPSCOMB. We are ahead of ourselves a little bit. On inflation or economic escalation factors, did you say that in your figures you did not include any inflationary factors in your estimates originally?

General JEFFREY. Not in the October 1964, estimate.

Mr. ANDREWS. If the gentleman will yield, I read in this report again, General, on page 20:

The inflation argument which is supposed to account for $500 million of the cost growth appears questionable. The contract contains an inflation provision to protect the contractor from unforeseeable price changes in the economy to go into effect 3 years after the issuance of the initial contract, that is, October 1, 1968. The initial 3-year period was supposed to be considered a normal business risk.

General JEFFREY. That is true, sir.

Mr. ANDREWS. So you can crank inflation possibilities into the contract 3 years after the signing of the contract.

General JEFFREY. That is true, sir. This was not the case with regard to the estimate that we made in 1964. We have a constant 1964 dollar.

Mr. LIPSCOMB. But you did crank them in on the contract itself, finally.

General JEFFREY. Yes, sir; when the contract was awarded.

Mr. LIPSCOMB. What was the figure that you used for inflation?

General JEFFREY. In the contract, sir?

Mr. LIPSCOMB. Yes, sir.

General JEFFREY. Two percent.

Let me ask Colonel Davis to address that.

Colonel DAVIS. Sir, we did not ask the contractor to put any inflation in the contract. The contractors proposed what they thought the inflation might be. We understand Lockheed has told us informally that they used a factor of about 2 percent for inflation in the future. The history is from 1958 to 1964 that the GNP inflators averaged about 1½ percent a year, a period of relative stability in the economy during the period shortly before the contract award. So Lockheed indicates they used about a 2-percent factor for inflation in the contract.

Mr. LIPSCOMB. So in the contract is included a 2-percent factor for inflation. How do you estimate from the time when the contract was signed until the present time an inflationary figure of half a billion dollars?

General JEFFREY. Sir, I would like to ask General Pitts to address that.

(Discussion off the record.)

Mr. SIKES. Gentlemen, the committee will be in recess until 2 o'clock.

AFTERNOON SESSION

Mr. SIKES. The hearing will be in order.

At the time we recessed Mr. Lipscomb had the witness on the C–5A program.

Mr. LIPSCOMB. Mr. Chairman, when we recessed General Pitts was about to explain the economic inflation that was figured in to arrive at the figure of half a billion dollars.

General PITTS. Yes, sir.

First I would like to state, sir, that that half billion dollars is based on estimate to estimate. In other words, we used the October 1964 estimate on the technical development plan that we spoke about and then compared that estimate with the October 1968 estimate in arriving at the $500 million inflationary figure.

Now, you will recall we cited a figure of $3.116 billion—General Jeffrey did—as our original 1964 estimate. When the large cost increases were identified some 4 years later, we went back to that earlier estimate to try to determine why it was so understated. You will recall also that General Jeffrey stated the 1964 estimate was made in constant 1964 dollars. When you adjust the estimate to reflect current dollars, our estimate of inflation became some $500 million. The actual computation was made using gross national product deflaters for the years 1965 to 1968, and these were taken from a publication, Economic Indicators, put out by the Department of Commerce.

From 1969 through the life of the program, or 1975, we used a flat rate of 4 percent. The actual computation then resulted in a total of some $545 million and, recognizing that these are estimates only, we rounded it off to $500 million.

Now, I can go through computations using the economic deflaters as set forth in the economic indicators put out by the Department of Commerce to show how we get that $500 million. Would you like that done at this time?

Mr. LIPSCOMB. No, that is not necessary at this time.

General PITTS. All right, sir.

Mr. LIPSCOMB. You had previously said in the $3.116 billion figure that there was no economic inflation included.

General PITTS. No, sir; those were constant 1964 dollars.

Mr. LIPSCOMB. What is included in that October 1964 technical development plan? How was that broken down?

General PITTS. I will ask Colonel Davis to reply, sir.

Mr. LIPSCOMB. Colonel, your chart says Lockheed, General Electric additives. I understand the $3.116 billion includes engines and everything.

Colonel DAVIS. Yes, sir; that is right. That was broken out, sir, by R. & D. and procurement. I can break it out further if you like, but the R. & D. portion, it was estimated at that time—of course, we did not know who the contractors would be—it was estimated that the research and development funding required would be $980 million. It was estimated procurement funding would be $2,136 billion, which is a total of——

Mr. LIPSCOMB. What is in the procurement?

Colonel DAVIS. For the airframe contractor, we estimated $904 million for run A for the airframe contractor for 53 aircraft; $704 million for run B, 57 aircraft.

Mr. LIPSCOMB. For what, sir?

Colonel DAVIS. For the 57 aircraft in run B, $704 million, and $53 million for the five run C aircraft.

For the engine contractor it was estimated $209 million would be required for the run A engine; $147 million for the run B engine, and $13 million for the run C engine.

Then we had other Air Force costs of $106 million in the production account.

Mr. LIPSCOMB. What was the figure on the run B engine?

Colonel DAVIS. $147 million.

Mr. LIPSCOMB. Do you know whether the contractor included economic inflation in his estimate of bid?

Colonel DAVIS. Did the contractor include anything in his bid? Yes, sir. I understand Lockheed has told us they put about a 2-percent factor for inflation in their bid.

Mr. LIPSCOMB. I come back to this point: Isn't there some way that when you have your technical survey or technical development plan made, that when you see something that is so different between the contractor's proposal and that which the Air Force technical people develop, that this should raise a red flag? That perhaps that is the time to watch the procurement practices? That people don't buy in or underestimate?

As you look at this, you say $130 million, but it is really a larger difference than that, it should have raised a question in somebody's mind.

Mr. ANDREWS. Will the gentleman yield?

Mr. LIPSCOMB. Yes, sir.

Mr. ANDREWS. I can tell you how they can stop it. If he wants to buy in, let him buy in and if he can't live with it, let him get out, but don't bail him out.

I think the General told me this morning that it is something of an unwritten law, or indelible impression, that if they bid too low, somewhere, somehow down the line, it will be taken care of.

If you let one of them bid one of these contracts and bite off more than they can swallow, you can stop it. You talk about a cutthroat industry that is highly competitive, you will get rid of some of the competitors. Let them stay in there and stew in their own juice. Try it one time and see if it is going to work.

General JEFFREY. This is exactly what we think we have done with the Lockheed Co.

Mr. ANDREWS. Didn't somebody say this morning that Lockheed was not going to lose money on this contract?

General JEFFREY. I haven't heard them say they are going to make money out of it.

General MCNICKLE. I believe they carry it in their annual report as "No profit."

Mr. ANDREWS. That will make them stop, look, and listen. They don't like to do business for free.

Thank you.

Mr. LIPSCOMB. There is danger in letting the contractors buy in. In this case you are getting—at least from what you have told us—you apparently are getting a good plane. It is technically good and apparently meets the Air Force and the Government standards. But there are times when if they buy in and then can't produce and you must cancel a contract, you lose all that time, resources, and technical capability and have nothing.

You get hung up on a contract when you let them buy in. The time to make the decision is before the mistake is made.

General JEFFREY. The Armed Forces procurement regulations—we have looked into this—don't prohibit a contractor from buying in. The General Accounting Office has ruled, however, that where it is obvious that a contractor has made an irresponsible bid, or an erroneous bid, that he will be advised.

Now, as I attempted to explain this morning, we find ourselves in the position when in a competition of possibly having to advise the low bidder that he is low and that we think his bid is "unresponsible," which puts us in an untenable position as far as the competition is concerned.

Mr. Lipscomb, I understand exactly what you are saying here, but the question we have to ask ourselves is, "What do we do in this situation?" a situation that if we did as we are discussing, it could result in a contractor's raising his bid to a point where somebody else would win the contract and then he could come back at us and say, "You caused me to lose the contract due to the fact that you told me that I bid too low on this." We feel this is a difficult position for us to be in, sir.

Mr. LIPSCOMB. I don't know all the ramifications, but I do know through situations that have arisen from contracts that I know of in my district, small contracts, that they have not taken the low bidder because they have felt that it wasn't a responsible bid.

Now, if they can do it on little contracts, with the little men, they can do it on big contracts.

General JEFFREY. Yes, sir, and it is done on big contracts.

Mr. LIPSCOMB. It is true we want the lowest, best qualified bidder to get the job.

General JEFFREY. Responsible bidder.

Mr. LIPSCOMB. Responsible bidder. But if technical development plans and other factors indicate that it just doesn't seem possible in the technician's mind for the company to do it, there has to be a decision made.

Mr. MINSHALL. General, the premise that you have made here is that in this specific contract where your Air Force estimators came up with about a, as you admit to, $130 million spread—at least that much——

Mr. LIPSCOMB. More than that.

Mr. MINSHALL. It was actually more than that and yet you were afraid to go back to them and say, "I feel that your bid is irresponsible, or erroneous." Where do you draw the line? Suppose it had been $50 million less than that or $100 million less than that? Who makes these judgments? This is a substantial amount of money.

General JEFFREY. Yes, sir. These judgments are not made lightly.

Mr. MINSHALL. In this case, supposing the bid had been another $10, $20, $30, or $100 million less, would you have taken another look maybe?

General JEFFREY. Yes, sir, we would have taken another look.

Mr. MINSHALL. Why didn't you take a look when you had a spread of $130 million? That is a lot of money.

General JEFFREY. Mr. Minshall, we did, as I indicated this morning, take another look. We were concerned about the content of the contractor's proposals and we did call the president of each one of the companies and advise them to take a relook at their proposals. We told them what we considered to be significant technical deficiencies in their proposals. The idea was to get them to take a close look without intentionally pointing out to one or the other that "Yours is too high," or "Yours is too low." We did this. We gave them an opportunity to repropose.

In the case of Lockheed, we pointed out technical deficiencies with their program. I don't recall specifically what they were at the time, but one had to do with the size of the wing. I think we indicated to them that they would have to have more wing on the airplane, implying that the airplane would have to be bigger than it was. They did respond with a significant increase in their proposal when they came back.

So I think, sir, that we in effect did what you suggest without specifically telling them what our estimate was as compared with their proposal.

SUBCONTRACTOR OVERRUNS

Mr. MINSHALL. You were asked this morning, General, to supply the list of subcontractors, which you will do at the appropriate place in the record.

General JEFFREY. Yes, sir.

Mr. MINSHALL. I would also like to have included with that list what the original subcontracts were for, in what amounts, and also outline how many overruns there were for these subcontracts.

General JEFFREY. Can we get that information?

Colonel DAVIS. The subcontractors' bids to Lockheed?

Mr. MINSHALL. Yes. We want to find out where the fly in the ointment was here.

General JEFFREY. I understand what you are asking for, but I doubt that we have that information available to us.

Mr. MINSHALL. Get it from Lockheed then.

General JEFFREY. We will try to get it from Lockheed.

Mr. MINSHALL. There shouldn't be any problem.

General JEFFREY. Normally, sir, on a fixed-price type contract, that information is not available to the buyer. That is, what sort of a deal he made with his contractors. Most of his subcontracts were for a firm, fixed price. I understand that his subcontractors—it is my understanding that by and large they are in pretty bad shape. He's driven a hard bargain with them. A number of them are in a substantial deficit position, but we will attempt to get that information for you for the record; the list of the contractors, the type of contract he had with them, the dollars they have bid, and their overrun position at some specific point in time.

(The following statement was provided:)

List of C–5 Contractors/Subcontractors/Overruns

The attached listing indicates the major subcontract items, the source, type of contract and the target price of R.D.T. & E. and production run "A" requirements at the time of the competitive subcontract award.

Lockheed does not have definitive data as to overruns involving firm fixed-price subcontractors. Even in the case of a fixed-price incentive subcontractors where Lockheed receives monthly cost reports, it is not possible to state positively how many of those subcontractors will experience cost overruns.

Item	Source	Type of contract	Award amount
Aft cargo doors	Canadair, Ltd., Montreal, Quebec, Canada	FPI	$5,545,340
Ailerons	do	FPI	3,426,270
All-altitude and heading reference unit	Lear Siegler, Inc., Grand Rapids, Mich	FFP	3,520,504
Antiskid system	Hydro-Aire, Division of Crane Co., Burbank, Calif.	FFP	1,637,775
Auxiliary power unit	The Garrett Corp., AiResearch Manufacturing Co. Division, Phoenix, Ariz.	FFP	3,561,157
Assembly of wing components (outer and center).	Avco Corp., Aerostructures Division, Nashville, Tenn.	FPI	(1)
Inertial doppler navigation system	Northrop Corp., Electronics Division, Hawthorne, Calif.	FPI	29,802,200
Automatic flight control system	Honeywell, Inc., Minneapolis, Minn	FFP	5,752,951
Central air data computer	Elliott Bros., Rochester, Kent, England	FFP	2,098,748
Center and outer wing box	Avco Corp., Aerostructures Division, Nashville, Tenn.	FPI	59,361,407
Constant speed drive	Sundstrand Aviation, Rockford, Ill	FFP	1,032,291
Conveyor and rollers	Brooks & Perkins, Detroit, Mich	FPI	2,182,819
Electrical generating system	General Electric Co., Waynesboro, Va	FFP	1,195,427
Emergency hydraulic generator	Task Corp., Anaheim, Calif	FFP	325,417
Empennage	General Dynamics/Convair, San Diego, Calif	FPI	4,874,180
Environmental system	The Garrett Corp., AiResearch Manufacturing Co. Division, Los Angeles, Calif.	FFP	6,000,158
Flaps	Kaman Aircraft Corp., Bloomfield, Conn	FPI	10,419,345
Flap actuation system	Steel Products Engineering Co., Division of Kelsey-Hayes Co., Springfield, Ohio	FFP	4,517,330
Flight director computer	Bendix Corp., Eclipse-Pioneer Division, Teterboro, N.J.	FFP	1,060,355

See footnote at end of table

Item	Source	Type of contract	Award amount
Flight simulator	Conductron Corp., Conductron-Missouri Division, St. Charles, Mo.	FPI	$6,676,667
Fuel quality gaging system	Honeywell, Inc., Aeronautical Division, Minneapolis, Minn.	FFP	654,066
Guidance subsystem integration	Northrop Corp., Electronics Division, Hawthorne, Calif.	FPI	1,600,000
Engine vibration system	Gulton Industries	FFP	770,634
Main engine starter	The Garrett Corp., AiResearch Manufacturing Co Division, Phoenix, Ariz.	FFP	747,883
Main landing gear	Bendix Products, South Bend, Ind	FPI	23,172,950
Main landing gear bogie (effective ship 0014 and up)	Menasco Manufacturing Co., Burbank, Calif	FPI	11,185,611
Main landing gear doors and fairings	Conadair, Ltd., Montreal, Quebec, Canada	FPI	10,419,497
MLG actuation system	Curtiss-Wright Corp., Caldwell, N.J	FPI	6,312,117
MLG brakes and wheels	B. F. Goodrich Co., Troy, Ohio	FFP	13,047,912
Multimode radar	United Aircraft Corp., Norden Division, Norwalk, Conn.	FPI	18,331,021
Nacelles and pylons	Rohr Corp., Chula Vista, Calif	FPI	47,031,645
NLG actuation	Walter Kidde & Co., Inc., Belleville, N.J	FFP	1,024,433
Nose actuation system	Hoover Electric Co., Los Angeles, Calif	FFP	570,981
Nose landing gear	Bendix Products, South Bend, Ind	FPI	6,704,170
Nose radome	Brunswick Corp., Defense Products Division, Marion, Va.	FPI	2,369,375
Inner wing box components consisting of: Front beam, aft beam (including trailing edge), upper aft skin panel assembly, lower aft skin panel assembly, upper forward skin panel assembly, lower forward skin panel assembly.	Avco Corp., Nashville, Tenn	FPI	(1)
Pitch trim actuator	Western Gear Corp., Lynwood, Calif	FFP	1,786,568
Primary flight control system	Bertea Products, Irvine, Calif	FFP	3,907,514
Radar altimeter	Litton System, Inc., Silver Spring, Md	FFP	1,035,186
Restraint rails	Teleflex, Inc., North Wales, Pa	FPI	3,739,665
Spoiler actuation system	Cadillac Gage Co., Costa Mesa, Calif	FFP	1,940,706
Spoilers	Kaman Aircraft Corp., Bloomfield, Conn	FPI	3,226,770
Tail radome	McMillan Industries, Ipswick, Mass	FPI	168,630
Thrust reversers	General Electric Co., Evendale, Ohio	FPI	20,858,548
Wing leading edge: Ribs, slats, and moving islands.	Canadair, Ltd., Montreal, Quebec, Canada	FPI	16,157,841
Wing leading edge: Fixed honeycomb panels	Twin Industries, Buffalo, N.Y	FPI	8,216,261

[1] Included in price shown for center and outer wing box.

Mr. ANDREWS. General, it sounds like the C–5 program is going to break a lot of people, including the taxpayers. You say some subcontractors are about to go under?

General JEFFREY. Yes, sir.

Mr. ANDREWS. And Lockheed and the taxpayers?

General JEFFREY. Yes, sir.

Mr. MINSHALL. I don't believe I have any more questions now, thank you. You have covered this point quite fully.

PENALTY PROVISIONS

Mr. DAVIS. You mentioned the penalty provisions which are included in the contract which ran a substantial amount each day. Have any of the penalty provisions been involved or invoked as of this time as yet?

General JEFFREY. No, sir. They would not be scheduled to be invoked until the contract would be consummated, or negotiations completed. Up until this point we haven't really faced the problem of late deliveries of production airplanes. The first production airplane was scheduled to have been delivered ——.

Colonel DAVIS. In June.

Mr. DAVIS. Now it will be December.

General JEFFREY. Now it will be December, so we begin to face the problem when that first airplane is not delivered on that schedule. The penalty provisions of the contract will apply in that case.

Mr. DAVIS. This was by mutual agreement that the date was put over from June until December?

General JEFFREY. Yes, sir.

Mr. DAVIS. There is no problem of penalties applying to this at this time then?

General JEFFREY. That is right, sir.

Now if, on the other hand, even though the schedule has been slipped, he is able to advance the date and he might as we go further down the line, this could cause an adjustment in the penalty area. In other words, the closer he can come to his original date, the less his penalty will be.

STATUS OF PRODUCTION FACILITY

Mr. DAVIS. Did I understand you correctly that approximately 20,000 people at Lockheed Marietta are working on the C–5 program alone?

General JEFFREY. That was our estimate; yes, sir.

Mr. DAVIS. Are there assembly lines set up? Are they actually producing this or are you still sort of waiting for your results on the five that have been produced before they actually start to put them on a production line to go?

General JEFFREY. No, sir; they are actively in the production process.

In addition to the five airplanes that have been delivered, there are 17 C–5's in some stage of assembly at the present time. That would be about what the full loading would be.

AIR FORCE OFFICIAL RESPONSIBLE FOR PROGRAM

Mr. DAVIS. Who in your organization is the man responsible?

General JEFFREY. The man in the Air Force who is responsible is our system program director out at Wright Field and his name is Colonel Beckman. He is responsible for the direction of this program and for administration of the contract.

Mr. MINSHALL. Is he still there?

General JEFFREY. Yes, sir.

Mr. SIKES. I bet he wishes he weren't.

General JEFFREY. I imagine you are right, sir.

MANPOWER UTILIZATION

Mr. DAVIS. Under the terms of our contract do we, meaning the Government, have any interest in the utilization of manpower? For instance, the 20,000 people down at Lockheed Marietta, do we in Government have any interest in the utilization of those people at all? Theoretically, since it is a fixed-price contract, but the price being rather fluctuating, we are not interested in their personnel utilization at all?

General JEFFREY. To the contrary, sir, I would say we are vitally interested in this because the majority of the cost of the program is, in one way or another, involved in people. The more people he has on the job, the more it costs him to perform. We are vitally interested.

We have down at the Lockheed Georgia Co. an Air Force plant representative with an office staffed by some 130 people. These are our own people who are inspecting the results of the work. They are checking manpower utilization to see that they are being effectively utilized; checking his procedures, processes, his general effectiveness, and efficiency. This information is reported to the program director at Wright Field who in turn visits the plant with people from his office at regular intervals to check into the same sort of things.

There isn't an indication, really, that his manpower hasn't been effectively utilized. It has more to do with the amount of it he has had to put on the job in order to cover technical problems that he has encountered.

Mr. DAVIS. That is all I have.

ORIGINAL COST ESTIMATES GIVEN CONGRESS

Mr. SIKES. This morning there was conversation about the figures given to the Congress on the cost of the C-5 program in the first session of the 89th Congress. I would like at this point to have placed in the record that information that appears on page 173 of the Air Force R. D. T. & E. hearings, in the discussions between Congressman Andrews, Mr. Flax, and General Crow, at which time it was stated that the cost would be $2.2 billion and that the plans were to procure 58 operational and possibly as many as five R. & D. aircraft for a total of 63.

(The pertinent colloquy from the hearing held on Wednesday, March 31, 1965 follows:)

Mr. ANDREWS. What is the total estimated development and procurement cost of the C-5A program?

Dr. FLAX. I do not have an up-to-date figure here. In fact, any figure we give you will be highly tentative, because the contractors are now at the stage where they are about to give us their proposals. But I think General Crow may have a figure he can provide for you.

General CROW. The tentative figure for development is $862 million. In the tentative sense, you could round that off and say $850 or $900 million. Production costs are in the order of $1.2 or $1.3 billion. We are talking of a total program upward of $2 billion.

Mr. ANDREWS. Upward of $2 billion?

General CROW. Yes, sir.

Mr. ANDREWS. How many aircraft do you plan to procure?

General CROW. Fifty-eight operational, sir, and tentative planning is that there would be possibly as many as five Research and Development aircraft, for a total, then, of 63.

Mr. ANDREWS. And those 63 will cost that figure of approximately $2 billion?

General CROW. Upward of $2 billion, sir. The tentative total is $2.2 billion.

Mr. SIKES. That exchange indicated that the projected cost was $2.2 billion in March of 1965. The figures which are given to the committee this morning show an October 1964 cost projected of $3.116 billion, modified in October 1968 to $4.348 billion.

The question is, How is it that your estimate in October 1964 was $3.116 billion and yet the estimate given to the committee in 1965 was $2.2 billion, a billion dollars less?

General JEFFREY. We seem to have been talking about a different number of airplanes there in the March 1965 testimony, if I understood the dates correctly, than our October 1964 estimate.

As I understood you to say there, reference was made to 58 plus a possible five which would have been 63. This was during the time that the competition was being held, in March, 1965. As a matter of fact, it was just after that time, as I recall, that the bids were received from the contractor. Then it would appear that reference was made to a portion of the total buy. I don't know how much at that time those people who were testifying knew about a possibility of having two production runs and that sort of thing.

Mr. SIKES. The question was addressed to the total buy. I would suggest that you review the testimony at that time and that you try to adjust the facts accordingly and give us the complete story for the record.

General JEFFREY. All right, sir, we will do that.

(The information follows:)

COST OF C–5 PROGRAM TESTIMONY OF PRIOR YEAR'S R.D.T. & E. TESTIMONY

The October 1964 estimate of $3,116 million is for 120 aircraft. The figures given to the committee in 1965 of $2.2 billion is for 63 aircraft.

(See pages 902 and 912–913 for additional information.)

REQUIREMENT FOR C–5A AIRCRAFT

Mr. SIKES. In all fairness to the Air Force, I believe it has been said that it was not Air Force changes that have run up the cost of the program. A number of other factors were listed, but Air Force changes are not a principal cause of the increased cost of the C–5 program.

General JEFFREY. That is correct, sir.

Mr. SIKES. There has always been a question in my mind as to the necessity for the C–5. I realize that you have built what may be one of the greatest aircraft of all times, but I think that may be beside the point.

Now that the cost has been increased so much, I have even more serious reservations about the wisdom of the purchase in that you have in the C–141 probably the most reliable cargo aircraft ever built. It is an aircraft so good that it just keeps flying and it will wear out crews since they don't get to stop to rest for repairs like they do on most aircraft. It doesn't haul as much, but it hauls it steadily and dependably, and the next war we get into very probably is not going to be a war in which aircraft can be flown with general immunity from attack, as cargo aircraft have been in this war.

The C–5 is a much bigger target; it is a more vulnerable target and when you lose a C–5, you have lost a big piece of your cargo carrying capability and a lot of cargo.

Am I the only one who has these reservations?

General MCNICKLE. No, sir. I am sure there are people who feel that we could have done an acceptable job with more C–141's. But I think the Army would justify this airplane vehemently because of the lack of capability of the C–141 to haul a number of their important pieces of equipment. In addition comparisons have shown the C–5 costs, on a ton-mile basis, will be about half those of the C–141, Mr. Chairman.

Mr. SIKES. We are in the boat now and we can't back it up and get out of it.

General McNICKLE. There are very few who do not feel that we have an excellent airplane in the C–5 and who back it a hundred percent.

General JEFFREY. The requirement is still as firm as it was at the time the contract was initiated, sir. I feel very strongly that the requirement did exist and does exist for this airplane to meet contingencies anywhere we might run into them in the world.

The airplane will provide us with a capability to get things, large pieces of equipment essential to the conduct of such an operation, to any place in the world and this capability we don't have at the present time.

Mr. SIKES. Not necessarily any place in the world. Your C–141 can get off the ground in about 4,000 feet loaded. You are going to need twice that much for the C–5.

General JEFFREY. Sir, my reference including hauling outsized, and all types of cargo that the Army has and would require for such contingencies and, of course, the C–141 wasn't built to do this.

APPROPRIATIONS TO DATE

Mr. SIKES. The funding requested before the committee today is a sum of $758 million which includes $481 million for the procurement of 23 additional aircraft, $52 million for advance procurement, and $225 million for cost overruns in fiscal year 1969 and prior years.

What appropriations have been made in both R.D.T. & E. and procurement for the C–5A through fiscal year 1969?

Provide that for the record.

(The information follows:)

FUNDING FOR C–5

The R.D.T. & E. and weapon system procurement programs as originally approved by Congress by fiscal year through fiscal year 1969 are as follows:

[In millions of dollars]

	Fiscal years—					
	1965	1966	1967	1968	1969	Total
R.D.T. & E.	7.0	157.0	258.2	305.2	128.0	855.4
Aircraft procurement			408.4	423.4	498.7	1,330.5
Total	7.0	157.0	666.6	728.6	626.7	2,185.9

REPROGRAMING FOR C–5A

Mr. SIKES. What reprograming actions have been submitted and approved for the program?

I think you can provide that for the record also.

(The information follows:)

C-5A REPROGRAMING ACTIONS APPROVED THROUGH FISCAL YEAR 1969

[In millions of dollars]

Reprograming No.	Date approved	1964	1965	1966	1967	1968	Total
R.D.T. & E.:							
FY64-47	Jan. 27, 1964	+10.0					+10.0
FY65-51	Dec. 22, 1964		+35.0				+35.0
FY67-111	May 12, 1967				+22.4		+22.4
FY68-89	Feb. 1, 1968					+40.0	+40.0
Below threshold				+1.9	−2.0	−3.3	−3.4
Total R.D.T. & E.		+10.0	+35.0	+1.9	+20.4	+36.7	+104.0
Aircraft procurement:							
FY68-86	January 1968					+16.6	+16.6
Below threshold					−20.0		−20.0
Total aircraft procurement					−20.0	+16.6	−3.4
Total R. & D. and procurement		+10.0	+35.0	+1.9	+.4	+53.3	+100.6

FUNDING PROGRAM

Mr. ANDREWS. General, what is the total of the funds programed by the Air Force for the C–5A through fiscal year 1969?

Colonel DAVIS. Through fiscal year 1969, sir, there has been $2,286.5 million programed for the C–5 acquisition costs. That is R. & D. and procurement funds.

Mr. ANDREWS. How much has been programed by appropriation and by fiscal year? You can submit that for the record.

(The information follows:)

The current C–5A programed funds by appropriation and fiscal year through fiscal year 1969 availability is as follows:

[In millions of dollars]

	Fiscal year 1964	Fiscal year 1965	Fiscal year 1966	Fiscal year 1967	Fiscal year 1968	Fiscal year 1969	Total
R.D.T. & E.	10.0	42.0	158.9	278.6	341.9	128.0	959.4
Aircraft procurement (wpons system)				388.4	440.0	498.7	1,327.1
Weapons system total	10.0	42.0	158.9	667.0	781.9	626.7	2,286.5
Additional aircraft procurement support funds: Initial spares				6.4	67.7	127.2	201.3
Total	10.0	42.0	158.9	673.4	849.6	753.9	2,487.8

EXPENDITURES

Mr. SIKES. What have the expenditures been to date by appropriation and by fiscal year?

Supply that for the record.

(The information follows:)

C-5A EXPENDITURES TO DATE BY APPROPRIATION BY FISCAL YEAR

[In millions of dollars]

Fiscal year	R.D.T. & E.	Aircraft procurement	Total
1965	33	----------	33
1966	117	----------	117
1967	216	192	408
1968	397	306	703
1969 (March)	59	562	621
Total	822	1,060	1,882

FISCAL YEAR 1970 REQUEST FOR C-5A

Mr. ANDREWS. What money is in this procurement appropriation before us, General Pitts, for the C-5 program?

General JEFFREY. There is $758 million; $543 million for procurement and $225 million on a line item for overtarget costs associated with prior years.

Mr. ANDREWS. A separate sum for overtarget costs?

General PITTS. Yes, sir. You will recall we budgeted just to target and you will recall we have spoken about cost overruns above target. General Jeffrey spoke of that rather fully this morning.

This $225 million is the sum of those overtarget costs that we recognize as of this funding period.

So $533 million is for procurement for fiscal year 1970 buy, and $225 million associated with prior years overtarget cost.

OVERTARGET COSTS

Mr. ANDREWS. A total of $778 million?

General PITTS. $758 million, sir; $533 million and $225 million.

Mr. ANDREWS. That is $225 million overtarget. Was that contemplated at the time the contract was signed?

General JEFFREY. It was recognized that it might be, yes, sir.

Mr. ANDREWS. I mean was it in the realm of negotiation?

General JEFFREY. It was within the realm of negotiation?

Mr. ANDREWS. At the time the contract was signed?

General JEFFREY. That is right.

Mr. ANDREWS. Would you consider this bailout money?

General JEFFREY. No, sir. The Air Force is liable for overtarget costs up to ceiling. We recognized from the beginning that there was a reasonable probability that this program would go to ceiling.

Mr. ANDREWS. You have explained that ceiling price and that target price and so forth. Now, did I understand you to say earlier that when they go over ceiling that stops their profit?

General JEFFREY. Yes, sir.

Mr. ANDREWS. Does the fact that you are putting in $225 million here as overtarget money mean there can be no profit?

General JEFFREY. I wouldn't interpret it that way, sir.

Mr. ANDREWS. Didn't you say if they went above ceiling there wouldn't be any profit?

General JEFFREY. That is right. If they go above ceiling, there won't be any profit and this money is to take care of an overtarget condition and not an overceiling condition, so we do not anticipate that the contractor will make a profit.

Mr. ANDREWS. Is overtarget overceiling?

General JEFFREY. No, sir.

Mr. ANDREWS. The target is under the ceiling?

General JEFFREY. The target is under the ceiling.

Mr. ANDREWS. Are they still under the ceiling?

General JEFFREY. No, sir. We estimate they will be over the ceiling.

Mr. ANDREWS. Which one is it where they forfeit the profit if they go above?

General JEFFREY. They begin to forfeit profit when they go above the target cost. They lose all of their profit when they reach ceiling.

Mr. ANDREWS. Have they gone above ceiling?

General JEFFREY. We expect that they will be above ceiling when they get to the end of production run A.

Mr. ANDREWS. Who makes the determination of whether or not they are overceiling and there will be no profit?

General JEFFREY. This would have to be as a result of a review of the actual costs associated with research and development and production of the airplanes. They have to lay it on the line, and as validated by Government audit. They arrive at the determination that they did in fact incur such and such costs.

BREAKDOWN ON EARLY COST ESTIMATE

Mr. ANDREWS. The original estimate of the target cost of the C–5A program was 120 aircraft for $3.116 billion. When was this estimate made?

General JEFFREY. This estimate, based upon a hypothetical airplane, was made in October 1964, sir.

Mr. ANDREWS. Break down the $3.116 billion estimate to show how much was estimated for R. D. T. & E., including the R. & D. aircraft. How much was the airframe contract for each production run; how much was for the engine contract for each production run, and how much was estimated for Government-furnished equipment?

General JEFFREY. All right, sir.

I have with me at the present time how much—we have the breakout with regard to R. D. T. & E. production run, at production run A and production run B, but we do not have available with us the details regarding the other questions that you asked. We might be able to supply those for the record.

Mr. ANDREWS. All right.

(The information follows:)

BREAKDOWN OF C-5A $3.116 BILLION ESTIMATE

The breakdown of the $3.116 billion is as follows. There was no breakout of Government furnished equipment.

	Billions
R.D.T. & E.:	
Airframe	$0.632
Engine	.222
Air Force adds	.126
Total	.980
Production:	
Run A:	
Airframe	.904
Engine	.209
Air Force adds	.049
Total	1.162
Runs B:	
Airframe	.704
Engine	.147
Air Force adds	.057
Total	.908
Run C:[1]	
Airframe	.053
Engine	.013
Total	3.116

[1] Run C, which is not under contract, is considered an Air Force add—$66,000,000.

Mr. ANDREWS. What use was made of the target cost? Was this the basis for the competition?

General JEFFREY. The target price would have been the basis for the competition; yes, sir.

Mr. ANDREWS. In the contract which was signed in 1965, the total ceiling price was $3.454 billion. Break down this amount in the same way the original target cost was just broken down and discuss the increase.

(The information follows:)

BREAKDOWN OF THE C-5A CEILING PRICE/$3,454 MILLION

The breakdown of the original ceiling price of $3,454 million follows:

	Millions
R.D.T. & E.:	
Airframe	$607
Engine	286
Air Force adds[1]	124
Total	1,017

	Millions
Production:	
Run A:	
Airframe	$1,055
Engine	231
Air Force adds [1]	125
Total	1,411
Run B:	
Airframe	637
Engine	167
Air Force adds [1]	136
Total	940
Run C (5 A/C):	
Airframe	72
Engine	14
Total	86
Total	3,454

[1] Includes test support, engineering change orders, studies prior to contract award, first destination transportation charges, base, and depot AGE.

SIGNING OF C–5A CONTRACT

Mr. ANDREWS. When was the contract signed?

General JEFFREY. The contract was signed in August or September 1965. I would have to supply the exact date for the record. The award was made in October of 1965.

(The information follows:)

CONTRACT SIGNING/C–5A

The three airframe contractors signed their contracts in September 1965. Lockheed was announced as the airframe contractor on September 30, 1965. Air Force signed in October 1965.

Mr. ANDREWS. Did Lockheed know in August of 1965 that they had the contract?

General JEFFREY. No, sir; they didn't know it until we handed it out.

Mr. ANDREWS. And yet they signed in August?

General MCNICKLE. All three bidders, sir, submitted signed contracts.

General JEFFREY. Three bidders signed.

Mr. ANDREWS. Is that the normal way to award contracts?

General JEFFREY. There is often some time period between the time that the contractor submits his bid and signs the contract, especially when several are involved, prior to the time that he is notified that he is the winner; yes, sir.

Mr. ANDREWS. The signing in August was a conditional signing then; it had to be.

General JEFFREY. Yes, sir. The contract is not effective until the contractor is notified.

Mr. ANDREWS. Until it is awarded.

I never heard of a signed, sealed, and delivered contract, and then 2 months later—it wasn't signed, sealed, and delivered?

General JEFFREY. It was signed. It was signed in August by each contractor.

Mr. ANDREWS. Douglas, Lockheed, and Boeing.

General JEFFREY. Each signed the contract.

Mr. ANDREWS. Separate contracts?

General JEFFREY. Yes, sir; and we had all three of them in hand.

Mr. ANDREWS. The ball could have bounced any way between those dates of August and October.

General JEFFREY. Yes, sir.

Mr. ANDREWS. I still say, General, I never heard of any such contract action as that.

General JEFFREY. I believe this happens with considerable frequency. The contract isn't a legal document until the Government distributes it.

Mr. ANDREWS. On the date each contractor signed that contract, from then on any one of them could have been liable under the contract that they signed?

General JEFFREY. Yes, sir.

Mr. ANDREWS. After the discussion with the Government.

General JEFFREY. It is necessary for the Government to sign the contract too.

Mr. SIKES. Secretary Charles and others have indicated that the presently estimated cost of the 120 aircraft of the C-5A program is $4,348 million. I would like to have for the record a breakdown of this sum similar to previous breakdowns so that accurate comparisons of the estimates can be made and I would like to know when this estimate was made.

(The information follows:)

BREAKDOWN OF THE C-5A COST OF $4,348 MILLION PER C-5A

The breakdown of the $4,348 million follows:

	Millions
R.D.T. & E.	
Airframe	$607
Engine	286
Air Force adds[1]	110
Total	1,003
Production	
Run A:	
Airframe	1,157
Engine	248
Air Force adds[1]	104
Total	1,509
Run B:	
Airframe	1,405
Engine	220
Air Force adds[1]	120
Total	1,745
Run C (5 A/C):	
Airframe	74
Engine	17
Total	91
Total	4,348

[1] Includes test support, engineering change orders, studies prior to contract award, first destination transportation charges, base, and depot AGE.

The run B figures reflect the application of the repricing formula but do not show the allocation of costs back to run A as has been done in the funding plan. The cost study was made in September 1968. The results of this cost study became the October 1968 estimate of $4,848 million.

INCLUSION OF COST OF SPARES IN ESTIMATE

Mr. SIKES. The sum of $5.2 billion has been used as the estimate of the current cost rather than $4.3 billion. This includes a $855 million for spares. We have always known spares would be required so why wasn't an estimate of the cost of the spares included in the target cost and ceiling price estimates from the beginning?

General JEFFREY. General Riemondy will speak to that. He is director of supply, Air Force Headquarters.

General RIEMONDY. As I indicated, the cost of spares is really an operational cost associated with the aircraft. The figure that you quoted there, Mr. Chairman, of $855 million really was an estimate made up by the Air Force Logistics Command in trying to price out the next 5 years' programs, the operating programs, and incidentally, that $855 million includes about $15 million for construction. So we are only talking about $840 million which would be the estimate that they submitted to us.

Incidentally, in that $840 million is also a figure for expected modifications which would have to be made to this airplane through 1974.

Mr. SIKES. I don't think you are getting to the point of it. You knew we were going to have these costs. Why weren't they included in the target costs and the ceiling price from the beginning?

General RIEMONDY. Because they are not a part of the cost of the contract to acquire the airplane. We did make an estimate back in 1964, in October of 1964, as to what the initial spares might cost, associated with the procurement of 120 airplanes. At that time we estimate that the initial spares would cost about $307 million. This figure was arrived at by taking the flyaway cost of the airplane that we estimated at that point in time and multiplying it by a percentage factor. This is the way we normally estimate the amount of initial spares we would normally buy when we acquire a new aircraft.

Mr. SIKES. But a more accurate fiscal picture would have been presented, and there would have been less explanation required now, if all this had been included in the original cost.

General RIEMONDY. Let me again address the $840 million then. The $840 million is the projection of cost to fly this airplane from 1969 through 1974. Had we made a 5-year projection, something comparable to what we made in October 1968, had we made a 5-year projection in October 1964, related to what it would cost to fly airplanes for 5 years, that is, from 1964 through 1969, there wouldn't have been any cost because we didn't intend to fly any airplanes until June of 1969 when the first production operational airplane would have been delivered to the Air Force. So we are mixing apples and oranges, Mr. Chairman. That is what I have been attempting to say.

I may say, Mr. Chairman, this is part of the confusion that has been appearing in the newspapers, based upon information that has been provided by a certain employee of the U.S. Air Force. He has been mixing apples and oranges also and included in the statement in

the press of $2 billion cost overrun, one of the most recent estimates he included was $967 million for "spares."

Mr. ANDREWS. Are you refering to Mr. Fitzgerald?

General RIEMONDY. Yes, sir.

Mr. ANDREWS. Has he been demoted?

General RIEMONDY. No, sir; not to my knowledge. He is still in the same job for which he was hired, as was explained by Secretary Nielson, who happens to be his boss, before the Armed Services Committee the other day.

Mr. ANDREWS. I have read through this most hurriedly and it seems some effort was made to downgrade him, demote him or transfer him.

General RIEMONDY. I wouldn't know of that, sir.

Mr. SIKES. In view of the fact that no estimate is included of the cost of initial spares in the cost estimates for new aircraft presented to Congress, in order to get a better picture of the impact of a new aircraft program on the Treasury, the committee will then have to demand estimates of the initial spares costs. If an aircraft, in its entirety, can be estimated in cost, surely based on experience and that information, some reasonable estimate for initial spares could be made at that time.

General RIEMONDY. I agree wholeheartedly, Mr. Sikes, and we do make such an estimate. Generally it is based on past experience and we arrive at a factor, a percentage factor, and we apply this factor then against the acquisition cost of the aircraft. And, incidentally, our latest estimate was predicated again on such a factor and inasmuch as the estimated flyaway cost of the airplanes went up, when we applied that constant factor we arrived at a higher estimate for our initial spares. I talked to the $482 million this morning, which is the figure in our approved force and financial plan through 1974.

FIRMNESS OF PRESENT COST ESTIMATE

Mr. SIKES. How firm do you consider the estimate of $5.2 billion for the C–5A aircraft program to be at this time, including aircraft spares?

General JEFFREY. We do not consider it firm at this time, Mr. Chairman. As I attempted to explain this morning, this figure includes, in addition to the program costs, or the Lockheed cost and the General Electric cost, it includes the initial spares, the replenishment spares, modifications and other support, plus some internal Air Force requests that have not been approved by the Air Force.

All of these things have been added together to arrive at this figure. We don't recognize this as having any official status in this program at all. We only mentioned it this morning to indicate to the committee where it had come from and how it had been arrived at.

TOTAL EXPENDITURE PER AIRCRAFT

Mr. RHODES. Is my arithmetic correct that this is about $43 million a copy for these planes, and that isn't firm?

General JEFFREY. No, sir; I am not familiar with where you got that figure. I haven't heard it expressed before.

Mr. RHODES. You said 120 airplanes for $5.2 billion, didn't you?

General JEFFREY. The $5.2 billion figure has no validity. We don't recognize it as a figure.

Mr. RHODES. What figure do you recognize?

General JEFFREY We recognize a figure of $4,348 million.

Mr. RHODES. To buy how many airplanes?

General JEFFREY. This is without spares. 120 airplanes.

Mr. SIKES. What is your estimate for spares on top of the $4,348 million?

General RIEMONDY. Spares to operate the aircraft how long, Mr. Chairman?

Mr. SIKES. Initial spares.

General RIEMONDY. Initial spares we are estimating at this time to cost us $482 million. This includes about $87 million to satisfy a certain wartime condition.

Mr. SIKES. You know you are going to buy those spares.

General RIEMONDY. Yes, sir.

Mr. SIKES. Then that gives you a total of $4.830 billion for 120 aircraft. Is that correct, according to the October 1968 figure?

General JEFFREY. If you add those together; yes, sir.

Mr. RHODES. $4.830 billion?

Mr. SIKES. Yes.

Mr. RHODES That is about $40 million a copy and, taking your figures of $4.3 billion it is still $35 million a copy. Is that about right?

Mr. ANDREWS. $36,230,000.

General MCNICKLE. Including R. & D.

Mr. ANDREWS. Well, that is all part of the cost.

Mr. SIKES. Does this include ground support equipment, construction, other costs that you know must be included?

General JEFFREY. In which figure, sir?

Mr. SIKES. $4.830 billion.

General JEFFREY. The $4.830 billion does not include military construction.

Mr. SIKES. You say that is $15 million?

General JEFFREY. Yes, sir.

Mr. SIKES. What about ground support equipment?

General JEFFREY. It does include ground support equipment. Peculiar ground support equipment.

Mr. SIKES. Then we are up to $4.845 billion as the October 1968 figure. How firm do you consider that estimate to be?

General JEFFREY. We consider that estimate to be firm, sir.

Mr. RHODES. Mr. Chairman, maybe the other members of the committee knew that this plane was going to cost this much per copy, but I certainly didn't have the slightest idea.

Mr. ANDREWS. Read that testimony.

Mr. RHODES. I don't know how much longer we can get the American taxpayers to support things like this. This is beyond belief, a $40 million airplane. Seriously, gentlemen, how much longer do you think the taxpayers are going to fund things like this? You have a taxpayers' revolt on your hands right now.

General MCNICKLE. Sir, this airplane will haul cargo on a ton-mile basis at half the cost of the C–141.

Mr. RHODES. General, that is a projection.

I hope you are right. I have heard figures like this before. Some have proved to be about right and some have proved not to be right at all. I do not think that answer would satisfy a group of irate taxpayers. We are going to have to find a better way than this to do business in the future, as I can see. This is beyond belief.

General JEFFREY. Certainly we recognize the cost growth in the airplane. As members of the Air Force and as taxpayers, we are concerned about this. In mitigation, however, we would like to request that the committee listen to what we would plan to replace with these airplanes and the resultant number of squadrons.

Colonel GROSSMILLER. All of our studies have indicated that we will have a greater capability at less operating cost when we have the C–5A squadrons in the Strategic Airlift Force. For instance, in fiscal 1966 we had some 65 squadrons of strategic airlift in the Active Force and the Reserves.

General JEFFREY. These are all types of transport and cargo airplanes.

Colonel GROSSMILLER. At the present time we have 58 squadrons including the active and reserve in the Strategic Airlift. We will phase out all of the Reserve Strategic Airlift by 1974 and have 11 Air Force Reserve associate units with our C–141's. We will also have three Air National Guard associate units. At that time, in fiscal year 1974, we will have a force of 20 strategic airlift squadrons, including the six C–5A squadrons and the 14 C–141 squadrons. We will have phased out of the Active Force the older C–133's and the older C–124's which are very expensive to operate and very costly in O. & M. funds and spare parts. We would estimate that our capability to carry cargo will increase by three times the present capability at only a slight increase in cost operation at that time and enable us to move the 70 percent of the air mobile divisions' heavy equipment, which is now too large to be carried in any of the active jet aircraft.

Mr. RHODES. Colonel, if you had the whole projected fleet of C–5A's in service today, and you had phased out all of the airplanes which you just mentioned, what would be the difference in your operating costs annually? How many dollars would you save annually?

General JEFFREY. Let me see if I understand your question. That is, if we phased these 65 squadrons down to the 20 that he referred to.

Mr. RHODES. Yes.

General JEFFREY. What would be the difference in the operating cost of the 20 squadrons as compared to the 65?

Mr. RHODES. If I understand the point you are getting to, by buying the C-5A you are going to save rather huge sums of money in operation and maintenance and the related costs. All I am trying to do is help you arrive at a dollar figure as to how much you are going to save by this buy which you make.

Colonel GROSSMILLER. We will have to supply that for the record.

Mr. RHODES. I would imagine you would. If you would, I think it would be very helpful.

Colonel GROSSMILLER. We will extend that out to the fiscal year 1974 time period.

(The information follows:)

SAVINGS IN OPERATIONAL COSTS RESULTING FROM C–5A OPERATIONS

The fiscal year 1964 strategic airlift force, consisting of 35 Active and 30 Reserve Force squadrons, was capable of generating 494 million ton-miles (MTM) in a 30-day wartime period. The annual operating cost for this fiscal year 1964 force, converted to fiscal year 1969 dollars, was $568.6 million. The programed fiscal year 1974 strategic airlift force, consisting of 20 active squadrons augmented with 14 associate units, will be capable of generating 1,579 million ton-miles on the same basis. The annual operating cost for the fiscal year 1974 force, in fiscal year 1969 dollars, is programed to be $576.2 million. Although the total fleet annual operating cost has increased slightly, the capability generated has increased by 1,085 million ton-miles. Thus, while the average cost per 30-day wartime ton-mile (TM) in fiscal year 1964 was $1.15, it will be reduced to $0.36, a savings of $0.79 per ton-mile, for fiscal year 1974. In addition to this cost saving, we will have the added advantage of a more modern, flexible, all-jet fleet with which we can provide better service.

PERCENTAGE OF SPARES TO BE PURCHASED FROM LOCKHEED

Mr. SIKES. What dollar value of initial spares will be purchased from Lockheed?

General RIEMONDY. We are estimating at this time it will be on the order of about $200 million. About 54 percent of that $482 million will go to GE. However, the balance of it for the most part will go to the airframe manufacturer. It may not necessarily all go to Lockheed. We may buy directly from the vendors as we provision on the items.

Mr. SIKES. Can you tell us at this time what the dollar value of initial spares will be purchased through Lockheed?

General RIEMONDY. No, I cannot, not definitely. We estimated somewhere on the order of $200 million.

Mr. SIKES. What part of the spares not made by Lockheed will derive a profit to Lockheed through the subcontractors? Can you answer that?

General RIEMONDY. I cannot give you an answer to that because we have not as yet identified what the spares really are. We are still identifying them as we go along.

FIRST C–5A COST ESTIMATE GIVEN COMMITTEE

Mr. SIKES. The C–5A program, first referred to as the CX–HLS for "heavy logistics support aircraft," was first funded in fiscal year 1964 with money from the emergency fund. The appropriations were first requested in fiscal 1965. Can you tell us at this point what cost figures were presented to Congress for the fiscal 1965 request?

Provide that for the record.

(The information follows:)

FISCAL YEAR 1965 COST FIGURES PRESENTED TO THE CONGRESS/C–5A

"Approximately $900 million" was the estimate of the total cost of development for the CX–HLS presented to the House Appropriations Committee during the hearings on the fiscal 1965 request.

INCREASE IN UNIT COST OF C–5A

Mr. SIKES. On April 25, 1966, in the hearings on the fiscal 1967 budget, the committee was told that the estimated unit flyaway cost

of C–5A aircraft over the 115 production aircraft program was $17 million. The comparable estimate today is what—$40 million?

Colonel BUCKINGHAM. The comparable estimate today to that figure would be $26.9 million, sir.

Mr. SIKES. Did the estimate reflect the best information available at that date?

Colonel BUCKINGHAM. Yes, sir.

Mr. SIKES. I am going to have to go back to the figure of $4,845 million for 120 aircraft which certainly figures $40 million a copy. How do you get $26.9 million?

Colonel BUCKINGHAM. Sir, that is broken down this way. Flyaway cost would be $26.9 million, which compares to the $17 million figure. In addition, we have peculiar support which brings that cost up to $29.096 million. Then we add a pro rata share of the initial spares of $4.197 million and a pro rata share of the development which amounts to $8.363 million and come up with approximately $41.7 million.

COST ESTIMATES GIVEN LAST YEAR

Mr. SIKES. The R.D.T. & E. hearings last year on March 5, 1968, the Assistant Secretary of the Air Force for Research and Development in response to questions about costs of the C–5A program stated: "We believe it is within the range between the target and ceiling costs at the moment."

In the same hearing the Deputy Chief of Staff for Research and Development stated: "The average weapon system cost for for the planned procurement of 115 aircraft is $19.6 million per copy."

How do these statements stand up under present cost estimates?

You can prepare an answer on that for the record. We have belabored it sufficiently, I think, to take time on it now.

(The information follows:)

COMPARISON OF COSTS AS STATED IN FISCAL YEAR 1969 R.D.T. & E. HEARINGS WITH CURRENT ESTIMATES/C–5A

The production cost presented in 1968 for 15 aircraft was $2,259 million (which included data, age, and training).

$$\frac{\$2{,}259 \text{ million}}{115 \text{ aircraft}} = \$19.6 \text{ million per aircraft}$$

The present estimate of production cost for 115 aircraft is $3,346 million.

$$\frac{\$3{,}346 \text{ million}}{115 \text{ aircraft}} = \$29.1 \text{ million per copy}$$

Mr. SIKES. Was there information available in the Air Force on March 5, 1968, which would have, if presented to the committee, given a more accurate picture of C–5A costs?

General JEFFREY. No, sir, there was not.

At that time I believe General Crow indicated to the committee that he would not have been surprised if the costs were not short by $250 million. He indicated a possible increase of $250 million. That was in fact based upon information that was available to us at that time. Additional information did not become available concerning further increases in cost until after those hearings.

COST OVERRUN COMPARISONS, FISCAL YEAR 1969 VS. FISCAL YEAR 1970 FOR C-5A

Mr. SIKES. On October 9, 1968, a memorandum signed by the Deputy Auditor General of the Air Force stated that a cost study performed by the systems command indicated a potential overrun of $570 million. Was the systems command study the first indication that the Air Force had of the magnitude of the cost overruns in the C-5A program?

General JEFFREY. No, sir. The date slips my mind exactly, but beginning in about May of last year we received our first indication that there was going to be a significant increase in cost, or overceiling condition on the production run A of the first 58 airplanes. That figure was refined as the result of a further detailed cost estimate and was upped to the figure that you mentioned, and subsequently as a result of further analysis in October of 1968 was confirmed at a figure of $671 million over ceiling on the part of Lockheed at the end of production run A. So that was an interim figure.

Mr. SIKES. The committee was informed of cost overruns in the C-5A program last year. Data placed in the record on page 188 of part II of the hearings indicated that the estimated production cost of 115 aircraft had risen from $1.838 billion to $2.140 billion. For the record, tell us the presently estimated total which compares with these figures. Tell us what they include and what they omit.

(The information follows:)

COST OVERRUN COMPARISONS, FISCAL YEAR 1969 VS. FISCAL YEAR 1970 FOR C-5A

The $1.838 and $2.140 billion are the flyaway costs for 115 production aircraft. The current estimate is $3.098 billion. These figures include the airframes and engines but exclude training equipment, AGE (Aerospace Ground Equipment) and technical manuals/publications.

Mr. SIKES. In the procurement hearings of last year, on March 26, the information was developed that while the Air Force was still officially carrying the $3.2 billion as the total cost of the C-5A program, the Air Force acknowledged that, for a part of the program, cost overruns were likely, "even though the total cost history of the program will turn out to be excellent."

It would appear that while possible cost overruns were acknowledged, an effort was made to minimize their importance. I would like a statement for the record on that.

(The information follows:)

TENDENCY TO MINIMIZE IMPORTANCE OF COST OVERRUNS/C-5A

At the time we appeared before Congress for the fiscal year 1969 budget we did have indication of some overrun and we identified this in several ways. We identified a figure of approximately $250 million that we expected the contractor to be above target. We gave a background estimate of $3.3 billion and described the situation as one in which we expected a 10 percent program increase. These statements reflected undue optimism but were based upon the best information available at that time. In retrospect we were not far enough along in the program to have enough actual cost data as a basis on which to justify the optimistic predictions we made at that time. We are still dealing with estimates but now have additional data which we consider sufficient to serve as the basis for projecting significant cost increases with reasonable assurance that they are within normal estimating accuracies. At no time has there been an effort to minimize the importance of cost overrups. On the contrary, as evidenced by our testimony on the fiscal year 1970 budget we have provided the Congress with our best current judgment of total program cost even though our estimate is higher than those presently estimated by the contractor and OSD.

OPERATION OF REPRICING FORMULA

Mr. SIKES. The request before the committee for $481 million is for 23 aircraft. The sum of $72.2 million was appropriated last year for advance procurement items for these aircraft. The 23 aircraft are a part of the "Production Run B." Under the repricing formula in the C–5A contract, if the actual costs involved in production run A exceed target costs by more than 30 percent, the excess percentage over 30 percent is multiplied by a factor of 1.5 and the target cost for the optional production run B is increased by that percentage. Also, if the actual cost exceeds the target cost by more than 40.5 percent, then the excess percentage over 30 percent is multiplied by a factor of 2 rather than 1.5. Not only is the target cost for production run B increased by this method, but the increase will be added in appropriate increments to the unit billing prices of the 115 production aircraft, the 53 production run A and the 57 production run B.

What is the actual cost above target cost of production run A, both in dollars and as a percentage, today? What is the currently estimated cost above target for production run A?

You can provide that for the record.

(The information follows:)

ACTUAL VERSUS TARGET COST FOR RUN A/RUN B/C–5A

Lockheed, as of May 4, 1969, based on actual run A work-in-process data, has incurred 71 percent or $572 million of the $810 million run A target cost.

It must be noted that Lockheed will continue to spend run A money several years in the future because the last run A aircraft is scheduled for delivery in June 1971.

The Air Force current estimated cost above target to produce run A is $788 million.

Mr. SIKES. In view of the repricing formula which provides that the unit cost of production run B is based on over target costs in production run A, can we be sure of what the unit costs in production run B will be before delivery of all aircraft under production run A has been accomplished?

General JEFFREY. I believe we can, sir.

Mr. SIKES. You can study that and modify your answer accordingly.

(The information follows:)

ASSURANCE OF RUN B UNIT COSTS BEFORE DELIVERY OF ALL RUN A C–5A's

Through fiscal year 1969, approximately 95.6 percent of $959 million of the R. & D. program has been provided. Similarly, we are in the final program year for the production aircraft in run A. With this kind of experience behind us, and within the present capabilities of cost estimating techniques, we feel confident of what the costs for run A will be. However, according to the terms of the contract, actual unit costs for run B cannot be determined until 60 days after delivery of the last aircraft of production run A. At that time, adjustments to the unit costs for run B will be accomplished in accordince with the terms of the contract.

Mr. SIKES. The run A delivery schedule ends in July 1971. Will it be necessary that the committee and the public wait until after July of 1971 to know the actual cost of the 23 aircraft you now are asking this committee to fund?

General JEFFREY. Yes, sir.

Mr. ANDREWS. Information given to the committee reports that, according to Air Force estimates, the cost of run A, computed according to the repricing clause, will exceed the target cost of that run by 83.4 percent. This percentage exceeds the target cost by more than 40.5 percent and the excess over 30 percent, 53.4 percent, must be multiplied by a factor of two, which is 106.8 percent, in order to arrive at the cost for run B. When this is computed, instead of being $489.9 million as fixed by the contract, the cost for run B would be a new target cost of $1,013,100,000. It is further indicated by this increase in the ceiling price the Government will assume a $680.3 million increase in price and the contractor's loss due to overrunning the ceiling price will be reduced from $1,155.3 million to $475 million. Do you agree with these computations?

General JEFFREY. Sir, I would like to request permission to study those computations. The numbers are a little too fast for me to mentally absorb. May we analyze those figures and supply that information for the record?

Mr. ANDREWS. I wish you would.

If you do not agree to the computation, state the reasons therefor.

General JEFFREY. Yes, sir.

(The information follows:)

ULTIMATE COST DUE TO REPRICING FORMULA

The figures you have quoted are correct. However, your loss figures of $475 million did not consider the Air Force estimate of $190 million as the amount Lockheed will be paid for abnormal escalation in the economy. Subtracting the $190 million from the $475 million we arrive at the Air Force estimate of Lockheed's loss at the end of run B of $285 million.

Mr. ANDREWS. What values were given to the repricing formula in arriving at your $24 million price estimate for the 23 aircraft requested? Do you anticipate requesting additional money to complete these same aircraft next year?

General JEFFREY. No, sir; we do not.

Mr. ANDREWS. What about the first part of the question?

General JEFFREY. Would you repeat the question, please?

Mr. ANDREWS. What values were given to the repricing formula in arriving at your $24 million price estimate for the 23 aircraft requested?

Colonel DAVIS. The value that was given was the estimate of the actual cost to produce the given aircraft.

UNIT COST OF C-5A AIRCRAFT

Mr. LIPSCOMB. I believe that in testimony earlier today when the unit price and flyaway price came up a different figure was given than the $24 million figure. Could we go through those again?

Colonel BUCKINGHAM. The figure of $24 million relates to the 23 aircraft in the fiscal 1970 buy.

The figure I gave this morning was $29.09 million which was an average for the total buy of 115 aircraft. That is the procurement cost only that I am citing now.

Mr. LIPSCOMB. The $29.09 million?

Colonel BUCKINGHAM. Yes, sir. On a programing basis you go back to the fiscal 1967 aircraft and come down a curve. They are starting out, if you prorate this thing across the total contract for the 115 aircraft, very steeply at the beginning. It works down to where you get out to fiscal 1972, on a unit weapon system, we are paying $21.45 million for each aircraft. Starting in fiscal 1967 for the eight aircraft we are paying $71.7 million. I want to point out that there is about $250 million worth of nonrecurring-type costs like tooling, which are sunk costs. So, all the airplanes we are going to produce later are going to be much cheaper, obviously.

Mr. LIPSCOMB. Is the $29.09 million the unit cost as defined in your procurement program on exhibit P–1? Are we talking about the same thing?

Colonel BUCKINGHAM. That is correct.

Mr. LIPSCOMB. What does the $29.09 million cover?

Colonel BUCKINGHAM. That is the average for each of the 115 aircraft in the total buy. It is only aircraft procurement cost, which is comparable to P–1-type cost information.

General JEFFREY. It does not include research and development.

Mr. LIPSCOMB. And what was your explanation of how you get down to the figure of the $24.052 million unit cost on this buy of 23?

Colonel BUCKINGHAM. That is the unit gross weapon system cost, the normal P–1-type cost information we provide to the committee and have for years. It includes the gross flyaway and the peculiar support for the aircraft. It is the fiscal 1970 program figure for those aircraft coming down the curve that I mentioned where you start out very steep and come on down to an end position of around $21.4 million in fiscal 1972.

Mr. LIPSCOMB. Usually, as more planes are produced, the unit cost goes down.

Colonel BUCKINGHAM. That is what is happening here.

Mr. LIPSCOMB. But where do you get the $29.09 million?

Colonel BUCKINGHAM. That is the average from fiscal 1967 through fiscal 1972.

Mr. LIPSCOMB. If it is going down, how do you get the average to go up to $29 million? We have never before had a figure this high for this C–5A.

General JEFFREY. May I read the figures for the record?

For the fiscal 1967 buy of eight airplanes, the unit weapon cost was $71.725 million. For fiscal 1968, 18 airplanes, $35.74 million. For 1969, for 27 airplanes, it was down to $25.43 million. For 1970 and 1971, $24.06 million; and for 1972, $21.45 million. When we averaged that across the board we arrived at the $29.095 million figure.

Mr. LIPSCOMB. When did you arrive at those costs?

General JEFFREY. I beg your pardon, sir?

Mr. LIPSCOMB. When did you arrive at those costs? That is completely different than was indicated to the committee a year ago.

General JEFFREY. These were the October 1968 figures; were they not?

Colonel BUCKINGHAM. Yes, sir.

General JEFFREY. These were arrived at in October 1968, sir, based upon the overceiling projections that we arrived at at that time. The testimony last year on the March figures did not reflect the cost increases to which we have referred here.

Mr. LIPSCOMB. A year ago you were figuring what in your procurement program? What did you figure C–5A at, do you remember?

General PITTS. The unit weapon comparable figure?

Mr. LIPSCOMB. Yes, we have been talking about the procurement unit cost.

General JEFFREY. We estimated to the committee last year that from information available at the time we could see a possible $250 million cost overrun on the program. In procurement only our average unit weapon system cost last year over the total program was $19.64 million.

Mr. LIPSCOMB. And the year before that it was $17 million.

General JEFFREY. I do not have that.

General PITTS. $18.4 million is the comparable figure estimated the year before, sir—in the January budget.

Mr. RHODES. The figure you are giving now is the last airplane you buy in 1972, is that correct? Is that the 120th one?

General JEFFREY. This would be the average of them all, the 120.

Mr. RHODES. How could that be when we just took the figure of $4.8 billion which was your figure and divided by 120 and got $40 million per copy? How do you get that down to 29?

General JEFFREY. Sir, as we mentioned the research and development costs are not included.

Mr. RHODES. In the figure you just gave Mr. Lipscomb?

General JEFFREY. That is right. This is not a peculiar way to report on the C–5. This is the customary way in which these weapon system costs are reported when we are addressing them in the context of the "Aircraft procurement" appropriation request.

Mr. RHODES. I did not indicate that it was peculiar. I am just trying to understand what you are doing.

General JEFFREY. Yes, sir.

Mr. RHODES. So the R. & D. funds are completely out of the accounting when you arrive at the figure you just gave Mr. Lipscomb of $29 million average?

General JEFFREY. That is right, sir.

Mr. RHODES. And the last buy, the 120th airplane costs how much?

General JEFFREY. The $29 million figure represents an average across the total buy of 120 airplanes.

The last buy, my figures indicates to be $21 million, or $21.45 million per airplane weapon system cost. May we indicate also other items that are not included in the $29 million figure in addition to research and development. Initial spares, aircraft modification replenishment spares, administrative charges, common AGE, component improvement program, and the research and development go to take that figure up to that which you mentioned.

Mr. RHODES. You do not have technical orders in there and publications?

General JEFFREY. They are in the initial $29 million figure.

Mr. RHODES. I am glad to hear it.

Mr. SIKES. What is the cost of an engine for this aircraft? What is the average cost considering the total buy?

General JEFFREY. The average unit cost of this engine is $924,000.

PERCENTAGE OF DIVISION EQUIPMENT THAT CAN BE CARRIED

Mr. SIKES. Do I understand that this aircraft is expected to transport 70 percent of division equipment?

General JEFFREY. No. The C–5A will be capable of carrying about 99 percent of a combat division's equipment.

Mr. SIKES. What percentage of division equipment will the C–141 transport?

General JEFFREY. May we supply that for the record?

(The information follows:)

PERCENT OF DIVISION EQUIPMENT A C–141 CAN TRANSPORT

The Bell HU–1B (Huey) and Boeing Vertol CH–47 (Chinook) represent approximately 70 percent of an airmobile division's unit heavy equipment. With major disassembly the Huey can be transported in the C–141; the Chinook cannot. Minor reassembly is a matter of several hours; major reassembly requires several days. However, with only minor disassembly to enable quick reassembly in the combat zone, only the C–5A can carry these helicopters. The C–141 can airlift approximately 50 percent of an airmobile division's unit equipment by weight. The C–5A can airlift 100 percent of an airmobile unit equipment by type and weight.

REVIEW OF NUMBER OF C–5A'S TO BE PROCURED

Mr. SIKES. General McNickle, your statement indicated that in light of increased costs, the total number of C–5A's to be procured will be reexamined. Does that indicate that the 120 may not be a firm figure? There may be a reduction?

General MCNICKLE. Sir, at the time the run B option was picked up, the commitment was only for the 4th squadron. It was stated that the decision to commit for the 5th and 6th squadrons would not be made until a later date. A commitment was not made at that time for the complete buy of run B.

Mr. SIKES. Do you anticipate, or rather, what do you anticipate might cause a cutoff short of the 120?

General MCNICKLE. If the cost continues to go up, we will carefully review the program at that time.

Mr. SIKES. What will be the total number of aircraft at that time?

General JEFFREY. This will be when we go beyond the 81 airplanes to which we are committed at this time.

Mr. SIKES. How high do you think that the unit cost of the aircraft would have to climb before it becomes sufficiently expensive to require a cutoff in procurement?

General MCNICKLE. I think that would depend on the economy at the time. If the entire economy goes up rather than just the C–5, then the increase would not be too meaningful. What I am saying is if it is strictly due to inflation in the economy as a whole, that would be different than having the C–5 escalate out of proportion to the rest of the economy.

Mr. SIKES. There is a distinct possibility that Congress will require a cutoff if this continues to climb. I am sure you realize this.

General MCNICKLE. Yes, sir.

RUN A UNIT COST IF RUN B OPTION IS NOT EXERCISED/C-5A

Mr. SIKES. If the Air Force had not exercised the option to buy the production run B aircraft and the repricing formula would not have operated, what would the unit weapon system cost of the production run A have been?

(The information follows:)

RUN A UNIT COST IF RUN B OPTION IS NOT EXERCISED/C-5A

$28.5 million.

Mr. SIKES. How much money would the airframe contractor have lost if the production run B option had not been exercised?

(The information follows:)

LOSS TO AIRFRAME/RUN B, C-5A OPTION NOT EXERCISED

The Air Force estimate is that the airframe contractor will lose about $670 million if we do not buy the 57 run B aircraft.

ALTERNATIVES TO C-5A PROCUREMENT

Mr. SIKES. Before exercising the option, and in view of the rising costs which were known at that time, what Air Force studies were made of funding alternative means of airlift?

(The information follows:)

ALTERNATIVES TO C-5A PROCUREMENT

The C-5A is the only aircraft in existence, or planned, that is configured for operating in a military environment demanding rapid on load/off loading of equipment outsize to the C-141. There is no airlift alternative to this resource. A review of the mobility force requirements studies which led to the development of the C-5A and the size of the C-5A force did not support a reduction in the program. Other airlift resources, including commercial augmentation, have been an integral part of the evaluations made to establish C-5A force requirements.

Mr. SIKES. The Boeing Co. has produced a large transport aircraft, the 747. This aircraft has been developed by the company without Government money. It is close to the C-5 in size and is said to be available for about $22 million a copy. Before exercising the option to buy another 57 C-5A aircraft under production run B, what consideration did the Air Force give to termination of the C-5 program and procurement of 747 aircraft?

General JEFFREY. Sir, we looked at the 747 and did consider going in that direction. We found, however, that Boeing had configured this airplane since it decided to build it, as a passenger-carrying airplane. It had incorporated escape provisions which were necessary under the FAA rules which would permit the passengers that might be entrapped during an accident, to escape. It had what we call unloaded floor to the airplane so that the floor to save weight was not capable of handling the heavy equipment that we required to haul in the airplane. Considerable redesign of the airplane would be necessary in order to reconfigure it to meet our requirements. Included also would be the drive-through capability with fore and aft doors which had also been eliminated from the airplane. It appeared to us at the time that the best course of action to follow would be to continue with our C-5 airplane.

Mr. SIKES. What would have been the cost if you can provide an estimate of the necessary modifications of the 747 to meet transport requirements of the military service?

General JEFFREY. May I supply that for the record?

(The information follows:)

COST TO MODIFY A 747 TO MEET MILITARY TRANSPORT REQUIREMENTS

The modifications to the Boeing 747 necessary to satisfy the requirements of the Air Force in terms of a capability equal to the C–5A appear to be of a major nature. For example, the 747 fuselage would require an aft opening to permit drive-through operation and an airdrop capability. The structural changes, the design and engineering of a door for in-flight operation, the consideration given to pressurization capacity of the present 747 system in view of an additional large fuselage opening requiring seals, the attendant static test program to insure the strength of the structural changes, and the aerodynamic tests to confirm the door operation during in-flight opening are a few of the problems to be considered. The 747 is a low wing aircraft that has a 16-foot height from the ground to cabin floor level. The C–5A is a high wing aircraft purposely so designed to provide a cabin floor to ground height as low as possible to facilitate cargo load/offload. In addition the C–5A can kneel the landing gear an additional 3 feet level plus an aft or forward kneel to provide truck bed height loading. Engineering redesign would be required to the 747 landing gear to provide an equivalent capability. Also the 28 tires of the C–5A plus the incorporation of an in-flight capability to reduce tire pressure give a landing foot print which allows operation into short semiprepared airfields.

The 747 does not have this capability and design changes to the landing gear system would be necessary. The avionics necessary to the military mission, and not currently on the 747, includes multimode radar, station-keeping equipment, long-range precision navigation equipment, and terrain following/avoidance radar. Also an adaptation of an in-flight malfunction, detection, and analysis system would be necessary to achieve the desired maintainability/reliability responsiveness. An increase in 747 cost would be required to incorporate these operationally oriented equipment.

The 747 is not presently suited to the Air Force mission for which the C–5A is designed. A complete cost analysis of modifications or design changes necessary for the 747 to meet the Air Force requirement in terms of a capability equal to the C–5A has not been accomplished. This would require an extensive design and engineering effort to have any validity.

Mr. SIKES. Do you consider that the subject was fully explored and not simply casually explored?

General JEFFREY. I think adequate exploration was given to this subject, upon which to base a decision to proceed with the course of action we did.

Mr. MINSHALL. When was the decision made not to go the 747 route?

General JEFFREY. Our decision to proceed with the additional option on the C–5 was in January of this year. So this was considered within a month or two prior to that time as this option date was approaching, sir.

Mr. SIKES. I would like to have you review the steps taken in this process of consideration for the record.

(The information follows:)

EXPLORATION OF PROCUREMENT 747'S VERSUS C–5 OPTION

An examination of the Boeing 747, including a visit to the Boeing Co., Seattle, Wash., by the Assistant Secretary of the Air Force (Installations and Logistics), was made in December 1968. The following factors eliminated the 747 from further consideration at that time as a suitable substitute for additional C–5A's

The C–5A has a forward loading opening and an aft loading opening (both full width), providing straight-through loading—the 747B–F has only a forward opening.

The C–5A features a kneeling landing gear plus integral ramps that enhance quick turnaround with vehicular drive-on and drive-off capability— the 747B–F does not have kneeling gear or integral ramps, and the cargo floor is over 16 feet above the ground.

The C–5A floor strength was designed to carry the heavy loads of military vehicular equipment—the 747B–F floor will not carry these loads without redesign.

The C–5A, with its aft opening, can airdrop large and heavy equipment—the 747B–F does not have this capability.

The C–5A has a high-flotation landing gear, with crosswind capability, that enables it to operate from support area airfields. The 747B–F landing gear is compatible with present-day paved runways and no operation in support area airfields is possible.

The C–5A can accommodate 100 percent of the vehicular equipment of the infantry division force. The 747B–F can accept 83 percent of this equipment by numbers and 66 percent of the equipment by weight.

The C–5A's pallet loading system, compatible with the 463L system, can accommodate two pallets side by side straight-in loading at truck-bed height—the 747B–F can load only one pallet at a time and special loading equipment is required for the 16-foot height of the cargo floor.

The C–5A has the additional operational capabilities of station keeping equipment for elements up to 36 aircraft to permit group operation in night and all-weather conditions, long range precision navigation capability to free the aircraft from dependence on ground navigation aids, and terrain avoidance radar to limit exposure in a hostile environment—these capabilities would be additional to the 747B–F.

The C–5A maintains unit integrity by transporting the operational equipment on the cargo deck and the associated personnel on the upper deck—the 747B–F does not have this capability.

The C–5A cargo compartment was designed to accommodate outsize cargo—the 747B–F would have no outsize capability for equipment outsize to the Air Force C–141, i.e., M–60 tank, tank recovery vehicles, cranes, tracked vehicular and helicopters.

Payload and speed of the 747B–F over a longer range are higher, however, other C–5A design chracteristics based on total mission requirements in the military environment outweigh the significance of this feature.

Although a complete cost analysis of the design changes necessary for the 747 to meet the Air Force requirement in terms of a capability similar to the C–5A was not accomplished, the nature and magnitude of some of the obvious design changes, as well as the time required for new development and engineering effort, confirmed that the 747 alternative was not a suitable substitute for the C–5A.

Mr. MINSHALL. Will you give us the actual dates for that, when the decision was made?

General JEFFREY. That the decision was made not to go the 747 route?

Mr. MINSHALL. Yes.

(The information follows:)

DATE OF DECISION NOT TO CONSIDER 747 PROCUREMENT

The decision was made in December 1968.

Mr. SIKES. The committee would like to know who actually made the decision.

General JEFFREY. Yes, sir.

Mr. SIKES. Or at what level.

(The information follows:)

The decision to exercise the option on the C–5A contract in January 1969 was based upon a request of the Secretary of the Air Force approved by the Deputy Secretary of Defense.

TERMINATION COSTS

Mr. SIKES. If Congress were to refuse the appropriations you are requesting for production run B aircraft, and you were forced to terminate the contract, what would the termination costs be?

General JEFFREY. Yes, sir.

(The information follows:)

TERMINATION COSTS/C-5A

Termination costs would be:

	Million
Lockheed (airframe)	$30.5
General Electric (engines)	0

Above costs are based on the amount stipulated in the airframe and engine contracts.

COST OF "RUN A" AIRCRAFT IF "RUN B" IS CANCELLED

Mr. SIKES. Are we in the position now that we must continue the program through production run B or face an extremely high cost for the aircraft procured?

General JEFFREY. We are not faced with the situation where we have to proceed with all of production run B. The costs of those airplanes that we get up to the time of cutoff would, of course, be higher than they would be if we proceeded throughout the program. That is true, sir.

Mr. ANDREWS. I do not understand that. You have a contract here for those first 58 planes. Why should that contract go higher?

You gave us a ceiling, you gave us a target, you gave us the contract price.

General JEFFREY. Yes, sir.

Mr. ANDREWS. I just cannot understand why planes procured under run A, under the original contract, would be higher if you did not go through with run B? You have a contract.

General JEFFREY. As far as cost to the Government is concerned, sir, they would not. I was addressing the situation, as I understood the chairman's question, if we stopped at 23 airplanes down the road or at some other intermediate period, after which time the repricing formula had been applied. Of course, the more airplanes that are bought the cheaper they are.

Mr. ANDREWS. That is true of the 58 under the original contract.

General JEFFREY. At a firm ceiling.

Mr. ANDREWS. That is right. You had a lock-and-key job on them.

General JEFFREY. Yes, sir.

Mr. ANDREWS. You had a target and you had a ceiling.

General JEFFREY. Yes, sir, If we stopped at that point, we would have known what the cost to us would have been, and the cost to the contractor would have been, as we indicated earlier, he would be out of pocket $671 million.

Mr. ANDREWS. He would have been out of pocket, the contractor?

General JEFFREY. Yes; he would have been out of pocket.

Mr. ANDREWS. I am talking about the cost to the Government. I cannot see how giving him an additional contract would make your

first-run planes cheaper to the Government when you had a contract covering that first run.

General JEFFREY. No, sir; they would not.

Mr. ANDREWS. I just want the record to be clear about that.

General JEFFREY. Yes, sir.

Mr. ANDREWS. The inference was that if you bought the second run you made the first run cheaper.

General JEFFREY. I did not intend to do that. It is certainly not the case.

MILITARY EFFECTS OF REDUCTION IN C–5A FORCE

Mr. ANDREWS. When the C–5A aircraft program was first presented to the committee, a total force of 63 aircraft was proposed. Militarily, what would be the effect of returning to this number as the total buy?

General JEFFREY. This would represent just half of our current program of six squadrons.

It would have been a three-squadron force.

Mr. SIKES. I do not think that you have given the committee a complete answer, and I suggest you prepare some tables which show the comparison in men and/or equipment that could be transported by the one versus the other, which would give us a military advantage of 120 over 63.

General JEFFREY. Yes, sir; I understand.

(The information provided the committee is classified.)

Mr. SIKES. Can you tell us what military commitments the 120-plane force was designed to meet?

General JEFFREY. May we supply that for the record?

Mr. SIKES. Very well.

(The information follows:)

MILITARY COMMITMENTS, C–5A

The C–5A is part of our strategic mobility force which is made up of military airlift, sealift, land- or sea-based prepositioned equipment, and the commercial airlift and sealift which are available for use in an emergency. Studies by the Joint Chiefs of Staff indicate that early and heavy deployments of U.S. forces can significantly reduce the duration and cost of a war in terms of lives, equipment, and total forces committed. A less rapid deployment reduces the cost of mobility forces but does so at the expense of the committed combat forces.

The strategic mobility force is designed to maintain the capability to meet simultaneously ———. The more probable contingencies.

PROCUREMENT SLIPPAGE

Mr. SIKES. It has been reported that the C–5 procurement is currently 6 months behind schedule.

Is that correct?

General JEFFREY. Yes; we anticipate the program will slip 6 months.

Mr. SIKES. So procurement aircraft deliveries will start in December 1969 instead of June 1969; is that right?

General JEFFREY. Deliveries will begin at that time. I was thinking of the initial operational capability slippage of December 1969 to June of 1970.

Mr. SIKES. There is a penalty of $12,000 per day up to a maximum of $11 million for slippage in the delivery schedule. Is this penalty to be exercised?

General JEFFREY. That penalty will be negotiated depending upon how much actual slippage there is on an individual airplane basis. That is the penalty, yes, sir.

Mr. SIKES. Why would there be negotiations?

General JEFFREY. I said that a 6-months slip has been negotiated. On the other hand, the planes can be delivered or could be delivered by the contractor sooner than this. So we would actually have to determine exactly how many days each airplane slipped and then apply the penalty.

WEIGHT REDUCTION PROGRAM

Mr. SIKES. We have discussed the weight of the aircraft earlier today. For the record, tell us how close to specified weight the C–5A is at this time and what has been the cost of the weight reduction efforts?

General JEFFREY. Yes, sir.

(The information follows:)

C—5A SPECIFIED WEIGHT VERSUS ACTUAL AND COST OF WEIGHT REDUCTION

The first operational aircraft (Ship No. 9) is calculated by Lockheed to have a weight empty of 320,203 pounds—394 pounds (0.1 percent) over the guaranteed weight empty of 319,809 pounds. The SPO has estimated that No. 9 will weigh 321,000 pounds. The first test aircraft (Ship No. 1) on May 29, 1969, weighed 7,663 pounds (2.4 percent) over the guaranteed weight empty. The kind of data that would reflect the cost of weight-reduction efforts was not included in the contractual data requirements. As such, the Air Force does not have the capability to develop the cost of the weight-reduction effort. In planning and evaluating the weight-reduction effort, the contractor individually analyzed each potential weight-saving area and applied different cost per pound criteria dependent upon the material involved, the degree of difficulty, the inherent technical problems, and the predicted results to be achieved. The final results were never translated into total costs to the program.

Mr. SIKES. In order to reduce weight in the aircraft, several things were done—a flap was redesigned and beryllium brakes added to the aircraft. Were these changes ordered by the Air Force?

General JEFFREY. No, sir, they were not; these were contractor-generated changes.

Mr. SIKES. At his expense?

General JEFFREY. They would cause the target to be exceeded and they were part of the cost growth of the airplane.

Mr. SIKES. I assume they were changes that were concurred in by the Air Force?

General JEFFREY. Not necessarily, sir; the provisions of the contract did not provide that we had to approve changes that were made. We were kept aware of changes and we reserved the right to disapprove, but we did not want to find ourselves in the position of having to approve everything that occurred.

ECONOMIC INFLATION

Mr. SIKES. The Air Force has indicated that economic inflation was the cause of about $500 million of the over-target cost of the C–5A. Is this figure borne out percentagewise by inflation on other aircraft programs?

You can check that for the record.

General PITTS. Yes, sir.

(The information follows:)

EFFECT OF ECONOMIC INFLATION ON OTHER A/C PROGRAMS

Although the C–5A is unique in that the contract for the procurement of the system is different from that of other systems, economic inflation is not uniquely associated with the C–5A program. Other programs during the same period and in the same phase of development and acquisition would have experienced a similar percentage of inflation in relation to the total program. This is not only true of aircraft programs, but also of other goods and services that are procured during any given period. This is borne out of the U.S. Department of Commerce survey of current business.

Mr. SIKES. You might provide a table showing the comparison with the cost of inflation on other aircraft.

(The following statement was supplied:)

COMPARISON OF INFLATION—C–5A VERSUS OTHER A/C OVERTARGET COSTS—REDESIGN WING, ETC/C–5A

Our estimate of inflation for the total C–5A program is based on general factors of the national economy which change the value of a dollar. Since economic inflation is not unique to the C–5A program other aircraft programs during the same period and in a like phase of development and acquisition would have experienced a similar effect of inflation on the total program. However, the C–5A contract is unique in its treatment of projected inflation related to the value of the contract by virtue of a contract clause on this specific item.

REDESIGN COSTS

Mr. SIKES. What is the amount of the overtarget cost of the redesign of the wing of the aircraft which was required, the redesign of the nose section and redesign of the fairing which had to be carried out to eliminate excess drag?

That can be provided for the record.

What is the total cost of Air Force changes in the aircraft?

General JEFFREY. It is estimated to be $6 or $7 million at this time. We will provide the accurate figure for the record.

(The information follows:)

TOTAL COST/C–5A CHANGES

The authorized but undefinitized changes to the Lockheed contract through run B (115 aircraft) is estimated to be $10.8 million, as of April 30, 1968.

COST-PLUS-A-PERCENTAGE-OF-COST CONTRACTING

Mr. SIKES. There is a prohibition against cost-plus-a-percentage-of-cost contracting. The repricing formula under which the greater the overrun on production run A the greater increase in target cost and ceiling price on production run B could be construed as cost-plus-a-percentage-of-cost contracting provision. What is your comment on this?

General JEFFREY. I would like to request that we be permitted to supply that for the record.

(The information follows:)

IS C–5A REPRICING FORMULA A COST-PLUS-A-PERCENTAGE-OF-COST CONTRACTING?

It is recognized that a potential "reverse incentive" feature of the repricing formula may give rise to a cost-plus-a-percentage-of-cost question. You may be assured that the Air Force is aware of this consideration, and in implementing

the option provision will do so consistent with the statutory requirement. Action to date with respect to the option provision is not in violation of the statutory prohibition.

APPROPRIATION REQUEST FOR OVERTARGET COSTS

Mr. SIKES. You are requesting the appropriation of $225 million for fiscal year 1969 and prior-year overtarget costs. Would you explain this item in considerable detail, so that we may understand just why we should appropriate this money? What overtarget costs are referred to? Is $225 million the Government's part of the overtarget cost? If so, what costs are being borne by the contractor? What would happen if funds requested for the overtarget were not provided?

Make that available for the record.

(The information follows:)

DESCRIPTION OF $255 MILLION OVERTARGET COSTS/JUSTIFICATION TO APPROPRIATE, ETC.

The C–5A program for fiscal years 1967, 1968, and 1969 was funded at the target price level. The current Air Force estimate is that both contractors will exceed the ceiling for run A. The $225 million represents that portion (from target up to ceiling plus small amount of abnormal escalation) of the cost increase that must be paid by the Air Force. The overceiling costs will result in an estimated $441 million loss to Lockheed on run A. The $441 million added to the $230 million loss on R.D.T. & E. gives Lockheed an estimated $671 million loss at the end of run A. The Air Force estimate is that General Electric will lose $12 million on run A. The $12 million added to the $12 million loss on R.D.T. & E. gives General Electric an estimated $24 million loss at the end of run A.

The contract requires the Government to meet funding requirements up to ceiling plus abnormal escalation. Failure to do so would require contract renegotiation.

EFFECT OF PROCUREMENT STRETCHOUT ON COSTS

Mr. SIKES. What would be the effect on the unit cost of the C–5 aircraft if the production rate were slowed to one per month?

Can you tell us that?

General JEFFREY. We would have to renegotiate the contract, Mr. Chairman, if we did this. It would stretch the program out to the point that it could triple the length of time during which the airplanes were delivered. I would expect that the costs of the airplanes would increase substantially over those costs that have been reflected here today. We can give you a more accurate answer if you so desire.

(The information follows:)

EFFECT OF UNIT COST OF A ONE-PER-MONTH PRODUCTION/C–5A

The Air Force cannot forecast with any reasonable degree of accuracy the unit cost impact of a one-a-month production rate. Manufacturing labor learning curves would be flat, material purchases could not take advantage of large quantity lot discounts, and reorder leadtimes and manufacturing cycles times would increase. Delivery time would be extended by a factor of three and would result in higher labor rates associated with economic increases over a longer period of time and the mix of a smaller labor force. The fixed portion of the overhead pool would be applied to a smaller yearly labor base resulting in abnormally high overhead rates per direct labor hour. The prime contractors would have to renegotiate all their contracts with vendors and suppliers to take into account similar high cost perturbations. The overall total program base eligible for abnormal fluctuations in economy would increase significantly. The subsequent increased run A cost subject to the repricing formula would increase the cost to

the Government astronomically. The contract as it exists today, including the correction of deficiency clause, would have to be completely renegotiated. Not only could the contractor drive a hard bargain to insure recoupment of potential losses, but he could request all subsequent production buys to be incrementally negotiated. Similarly, in dealing with his subcontractors, they could seek relief for losses being currently incurred. For the above reasons, it is not possible to estimate the effect on the unit cost at a one-per-month rate.

ADVANCE PROCUREMENT

Mr. SIKES. What is the requirement for $52 million for advance procurement?

General PITTS. The $52 million is in the 1970 budget submission for advance buy for 1971.

Mr. SIKES. Will you provide a breakdown for the record showing what will be accomplished by that appropriation?

(The information follows:)

EXPLANATION OF ADVANCE BUY—$52 MILLION/C-5A

The advance buy requirements in fiscal year 1970 for fiscal year 1971 are as follows:

	Dollars in millions
Subcontract	45.800
In plant material	2.900
Other	3.300
Total	52.000

Mr. SIKES. The Johnson budget requested $28 million for advance procurement. Does the revised request for $52 million indicate anticipated cost increases, or does it result from other causes?

Colonel BUCKINGHAM. Sir, what happened to the original submission was that OSD arbitrarily reduced this in half. When we produced evidence that indicated the $52 million was needed they provided the $52 million.

Mr. SIKES. Provide for the record a breakdown of the Johnson budget of $28 million.

(The information follows:)

EXPLANATION OF JOHNSON BUDGET $28 MILLION ADVANCE BUY/C-5A

The $28 million amount was set prior to the final negotiation of the run B option and represents what was thought to be attainable at the time of the program budget decision. At that time a negotiation position of this amount was a possibility, however, experience to date and the leadtime considerations did not support this. The $28 million was to cover the same items now covered in the negotiated position but would necessarily have been on a lower scale. These items include inplant raw material and labor and major equipment (subcontracts).

Mr. SIKES. When the Secretary of the Air Force informed the committee that he was exercising the run B option for additional C-5A aircraft, he stated that the expenditures and commitments would be limited to the 23 airplanes which would complete four squadrons, and that the Government could decide at a later time whether or not it wanted to go beyond the fourth squadron. Does your request for $52 million indicate that the decision has been made and the fifth or fifth and sixth squadrons will be procured?

General JEFFREY. No, sir; it does not. It protects our option to proceed along that course if it is decided to do so.

Mr. MINSHALL. Who was the Secretary of the Air Force at that time, do you remember, General?

General JEFFREY. This would be Secretary Brown.

Mr. MINSHALL. Then, as I understand it, the decision of the Secretary of the Air Force under the previous administration to take the run B option saved Lockheed from a loss on the program which is estimated by the Air Force to be $671 million, and this decision was made 4 days before the present administration took office. Is that correct?

General JEFFREY. Let me answer your question this way. The decision to request funds for the 23 aircraft for the fourth squadron was based on the military need and cost effectiveness of the aircraft. The Deputy Secretary of Defense on January 15, 1969, approved, subject to availability of appropriations—that is congressional approval—the Secretary of the Air Force's request to exercise the production run B option. In the request was a statement that expenditures would be limited to the fourth squadron, the fiscal year 1970 buy, and a separate decision would be made for the fifth squadron and later for the sixth squadron.

Admittedly, Lockheed's loss will be reduced to about $285 million should the Air Force buy the fifth and sixth squadrons, but again the decision to buy these squadrons will be based on the military requirements and the C–5A's cost effectiveness.

Mr. SIKES. Mr. Preston.

Mr. PRESTON. Could you provide for the record the dates on which the options are due on the fifth and sixth squadrons?

General JEFFREY. Yes, sir.

(The information follows:)

DATES ON WHICH OPTIONS ARE DUE, C–5A

The date for exercise of the option for the fifth squadron is January 1970 and for the sixth squadron is August 1970.

Mr. SIKES. What would be the effect of denial of the advance procurement funds?

General JEFFREY. It would affect our flexibility in exercising the option for a follow-on squadron of airplanes if we decided to do so, sir. This would be to purchase the long leadtime equipment that would permit us to exercise this option and continue the production of the airplane.

I expect that it might result in a gap in production.

INITIAL SPARES

Mr. SIKES. According to the best information today, what quantities of initial spares will be procured from the C–5A contractor which are not included in the contract? How will the price of the spares be determined?

Provide that for the record.

(The information follows:)

QUANTITY AND PRICE OF INITIAL SPARES, C–5A CONTRACT

The Air Force estimate for C–5 initial spares for 120 aircraft funded in this appropriation total $482.6 million. Of this, about $262 million will be used to

procure engines and engine spares from General Electric. The majority of the remaining $220 million will be used to buy avionics and airframe spares from the C–5A contractor. The price of these spares will be negotiated on an individual item basis in accordance with normal initial spares procurement procedures. A continual review is and will be made of these cost projections in order to procure only the minimum numbers of spares to support the aircraft operating program.

PAYMENTS TO CONTRACTORS

Mr. SIKES. On January 14, 1969, a new provision was added to the C–5A contract under which the Air Force would pay the contractor in payments which will exceed the ceiling price. This was done because the contractor has a serious cash flow problem due to the cost overruns. It is understood that the new provision was added without any consideration to the Government. It is also indicated that the Air Force is in the process of raising the billing prices on the development effort and on the production run A up to the ceiling prices in order to provide the contractor some relief with his cash flow problem.

Why were these actions considered to be in the best interests of the Government?

General JEFFREY. We will have to get that information from the contracting officer.

May we supply it for the record?

Mr. SIKES. Yes. But that would indicate that it was in the best interests of the contractor. So let us have——

General JEFFREY. No; I mean the Air Force contracting officer, not the contractor.

Mr. SIKES. Very well.

(The information follows:)

COMMENT ON JUSTIFICATION OF JANUARY 14, 1969 NEW PROVISIONS/ C–5A

Under date of January 14, 1969, the Government did not take any action to amend the C–5A contract so as to provide the contractor payments which would exceed the ceiling price. The January 14, 1969, amendment to the contract did provide that the parties would mutually establish revised billing prices. The purpose of such revisions would be to provide progress payments to within 90 percent of the ceiling price as authorized by general provision 43, progress payments, of the contract. These billing price revisions have been made only in part to date. Inasmuch as these actions were authorized by existing terms and conditions of the contract, consideration to the Government for such action was not considered appropriate.

CONTRACT AWARD

Mr. SIKES. Are we to understand that the award of this contract was based on a combination of price and performance?

General JEFFREY. Yes; initial source selection technical evaluations revealed that Boeing had the best potential design. However, the weight and drag problems of Lockheed caused in part by limited wing size were identified and Lockheed agreed to add sufficient wing area to overcome this problem. As a result of negotiations with all three contractors at the end of the evaluation period, it was determined they were all at approximately the same technical level with Boeing having a slight edge. At this point Lockheed's proposed price of almost $300 million less than Boeing's for the first 58 aircraft became the major factor in the final source selection.

Mr. SIKES. In the Lockheed design was it superior performance or price that decided the contract award?

General JEFFREY. Both. As stated previously, Lockheed's proposed price, which was low by almost $300 million, became the controlling factor in final selection—but not until negotiations during the evaluation phase brought the Lockheed technical design to an acceptable level and almost equal to Boeing's proposed design.

Mr. SIKES. To what extent did in-flight operating costs—that is, cruise efficiency—figure in the award?

General JEFFREY. The objective of the cost effectiveness evaluation was to assess the relationship between operational productivity and cost, to include both acquisition and 10-year operating costs. While the prime mission of the C–5A will be the emergency rapid deployment of general purpose forces, the cost effectiveness of peacetime operations is important and was also studied.

For the purpose of determining the relative cost effectiveness of the three contractors' designs in the contingency role, a representative set of contingency missions was established. ———.

These forces were loaded on a computerized model which made optimum use of the available cargo area. The optimum route structure was selected for each design by optimizing the range/payload/block speed relationship for the runway lengths existing at the various enroute bases. Credit was given for an ability to operate into short fields as this would mean, on the average, a shorter distance to the forward edge of the battle area (FEBA) because of the greater choice of airfields.

In the contingency role, the Boeing proposal exhibited the greatest productivity.———. However, since the Lockheed costs are approximately 10 percent below those of Boeing, the cost effectiveness for such a mission is about equal, or, on the basis of forces of equal costs, the closing times would be about the same.

For design purposes, the request for proposal (RFP) enumerated a variety of peacetime missions, based upon the normal Military Airlift Command (MAC) requirements. Against this peacetime utilization, cost effectiveness has been computed in terms of cost-per-ton mile where costs are derived from total program costs over a 10-year period and ton miles are derived from channel traffic and special assignment airlift capability at ranges of 2,500, 3,200 and 4,000 nautical miles. MAC suggests that the 3,200 nautical miles range is the most representative distance. The others are shown in order to test the sensitivity of the results to the other operating ranges. These calculations assume a 4.25 hour per day effective utilization with the payloads optimized for the ranges considered. Operating costs are based on Air Force estimates and do not differ significantly between designs. The most probable acquisition price was assumed for these calculations. The results are as follows:

	Cents per ton mile
At 2,500 nautical mile range:	
Boeing	7.60
Douglas	7.80
Lockheed	6.82
At 3,200 nautical mile range:	
Boeing	9.14
Douglas	9.22
Lockheed	7.18
At 4,000 nautical mile range:	
Boeing	10.10
Douglas	11.42
Lockheed	8.58

From the results shown above, it can be seen that the Lockheed design displays a productivity and cost effectiveness advantage which is greatest at the 3,200 nautical mile range and narrows at the shorter and longer ranges.

Mr. SIKES. Could you comment on the technical evaluation? We understand that competing designs were shown by government wind tunnel tests to be somewhat better.

General JEFFREY. In the final stages of our deliberations, it was possible to limit our consideration to Boeing and Lockheed since the Douglas design fell significantly short of meeting the request for proposal (RFP) requirements and since it was assessed that the design changes required to meet these requirements were so substantial as to impose a considerable amount of schedule risk.

It was the finding of the evaluation group and the Source Selection Board that Boeing had a generally superior air vehicle configuration. This resulted in part from the use of a blow flap high-lift device on the wing which permitted an aircraft of smaller wing area and smaller gross weight to meet the minimum SOR requirements in all respects and to better them in the case of short field landing distances. On the other hand, Boeing's design offered a fuselage with the minimum request for proposal width of 17.5 ft. and several features, identified by MATS, relating to the ramp and loading flexibility which limited the utility of the aircraft in operation from primitive or poorly equipped bases. In addition, the proposed target price of Boeing was initially $437 million greater than Lockheed and, after the September 4, 1965 resubmittals, this was reduced to $330 million, based upon the 85/15 basic flexible incentive proposal for both contractors.

Boeing offered a design speed of 470 knots (mach 0.82) which is 30 knots greater than the RFP minimum of 440 knots. This, however, could not be used in the RFP overload mission, since to make the 2,500-mile range, the aircraft would have to be operated at 440 knots to minimize fuel consumption. Lockheed's design speed was 440 knots and was able to exceed the required range on the overload mission at this speed.

Lockheed originally submitted a design which was evaluated by the Air Force as capable of meeting range and payload requirements of the RFP but not within the maximum takeoff and landing distances specified by the RFP. When these deficiencies were discussed with the contractor, he proposed an increase in wing area and flap span and some improvements in engine inlet design for the takeoff condition which brought his design to within RFP performance requirements in all respects, except for one required mission for which his evaluated landing distance was 4,190 feet and the RFP requirement was 4,000 feet. On the other hand, Lockheed provided a 19-foot fuselage width for the entire length of the fuselage, including both ramps. This straight-through configuration, in conjunction with a complete kneeling capability and variable ramp angles, gave the Lockheed design excellent qualities of loadability under primitive conditions, particularly in bad weather, as well as a high degree of flexibility for optimum loading under a variety of field conditions. The cargo volume in Lockheed's design is 37,837 cubic feet in comparison with 39,106 cubic feet for Boeing. Because Boeing designed a retractable rather than a fixed troop deck, when mixed loads of troops and cargo are carried,

Boeing's cargo volume is reduced to 36,218 cubic feet. Because Lockheed has a greater payload capability than Boeing at ranges around 3,200 nautical miles (the range for operation non-stop in the Atlantic and one-stop in the Pacific) indicated by MATS to be about representative of preferred peacetime operations, Lockheed's design showed a substantial advantage in peacetime operating cost per pound of available cargo capacity in spite of the Boeing design's higher cruise speed.

Mr. SIKES. In preparing your price you, of course, predicated it on cost of material and the fabrication cost of the chosen material. How did your overall cost per pound compare with industry average?

General JEFFREY. In preparing the Air Force estimate, a current bill of material for each element was utilized. Fabrication costs were, of course, estimated separately. However, there is no industry average for cost per pound based on the cost of material and the fabrication cost of the chosen material; for example, titanium and titanium fasteners.

MATERIAL CHANGES

Mr. SIKES. How many changes of material were made after award of contract?

General JEFFREY. The request for proposal and the contractual documents did not specify materials to be used. Rather, prohibitions and limitations for materials were specified allowing detailed material selections to be the prerogative of the contractor. Since there was no production design at the time of contract award, there was no precise bill of materials to compare with that which exists today. In developing today's production design, there have been a number of material changes, but it is impossible to accurately determine the number of such changes.

CHANGE IN ENGINE COSTS

Mr. SIKES. To what degree have the engine costs changed since the contract award?

General JEFFREY. Based on the October 1968 estimate, the change in engine costs since contract award is the difference between the original target price of $633 million and the most probable cost to the Government of $830 million—a difference of $197 million. This also includes spare engines.

VENDOR COSTS

Mr. SIKES. In estimating your price, did you use Lockheed estimates of costs of vendor items, or did you use firm vendor quotes?

General JEFFREY. The Air Force estimates of October 1968 for vendor items were based on the amounts, where available, of awarded contracts, and on firm vendor quotes for items not yet on contract.

MATERIAL CONTENT OF AIRCRAFT

Mr. SIKES. Going back to an earlier question, we would like to have you breakdown the material content of the airframe as it was proposed in your bid and as it now is.

General JEFFREY. I have that here, Mr. Sikes, in tabular form.

(The following is a comparison of the materials proposed for evaluation and current configuration:)

Item	Proposed	Current
Fuselage skin panels, frames and longerons	Aluminum	Aluminum.
Fuselage fail-safe straps	Titanium	Titanium.
Wing and empennage surface panels	Aluminum	Aluminum.
Landing gear struts and bogies	Steel	Steel.
Main landing gear trunnion (yoke)	Titanium	Aluminum.
Brake heat sinks	Beryllium	Beryllium.
Cargo floor plates and stiffening	Titanium	Aluminum.
Nacelles and pylons	Titanium and aluminum	Titanium and aluminum.

The breakout of airframe materials taken from the weight statement of the first operational aircraft—ship No. 9—is as follows:

	Percent
Aluminum	64.8
Titanium	2.5
Steel	11.4
Fiberglas	1.7
Miscellaneous and equipment material	19.6

Mr. SIKES. Where changes of material were made, can you state the reasons?

General JEFFREY. As previously indicated, there were a number of detailed material changes as the production design developed. These changes considered trade-offs involving air vehicle performance, structural integrity, cost, weight, ease of fabrication, and maintenance requirements. As for the two major changes previoulsy indicated:

Item	*Reason*
Main landing gear trunion (yoke)	Cost and limited technical data. Properties of large titanium forgings
Cargo floor plates and stiffening	Cost, ease of fabrication, and maintenance requirements

Mr. SIKES. In relation to change orders either requested by the company as ordered by the Government, was the performance or operating efficiency improved over the original specification, or were any of these changes made necessary to attain the specification performance or operating costs?

General JEFFREY. There have been no substantive changes to the contractually specified performance levels or to parameters which relate to operating efficiency, such as reliability and maintainability. There have been editorial changes for purposes of clarification and to orient certain secondary design criteria to real-world conditions, which could not be anticipated prior to determination of finite design approaches and characteristics. Since these did involve changes to the words of contractual documents, they were implemented by formal change order procedures at no change in contract price. They resulted in better definition of contract requirements without changing the real value of any specified performance parameter affecting operating efficiency, productivity, or utilization of the airplane.

DESIGN FLIGHT LOADS

Mr. SIKES. How do the wind tunnel loads investigations compare with the actual design loads used for the construction of the aircraft

wing, tail, wing control surfaces, fuselage, etc.? Were there differences between wind tunnel and design loads to require structural modifications? What were the extents of the modifications?

General JEFFREY. Aircraft design flight loads were derived from the results of the wind tunnel investigations. Each C–5A tunnel test program contributed some information as a basis for the determination of loads. The two major test programs specifically oriented toward establishing design flight loads distributions were the low speed pressure test in North American Aviation's tunnel and the high speed pressure tests in the Air Force Arnold Engineering Development Center tunnel. The wind tunnel loads program ran concurrently with airframe design and development. The detail design of the airplane, as affected by airloads, was thus updated as necessary. The final accuracy of the design loads and structural modifications necessary due to load errors, if any, will be determined during the ship 0003 flight and ground load testing which started last month and will require approximately 18 months.

STRUCTURAL TESTING

Mr. SIKES. How far has the laboratory structural testing progressed in the areas of static testing, fatigue testing and functional testing? Have there been any indications or results which indicate structural modifications or reinforcements are required? Any desirable? What are the extends of the modifications?

General MCNICKLE. Full-scale static testing has been in process for a year. Numerous smaller tests, as well as stiffness tests of the major airframe elements, have been completed. A few tests of the main and nose landing gears have been completed and pressurization testing of the fuselage has been underway. Most of the major tests of basic structure remain to be done.

Full-scale fatigue and functional testing is just commencing with some test specimens in place in their testing fixtures.

The static tests to date have shown that localized modifications to the structure will be required. This is normal for evolution of the final design. All static tests are required to be carried to design ultimate load and it is normal procedure for the contractor to make modifications until that strength capability is achieved. The pressurization tests of the fuselage have shown the upper aft pressure bulkhead and the forward pressure bulkhead, were under strength and required redesign of some of their members. Three failures of landing gear components have required redesign of a pin in one case, redesign of a nut in another, and a recent failure of the bogie beam is being studied at this time. The modifications resulting from test experience to date have been released to production.

Mr. SIKES. Has the airplane been operated to its full design loads? Have tests to date indicated any serious structural deflections, deformations, or undesirable handling characteristics during ground or flight operations?

General MCNICKLE. No, the aircraft has not yet been operated to all the limits of the design envelope.

The flight test program to date has achieved the following:

Maximum takeoff weight (design maximum takeoff weight 728,000 pounds): 728,000.

Maximum sustained speed (design maximum speed .875 mach): .88 mach.

Maximum altitude: 39,000 feet.

Preliminary stall testing has been completed. No undesirable handling characteristics in any flight regime have yet been encountered. Ground handling characteristics are outstanding.

Currently, ship No. 1 has virtually completed the flight flutter test program and ship No. 3 is just commencing the flight and ground loads program. No serious structural deflections or deformations have been noted to date.

Mr. SIKES. Does the aircraft fly throughout its design envelope without limitation or restriction below specification requirements?

General BOYLAN. It is Air Force policy, for flight safety reasons, that all aircraft of a new design be restricted to an operational envelope that will restrict loads to 80 percent of design until such time as all structural testing is completed and the design loads and strengths verified. Only designated test aircraft (ship No. 1 and ship No. 3) are permitted to exceed these restrictions for the purpose of demonstrating that the aircraft can be safely maneuvered to its design limits. However, release of the aircraft to 100 percent design loads and envelope will be contingent upon satisfactory completion of the flight test and static test programs. This release is currently estimated for June 1971.

CARGO HANDLING SYSTEM

Mr. SIKES. The cargo handling system is reported to be an important part of the C–5 concept. What is the status of this system? What part of the cost of the C–5 program does it represent? Is there a commercial version of the C–5 under consideration and, if so, will this system be applicable to it?

General MCNICKLE. When we speak of the cargo handling system it is important to recognize that materials handling equipment and terminal operations must be responsive to total airlift and not peculiar to a single aircraft. The C–5 is generating a substantially increased airlift capability that will require expansion of the 463L materials handling system to efficiently load and unload the C–5 and prevent excessive ground time for the aircraft. We possess the capability today to load the C–5 but it would not provide a 1 hour turnaround on a regular basis. There is a quantum jump from 10 463L pallets on the C–141 to 36 pallets on the C–5. This volume of cargo per aircraft, multiplied by the probability of handling three or four such loads at a time in a large terminal, does present a problem unique to the C–5 era; thus, a sizable expansion and immediate upgrading of the 463L system is imperative.

As an integral part of the airframe structure the C–5 has two parallel sets of restraining rails and rollers that provide a means of rapid insertion and locking of pallets. This system is completely compatibe with all of the ground handling equipment. In addition, the rails are retractable and the rollers reversible to provide a clean

load-bearing floor for vehicles. There is a third single set of rails in the center of the fuselage that is used for aerial delivery loads. The materials handling equipment in the C–5 was procured as part of the airframe contract and not priced separately.

Lockheed is developing the L–500, a commercial version of the C–5. Commercial cargo aircraft differ from the military in the basic requirements in that they do not require:

(*a*) Paratroop egress;
(*b*) Aerial delivery; and
(*c*) Capability to jettison cargo.

Although the system of restraining cargo on the L–500 will differ from the C–5 system it will be completely compatible with our 463L system. The same ground handling equipment can be used and our pallets can move freely between military and commercial cargo aircraft.

As indicated in the previous statement pointing out that the total materials handling system is required to respond to the total airlift capability including intratheater, contingency requirements and commercial augmentation of channel airlift, it is not meaningful to relate the cost of any part of this system to the C–5 alone. The additional ton mile airlift capability of the C–5 fleet can be computed. However, it is not feasible to apply a direct ratio for determining the additional materials handling equipment requirements. These requirements are influenced to a considerable extent by other factors such as the world-wide route structure and the local conditions at the various enroute and terminating stations.

APPLICATION OF C–5A TECHNOLOGY TO AIRBUS

Mr. SIKES. Is any of the technology developed during the C–5 program applicable to the Airbus which Lockheed is developing for the airlines? Are the company's books kept separately to insure that engineering costs for the two programs do not become intertwined and the Government find itself helping in the development of a commercial transport?

General MCNICKLE. The C–5 has been designed to perform to a highly specialized military mission, whereas the Lockheed 1011 Airbus is being designed to fulfill solely commercial requirements. Within broad limits, however, it can be said that engineering experience gained on all prior models will provide a more informed background against which future technical decisions can be based.

The Lockheed books are kept separately to insure that engineering costs for the two programs do not become intertwined.

SPARES CONTRACTS

Mr. SIKES. Have all spares, maintenance procedures, facilities, management procedures, etc., that are required to maintain the predicted operational utility been established, contracted and its assuring tested with the available results of the testing to date? If not, when will it be implemented? Are funds committed or will new appropriations be required? What will be the impact on the operational date of the airplane?

General JEFFREY. Sufficient funds are in the force and financial plan to complete the initial spares provisioning effort in support of the current approved MAC peacetime operational program. The majority of required spares for those aircraft approved through fiscal year 1969 are identified and are in the initial provisioning process utilizing estimated costs. Except for design changes, most all initial spares provisioning actions for run A aircraft are expected to be completed during fiscal year 1970. Replenishment requirements will continue to be developed to support the aircraft as they enter the MAC operational inventory. Spares selected are identical to items which have been tested and installed in the C-5A System.

Maintenance procedures are published in technical orders, manuals, and publications, which will be proofed and delivered prior to the delivery of the operational aircraft.

AFL/MAC facility requirements are identified, programed, and included in the appropriate military construction program (MCP) budget document by fiscal years. Fiscal year 1970 and beyond have been programed and will require approval and appropriation actions.

Management procedures published in standard Air Force regulations and directives applicable to support of the weapon systems are being used.

Funds committed through fiscal year 1969 utilizing estimated costs and programed requirements projected through fiscal year 1970 will support the activation of the training squadron, major overhaul activities, and the first three operational squadrons. Programed requirements for fiscal year 1970 through fiscal year 1975 have been projected utilizing estimated costs for follow-on support funds and funds to activate squadrons 4, 5, and 6. Funds will require approval and appropriation actions.

Efforts to date in the above areas, if programed requirements and fund projections are approved, will provide adequate support at the initial operational date and will sustain aircraft in operational status with minimum interruptions.

PERFORMANCE SPECIFICATIONS

Mr. SIKES. Does the airplane meet specification requirements during takeoff, climb, cruise, power response characteristics, and similar factors?

General MCNICKLE. Based on wind tunnel and preliminary flight data, it appears that the airplane will meet its specified performance requirements; i.e., takeoff, climb, cruise, and landing. The No. 2 airplane is undergoing the performance verification flight test program at Edwards Air Force Base, Calif. It will be completed in early 1970. The aircraft responds well to changes in engine power. The engine acceleration and deceleration characteristics all meet or exceed specification requirements as determined by development tests at General Electric, altitude qualification tests at Arnold Engineering Development Center, and inflight tests on a B-52 test bed aircraft at Edwards Air Force Base. Cruise performance of the engine has been investigated in an altitude test cell by the Air Force's Arnold Engineering Development Center, which reports that thrust and fuel consumption at the critical flight conditions meet or exceed specification requirements.

DELIVERY DATES

Mr. SIKES. Would you outline the scheduled and actual delivery dates of the airplanes in the C-5 fleet? Was the first flight made on time? Will the other airplanes on order be delivered to the Air Force on time?

General JEFFREY. This is rather lengthy, Mr. Sikes, but I will be pleased to submit it for the record.

The first schedule below shows the delivery requirements of the present contract. The second schedule represents the noncontractual revised schedule currently used for planning purposes. The first five aircraft are contractor test vehicles and will not be accepted by the Air Force until the completion of category I testing after which they will be updated and prepared for delivery to the Air Force. The next three aircraft, originally scheduled for delivery in March, May, and June 1969, are to be conditionally accepted for Air Force testing and will also be updated and prepared for delivery to the operational units. The update and delivery of these eight test aircraft (5 contractor and 3 Air Force) are scheduled for late 1970 and early 1971 on the present contract schedule and for late 1971 and early 1972 on the revised schedule. The first flight of aircraft No. 1 was on schedule in June 1968. In the opinion of the SPO the revised schedule, which has not yet been contractually negotiated, is a tight but attainable delivery schedule.

(The following chart was submitted:)

Present Contract

	1968												1969												1970				1971				1972				1973
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	1	2	3	4	1	2	3	4	1	2	3	4	1
Flt Test A/C:																																					
Orig. Sched.	1			1		1			1	1			1			1	1											4		3	1						
Actual	1				1			1		1			1																								
Run A																			1	2	3	3	3	3	9	9	9	8									
Run B																														4	9	9	9	9	9	8		

Revised

The first 5 test aircraft are eliminated from this schedule since they are shown as actuals on the schedule above.

	1968												1969												1970				1971				1972				1973
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	1	2	3	4	1	2	3	4	1	2	3	4	1
Flt Test A/C:	1			1			1		1	1			1		1			1	1											3	3	1		1				
Run A																						2			6	9	9	8	9	7							
RUN B																														2	9	9	9	9	9	1		

ESTIMATES OF COSTS OF VARIOUS CATEGORIES OF WORK

Mr. SIKES. The C-5A contract as amended, between the Government and Lockheed Aircraft Corp. specifies various statements of

work. The statement of work can be subdivided into seven categories as follows:

(1) Item A, system integration and assembly for design, development, and item B, system integration and assembly for production separated between:

(2) (a) Production run A.

(3) (b) AGE, publications, et cetera.

(4) (c) Spares.

(5) Production run B.

(6) AGE, publications, et cetera, associated with production, run B.

(7) Spares associated with production run B.

What was the Air Force original estimate of the costs for each category?

General JEFFREY. The airframe portion of the $3,116 million October 1964 estimate is as follows:

	Millions
1 Item A—Total R.D.T. & E.	$632
Item B—Total run A plus B	1,608
2(a) Production run A	904
3(b) AGE, publications, etc., run A plus B	[1] 62
4(c) Spares (initial operating)	[2] 307
5 Production run B	704
6 AGE, publications, etc	([1])
7 Spares associated with production run B	([2])

[1] $62,000,000 not broken down between A and B and is included in the $1,608,000,000.
[2] $307,000,000 not broken down between A and B and covers all initial spares.

Mr. SIKES. How much money has been funded under the contract to date for each category?

General JEFFREY. The following money has been funded under the contract to date for each category:

	Millions
Item 1 A—Total R.D.T. & E.	$607.0
1 B—Total run A and B	941.3
Item 2 (a) Production run A air vehicle	826.4
(b) Peculiar support	66.1
4 Initial spares	110.5
5 (a) Production run B air vehicle (advance buy)	48.8
(b) Peculiar support	0
(c) Initial spares	0

Mr. SIKES. What is the Air Force estimate as to the aggregate final obligation of the Government with respect to each individual category?

General JEFFREY. The Air Force estimates as to the aggregate final obligation of the Government with respect to each individual category is as follows:

	Millions
Item 1 A—Total R.D.T. & E.	$ 607.0
1 B—Total run A plus B	2,562.0
Item 2 (a) Production run A air vehicle	1,468.5
(b) Peculiar support	75.5
4 (c) Initial spares	130.0
5 (a) Production run B air vehicle	994.2
(b) Peculiar support	23.8
(c) Initial spares	90.0

Mr. SIKES. What is the Air Force estimate as to Lockheed's costs for each category at completion?

General JEFFREY. I have that in tabular form Mr. Sikes—I will put it in the record at this point.

(The following table was provided:)

		Millions
Item 1	A—Total R.D.T. & E	$838.7
1	B—Total run A plus B	2,615.4
Item 2	(a) Production run A air vehicle	1,516.0
	(b) Peculiar support	81.2
4	(c) Initial spares	118.2
5	(a) Production run B air vehicle	994.5
	(b) Peculiar support	23.7
	(c) Initial spares	81.8

FUTURE FUNDING

Mr. SIKES. What is the Air Force's current estimate as to the amount of funding which will be added to the contract during each subsequent fiscal year until completion?

General JEFFREY. The Air Force's current estimate as to the amount of funding which will be added to the Lockheed contract during each subsequent fiscal year until completion is as follows:

	Millions
Fiscal year 1970	$609
Fiscal year 1971	626
Fiscal year 1972	398

COST OF DELIVERY SLIP

Mr. SIKES. What is the best estimate of the Air Force as to the increase in C–5A program costs which will result from the 6-month delay in the delivery schedule?

General JEFFREY. The Air Force considered the following rationale relative to the cost aspects of the delivery schedule slip. In his unsuccessful efforts to meet the contract schedule, the contractor was being forced to use exorbitant amounts of overtime; to load his labor base with large numbers of inexperienced new people which generated a higher than previously required man-hour effort; and conduct out-of-station assembly associated with part shortages and rework. In addition, the Air Force considered the high cost of retrofit since the test program results will probably necessitate some changes to the aircraft already manufactured. Finally, consideration was given to the impact of these costs as they would be applied to the run A repricing formula. Based on this rationale it was determined that the net cost increase to the program would not be significant. The Air Force has not, however conducted the exercises necessary to definitize an estimate of the program costs associated with the 6-month slip in the delivery schedule.

Mr. SIKES. Of the estimated increase in C–5A program costs resulting from the slippage in delivery schedule, what proportion will be ultimately borne by Lockheed and what proportion will be ultimately borne by the Government?

General MCNICKLE. There are two conditions involved in answering your question. If production is terminated with the run A buy any increased cost due to the slippage would only add to the amount already estimated to be over the run A contract ceiling, and the Government would bear no part of the cost. If the run B aircraft are procured, the provisions of the repricing formula result in a revised

ceiling which would include an increment due to the increased cost of producing run A as a result of the slippage. The actual proportions would be determined through negotiation.

Mr. SIKES. Has the Air Force analyzed the internal cost to the Government of not having the C–5A aircraft operational as originally scheduled? If so, what are the results of such study?

General BOYLAN. We studied the impact of the C–5A slip in production and recently received approval from OSD to make adjustments in our force structure. Most of the internal cost of retaining units previously scheduled to phase out is offset by the costs previously planned for the C–5A. However, the retention of units does not replace the capability loss resulting from the C–5A slip and additional commercial airlift procurement will probably be required.

APPLICATION OF INCENTIVE PRICE REVISION CLAUSE

Mr. SIKES. Clause 42 of the general provisions of the Lockheed/Air Force contract provides for incentive price revisions. It provides that costs of R.D.T. & E. and production run A are to be combined for final pricing purposes. Is it proposed to combine the costs incurred by Lockheed in producing spares for production run A with the costs of R.D.T. & E. and the costs of production run A for purposes of calculating the incentives price revision provided by clause 42 or it is proposed to apply the incentive price provision clause to the costs of spares in a separate calculation distinct from the costs of R.D.T. & E. and production run A?

General JEFFREY. It is not proposed or contemplated that the cost of spares will be handled as a separate calculation distinct from the cost of R.D.T. & E. and production run A. General provision No. 42, incentive price revision firm target, paragraph a., states that the supplies or services identified in the schedule as items A and B of part I are subject to price revision in accordance with the provision of this clause. Part B covers spares, in addition to other items on the contract; and, therefore, the cost of said spares and the final price revision of spares will be handled in conjunction with all other items subject to the price revision clause.

Mr. SIKES. Is it proposed to combine the cost of production run B and the spares applicable thereto with the costs of R.D.T. & E. and production run A for purposes of calculating the incentive price revision provided by clause 42 or is it proposed to apply the incentive price provision clause to the costs of production run B and applicable spares in a separate calculation distinct from the costs of R.D.T. & E. and production run A?

General JEFFREY. General Provision No. 42, incentive price revision firm target, contemplate that the price revision clause will cover R.D.T. & E., production run A, production run B, and all applicable spares.

REVISED BILLING PRICES

Mr. SIKES. Subparagraph (e) of clause 42 apparently provides that Lockheed and the Air Force may agree to revised billing prices which will be reflected in a modification to the contract. To what extent has this provision been invoked to date? What is the Air Force's best

estimate as to when, and in what amounts it will be invoked in the future?

General JEFFREY. This provision has been invoked only once to date to provide an additional amount of $84,509,685 for the R.D.T. & E. portion only, and the contract has been modified to reflect this adjustment by SA No. 300 to contract AF-33 (657)-15053. It is anticipated that the contractor will request an adjustment of the billing price up to the ceiling price of R.D.T. & E. and production run A during the first or second quarter of fiscal year 1970. Throughout the program, additional similar requests which revise the billing prices can be anticipated as incremental revisions for raising run B fiscal year buys to ceiling, abnormal fluctuation in economy adjustments, and impacts of the repricing formula. All applications of this nature are contingent on a combination of contractor's initiation of these requests and Government approval, negotiations, and subsequent procurement actions. Production run B, if exercised in its entirety, will be adjusted to ceiling by the second quarter of fiscal year 1972. The Air Force's best estimate as to when and to what amounts will be invoked are as follows:

	Millions
1st and 2d quarter, fiscal year 1970	$380
1st and 2d quarter, fiscal year 1971	451
1st and 2d quarter, fiscal year 1972	325

SUBCONTRACTOR PAYMENTS

Mr. SIKES. What is the Air Force estimate as to how much each major subcontractor will be paid, broken down as between R.D.T. & E., production run "A" and production run "B"?

General JEFFREY. I do not have that information, but I will provide it for the record.

(The following table provides the Air Force estimate as to how much each major C-5A structural subcontractor will be paid by Lockheed:)

PRICE TO LOCKHEED

[Dollars in millions]

	R.D.T. & E.	"A"	"B"	Total
AVCO	15.0	78.9	45.7	139.6
Bendix	10.9	39.2	33.4	83.5
Canadair	17.1	72.4	41.5	131.0
Convair	14.3	38.9	23.1	76.3
Kaman	5.2	23.5	11.9	40.6
Rohr	15.6	60.6	39.1	115.3
Others	8.2	47.4	42.7	98.3
Total	86.3	360.9	237.4	684.6

Mr. SIKES. What is the estimate as to the actual costs of each major subcontractor?

General JEFFREY. I will be happy to provide that for the record.

(The information follows:)

The following information is an estimate of costs at completion for the R.D.T. & E. and run A program as reported by the subcontractors to Lockheed. It should be noted that in many cases there are significant subcontract change quotations outstanding and yet to be negotiated. The subcontractors' estimate at completion would include these quotations at full value, and the estimate should be considered in that light.

Subcontractor and estimate of costs

	Millions
AVCO	$88.3
Bendix	54.8
Convair	49.2
Rohr	76.1

These four subcontractors plus Canadair are the major subs in terms of dollars. At the time Canadair was preparing a major cost proposal for changes and did not provide an estimate to completion.

Mr. SIKES. To what extent has Lockheed passed down to its major subcontractors the benefits of (a) the cost escalation provisions, (b) the redetermination provisions, and (c) the option formulae for pricing production run "B" contained in their prime contract and supplemental agreements with the Air Force?

General JEFFREY. Lockheed included an abnormal fluctuation in the economy clause in five of its subcontracts. They placed 17 fixed price incentive subcontracts with a total original value of over $300 million, and they did not include an option adjustment formula for the price of run "B" in any of its subcontracts.

SUBCONTRACTOR CHANGE CLAUSES

Mr. SIKES. Are the change clauses in Lockheed's contracts with its major subcontractors the same as those in Lockheed's basic contract with the Air Force? If not, what is the difference, and why?

General JEFFREY. Lockheed's subcontracts change clauses are not the same as the prime contract. Many of them contain provisions which limit the amount of price adjustment the subcontractor will be entitled to for Lockheed directed changes. A slightly different approach was utilized to minimize the cost of changes on subcontracts.

COSTS NOT ELIGIBLE FOR ABNORMAL FLUCTUATION ADJUSTMENTS

Mr. SIKES. The supplemental agreement of April 6, 1966, provides that target cost and ceiling price shall be subject to revision each year commencing with calendar year 1968, to reflect abnormal fluctuations in price levels for any of Lockheed's elements of cost in that year. How much of the total costs under the contract were incurred or committed prior to January 1, 1968? It is presumed that such costs will be borne by Lockheed subject only to the cost-sharing provisions of the contract. Is this correct?

General JEFFREY. The Air Force estimate of the total cost incurred or committed under the contract by Lockheed prior to January 1, 1968, not eligible for abnormal fluctuation adjustments, was $538 million. It is correct that these costs will be borne by Lockheed subject only to the cost sharing provisions of the contract.

Mr. SIKES. What is the Air Force's estimate as to the amount of costs that will be incurred or committed as defined in the supplemental agreement dated April 6, 1966, which will be applicable to each calendar year subsequent to December 31, 1967? Separate this estimate between R.D.T. & E. and production runs A and B.

General JEFFREY. I will be pleased to put that in the record.

The following costs by R.D.T. & E., run A and run B will be incurred or committed subsequent to December 31, 1967:

[In millions of dollars]

	Calendar year 1968	Calendar year 1969	Calendar year 1970	Calendar year 1971	Calendar year 1972	Total
R.D.T. & E.: Total base	333	75	39	7	3	457
Run A: Total base	522	652	265	2	0	1,441
Run B: Total base	0	2	409	569	38	1,018

Mr. SIKES. The Air Force should supply calculations as to the amounts of money which it is estimated will result from the application of the formulae specified in the April 6, 1966, supplemental agreement to the estimated costs applicable to each calendar year subsequent to December 31, 1967.

General JEFFREY. The formula for the calculation of abnormal escalation is the same for all years. Simply stated, if the actual index number is above the applicable "Over" index value, the labor costs, materials cost, equipment costs, or subcontract and other costs, shall be multiplied by the amount the actual Index number exceeds the indicated "Over" index value and the product shall be divided by the actual index number. The quotient shall be added to the target cost and ceiling price. The amounts of abnormal escalation applicable to each calendar year for Lockheed are:

Calendar year:	*Millions*
1968	$35
1969	44
1970	56
1971	54
1972	1
Total	190

Mr. SIKES. When does the Air Force propose to fund the contract for the amounts estimated to be ultimately due Lockheed as a result of the application of the April 6, 1966, supplemental amendment and when is it estimated payments of such sums will be made to Lockheed?

General JEFFREY. The Air Force proposes to fund the contract in the fourth quarter of a calendar year following the calendar year in question. This will allow the final Bureau of Labor Statistics data to be published, the contractor to make his request, auditing by the Government, and negotiations to be completed. Payments will be made concurrently with the funding.

COST OVERRUN ON ENGINE PROGRAM

Mr. SIKES. Give us the anticipated cost overrun in the C–5A engine program.

General JEFFREY. The difference between the original contract target price and the presently estimated cost to the Government for the engine program is $197 million. This includes the spares engine buy for run A and run B.

Mr. SIKES. How would the cost overrun in the engine contract be shared between the Government and the contractor?

Colonel DAVIS. Sir, the engine contractor has what we call a flexible sharing arrangement. He started out with an 85–15 share and then went to 70–30 and back to 85–15. So the net result is that he is on approximately an 80–20 share line on overruns with the Government.

Mr. SIKES. Who pays the 80 and who pays the 20?

Colonel DAVIS. The Government pays the 80 and the contractor pays the 20.

Mr. SIKES. Is this a fair division?

Colonel DAVIS. It is pretty much the standard sharing arrangement and was thought to be appropriate for the risk involved in this particular contract.

Mr. SIKES. Are there any questions on my right?

Mr. ANDREWS. No.

Mr. SIKES. Questions on my left?

Mr. LIPSCOMB. No, Mr. Chairman.

"RUN B" OPTION

Mr. MINSHALL. Mr. Chairman, may I ask this question?

General, the Air Force exercised the option for run B on the morning of January 16, only 4 days before the new administration took over. If that option had not been exercised, we would have no further liability on this contract; is that correct?

General JEFFREY. We would have had the liability contained in production run A on the contract, sir.

In other words, if the option had not been exercised on production run B, this would not have relieved the Air Force of its obligations under production run A.

Mr. MINSHALL. Did you obligate the Government to spend at least $5.1 billion when you exercised this option?

General JEFFREY. No, sir.

Mr. MINSHALL. $4.8 billion?

General JEFFREY. No, sir, 23 airplanes—23 additional airplanes only.

(Discussion off the record.)

Mr. RHODES. If the gentleman will yield, did the 23 in production run B take the total of planes up to 120?

General JEFFREY. No, sir, it took it up to 81.

Mr. RHODES. How did we get the 120?

General JEFFREY. 120 was the initial program of airplanes. We had an initial program of airplanes that consisted of 120. They were broken into three parts, first 58 and then 57 and five out of production run C, which made the total of 120.

Mr. RHODES. Your arithmetic does not add up here. You have 57 in production run A. You said 23 in production run B.

General JEFFREY. We obligated ourselves only to 23 of the 57 airplanes in production run B. So the Government is only obligated right now to those additional airplanes.

Mr. RHODES. So you are not contractually obligated for more than 81 airplanes at this time?

General JEFFREY. As a matter of fact, sir, we are not cantractually obligated for those. The contract provides that we are only obligated to the limit of the funds on the contract, and this would just include the advance buy money for the 23. We are not obligated to the 23 either. We exercised the option but we did not obligate ourselves past the money we put on the contract which was only the advance buy money for the 23 airplanes.

Mr. RHODES. Then you are saying you are only obligated for 57 airplanes plus the advance buy on 23 others.

General JEFFREY. It is 58 plus the advance buy money.

Mr. RHODES. That is the limit of your contractual liability?

General JEFFREY. Yes.

Mr. RHODES. If you canceled out on the 23, would any penalties be involved?

Colonel DAVIS. There would only be the liability to the extent of the $72 million that has been expended that we could not recover on the advance buy, plus some $30 million that is reserved for termination liability. That is the extent of our liability.

Mr. RHODES. Your termination cost would be $30 million only.

Colonel DAVIS. That is the maximum.

Mr. RHODES. On the 23 for production run B?

General JEFFREY. That is the maximum.

Mr. SIKES. Thank you very much, gentlemen.

The committee will resume its hearings at 10 o'clock tomorrow.

WEDNESDAY, MAY 28, 1969.

Mr. MAHON. The committee will come to order.

I have been absent from some of the hearings this week on account of the fact that we have had two important appropriations bills on the House floor. So with a twinkle in my eye let me say we will continue our harassment of the Air Force.

A TIME FOR REEVALUATION

This is a time of skepticism, a time of reevaluation of our problems in our society. This is certainly not all bad. Congress has had its ups and downs from the standpoint of public favor. The military have had their ups and downs. The Supreme Court has had its ups and downs. They have been mostly down in recent years. In the third chapter of Ecclesiastes, it is said that there is a time for everything under the sun, a time to love, a time to hate, a time to plant, a time to reap, and so forth. I think there comes a time for a reevaluation of the procedures and programs of the military. Now is the time.

This Committee on Appropriations is highly motivated toward the security of the country. We have worked closely in this field and we do not want to take any chance of jeopardizing the security of this country. It may be in times past in our effort to serve the best interests of the country we have been a little too lenient on the military and have been too tolerant of some of the mistakes which have been made.

It seems obvious that the military departments have made a lot of mistakes. We have known that all along, and I think as long as we have a military program there will be a lot of mistakes made, just as there are mistakes made in a housewife's kitchen, or in Congress, or in business. But we want to keep those mistakes to a minimum. Defense contracts have reached such importance in the economy of our country, and there is so much involved taxwise and otherwise, we just have to insist on getting the best we can for our money. We are well aware of the underestimates which almost invariably industry makes and which almost invariably the Army, Navy, Air Force and Marines make in telling us what the cost will be before we begin a program.

I understand it was Mr. McNamara, who is not popular in all quarters, and who I agree made mistakes as Secretary of Defense, who insisted upon making a long-range projection of the ultimate cost of weapon systems. Is that somewhat correct, General?

General PITTS. Yes, sir.

Mr. MAHON. This was a step in the right direction, and the Committee on Appropriations is insisting that there should be a cost evaluation of all programs, civilian and military, a 5-year cost projection that would give us a better picture of what the ultimate impact of a new program might be. This is certainly a good thing. I think some of your difficulties now spring from the fact that this cost analysis procedure has made it easier to surface the facts and more difficult to sweep the facts under the rug. That has highlighted the gross miscalculations of industry and the Air Force in regard to the C–5A and other programs. I realize that there is no way in the world to estimate precisely what the cost of any major weapon system might be. There are so many imponderables in a thing like that.

C–5A AIRCRAFT CONTRACT

Would you like to make any comment, General McNickle?

General MCNICKLE. Sir, I can only make this comment on what you said. One problem we have had is that we started a procedure in contracting that obligates the Government and the contractor many years in advance. For instance, the C–5 contract covers a period of over 8 years and the unknowns and uncertainties over that period have really caught both the Government and the contractor. Prior to this, we had contracts on a year or 2 or 3-year basis. Many programs—whether or not it is a bridge or a building or whatever—have had larger percentage overruns than the C–5. But to forecast for an 8-year period, which we are halfway through now, just creates difficulties that we cannot escape.

Mr. MAHON. Something was mentioned in the testimony yesterday that was significant. We had gone along for about 7 or 8 years with an inflation rate of about 1½ or 2 percent per year. Then suddenly as a result of all this "guns and butter" program, this high level of Government spending and other reasons, the rate leaped from about 2 to about 4 or more than 4, and this had its impact all the way around. I do not see how we can blame the industry or the military for that particular extra escalation of cost brought about by inflation. But it is so very important for us to know in advance what these programs probably will cost.

When you look at the C–5A and say 120 planes may cost us $5 billion, plus, let us consider that if we had really known that fact in advance and properly evaluated it, we might not have gone forward with the program. We might have decided to buy off the shelf this big plane that Boeing is manufacturing, the 747. Of course, it would not be as good as the C-5A, but it might be so much cheaper that it would be an acceptable substitute with modifications under the circumstances.

General MCNICKLE. It is a completely different airplane, Mr. Chairman, in that it is a personnel carrier, where the C–5A is an equipment carrier. It was also a fallout of the original C–5 competition.

Mr. MAHON. That is right, I think the Boeing 747 could be reconfigured somewhat. If you did reconfigure the Boeing 747 that might cost millions more. I understand that possibility. But we do need to look at these matters objectively.

General JEFFREY. Mr. Chairman, may I make an observation in connection with your remarks?

Mr. MAHON. Yes.

CHANGE IN WEAPON SYSTEM PROCUREMENT

General JEFFREY. In the early fifties, our approach to procurement of a major weapon system had been to complete the research and development on the initial article or articles, test them, and then in a sequential step buy in quantity the follow-on numbers that were required. We found that we were always in a sole source position once the winner of this R. & D. award had been made. It was almost impossible to segregate the research and development cost from the follow-on. Of course, this was done on a year-to-year basis. So even though, in my opinion, the C–5 total package approach certainly has some faults, it was an effort to try to procure the R. & D. and follow-on quantities in a competitive environment in order to get on top of this problem and the problems associated with the earlier approach.

As General McNickle indicates, this covers a wide period of time and immediately lays on the table for everybody to see the vast amounts of money that are involved in a program of this nature.

As I indicated yesterday, it is my firm belief that this program would have cost more money had it been contracted for by the previous technique. We just would not have known about it in a lump sum. We could not have identified it. It would have been identified in pieces. I think at the end of the contract we would have found that the airplane would have cost us more money.

Mr. MAHON. I would suspect it would have cost more money under the old technique.

General JEFFREY. The point I wanted to make is that we recognize what you have said and, of course, agree with it completely. On the other hand, we want to indicate that we are conscious of this problem. Even though the results do not seem to justify the means, we have taken steps to attempt to identify this complicated problem and do something about it.

Really, we have a long way to go.

Mr. MAHON. Thank you very much, General.

VALIDITY OF ORIGINAL COST ESTIMATES

Would you think it a good idea in the future when big systems come before us maybe for Congress to take the testimony of the Pentagon witnesses and add about 30 percent to the estimated cost as our best evaluation of what the real cost might eventually be. I do not think we would be too far wrong.

General McNICKLE. Sir, I think the Deputy Secretary of Defense is endeavoring to improve the situation by setting out milestones and requiring that these milestones be met on a technical basis before going to another one. He is making an effort to get better costs. The trouble with adding factors is somebody will add a factor and somebody else will add another one, and we may lean too far the other way. I think the Secretary and the Deputy Secretary of Defense are making a real effort to come to grips with this right now.

I would hope that nobody would have to add 30 percent to it.

Mr. MAHON. On second thought, I was a little afraid my figure of 30 percent was too low. I believe past experience would indicate it was too low.

General McNICKLE. I agree, sir.

Mr. MINSHALL. I can think of some programs where 100 percent would be a more accurate figure in the past.

General JEFFREY. It has been said jokingly, Mr. Chairman, if you multiply the figures by pi——

General McNICKLE. I think the problem with that would be that you would give us money based on an arbitrarily high point rather than a lower point. I would think that to put more money on a program at the start than is indicated by the contractor and the service might lead to difficulty.

Mr. MAHON. We would not put more money on the line, but in making our decision as to whether or not to fund a new program we could take into consideration the fact some developments had escalated 100 percent or more. This is what I really had in mind.

Mr. ANDREWS. I will bet you 2 to 1 that if the contractor knew there was more money there he would bid more money.

Mr. MAHON. Yes; it was far from my mind that we would give 30 or 50 percent more money than requested. But in evaluating the program and deciding whether or not to proceed with it, we might take into consideration the inevitable escalation, or almost inevitable escalation.

ACCOUNTABILITY OF THE MILITARY OFFICER

You gentlemen are before us today to talk about certain programs, but when these programs succeed or when they flop you will be in different positions. As is true in the past, the military people are not held strictly accountable. This is one of the difficulties. If a man started the program and had to stay with it until it was completed, he would really be on the spot and he would have many restless and sleepless nights if he saw himself moving toward catastrophe. But as it is now, he is off someplace else when the difficulties become apparent, and his successor says, I was not here when the keel was laid or the baby was born. I am not responsible for those troubles. The military officers have a very adequate screen to protect themselves. I do not know just how best this matter can be handled but there is a better way.

You cannot keep a military officer in the same business for his entire career, but the way it is now you have a lack of continuity and accountability. One of the greatest difficulties, and I have been watching these defense appropriations since 1940, is that there is not this feeling of accountability which is so important in achieving an objective once a program is begun. Do you have any remedy to that?

General McNICKLE. Sir, I would agree that we inherit programs as we come into a job and some of them come with problems born several years before.

Mr. MAHON. You inherit them, but you disclaim responsibility for them. You are just doing the best you can with what has been handed to you.

Mr. ANDREWS. That is the point.

Mr. MAHON. I do not know just how to handle that.

General BOYLAN. Mr. Chairman, in all fairness, the circumstances which surround these programs vary as decisions taken in the broadest context influence a particular program. The point I am making is that even the so-called program manager is not master of his total destiny. He is subject to schedules, performance reviews, the budget, technical problems, shift in national policy, all of these that are beyond his personal control, or I might go further, beyond his ability to influence greatly.

I think the F–111 program could be a very good example of the point I am trying to make. Certainly the program director for that program had very little to do with the initial decision to proceed with the program, the withdrawal of the British, the withdrawal of the Navy, the varying quantities approved by the Department of Defense. That is my point. I am not raising it in just blanket defense of the uniform. I am just trying to describe the real world that we have to live in.

Mr. MINSHALL. General, you brought up one weapon system, the F–111. But I know personally and I know this committee can remember other programs, where all the factors you outlined were not cranked into it. It was just a question of the particular service or the program director very frankly not being on the ball or not informing the Congress of what was going on with the program before it was too late.

General BOYLAN. Sir, I was referring to those conditions——

Mr. MINSHALL. The F–111 program is a sort of special one. I could not agree with you more. That was McNamara's baby and it was forced down your throat and the Navy's throat. The only thing that McNamara proposed that has not gone wrong is everybody wearing black shoes.

ROLE OF CONGRESS IN ENCOURAGING MOBILITY THROUGH AIRLIFT

General BOYLAN. As you know better than I, the Congress itself led the Nation toward paying some attention to mobility through airlift.

Mr. MAHON. This committee was very active in pounding the table over the years and demanding more attention to airlift, and the Air Force and the other services tended to back away from it because there were other things that the services were more interested in.

Of course, the Army was interested in airlift, but the Air Force had many priorities greater than providing the Army with airlift.

That is one of the elements in this picture.

General BOYLAN. Yes, sir. Without being facetious, sir, the Army could express that interest because the responsibility for airlift lay in the Air Force program. But in the C–5, the Congress did take the lead.

Mr. LIPSCOMB. Excuse me. Did you say in the C–5 the Congress took the lead?

General BOYLAN. I am sorry, the national airlift capability.

Mr. LIPSCOMB. There is a difference.

General BOYLAN. As you recall, Congress authorized and appropriated funds for the modernization of the military airlift command, C–130's and C–135's. It encouraged the Department to lay down a specific uncompromised aircraft for cargo, the C–141.

The Department of Defense then was part of a shifting national strategy which moved away from the sole reliance on nuclear weapons. This came in 1961. Following that the requirement for the C–5 to contribute more through airlift to mobility was laid down. As was brought out here yesterday, the initial estimates on how many C–5's were required ranged from 200, eight squadrons; six squadrons was the program figure adopted. This involved a cutback in the C–141 which previously had been considered a stable program at some 20 squadrons. The C–141 program was changed. The C–5 was brought into the picture. Yes, the Air Force then found itself in the position of advocate for the C–5 because it was an Air Force program.

SELECTION OF C–5A CONTRACTOR

I am sure General Jeffrey covered the selection and procurement process yesterday and in that must be considered the competence of Lockheed in producing this aircraft. I am sure General Jeffrey must have touched on that.

Lockheed had built the C–130 and C–141. From a program manager point of view. I would think that the Air Force could well have been justified in accepting Lockheed's proposition to build the airplane on the basis of competence.

Apparently Lockheed had initial difficulties in translating its proposal into good engineering work. But all of these factors then have influenced the C–5 program as well.

Again, sir, I think the responsibility certainly must be borne by key responsible individuals in uniform, and the key responsible individuals who are civilians in the Department of Defense. But again, they alone do not control all of the factors.

LACK OF COMPLETE CANDOR OF MILITARY WITNESSES

Mr. MAHON. I had intended to ask you this further question. You people have been heavily involved in the C–5A and other aircraft procurement. One of the problems we have in Congress is this: The civilian and military officials in the Pentagon, after a period of days or weeks, or months, or years, come to a conclusion with respect to a certain program or policy. Before the party line, so to speak, of the

Department of Defense is established, many of the pros and cons are weighed. This is a healthy exercise, a necessary exercise. But one of the weaknesses of our procedures in Congress is that when you come before congressional committees the party line has been established and we only hear, to some extent, one side of the picture. We have to dig and dig in order to discover what the alternatives may have been and what the pro-and-con arguments are. Do you understand what I mean, General McNickle?

General McNickle. Yes, sir.

Mr. Mahon. Do you as an Air Force officer feel free to express to a congressional committee the pros and cons of a decision which has been reached, or do you feel you must support the decision and also withhold from the Congress, unless you are smoked out on the issue, so to speak, the other side of the coin or the other side of the picture or the alternatives involved?

General McNickle. I think the way I would say it is that I am first to express the program, and if you desire the alternatives, I will give them to you.

Mr. Mahon. Do we get, in your opinion, a forthright statement from civilian and military witnesses with respect to the other side of the argument, so to speak? I have my own thoughts on the matter. I just wanted to get your view.

General McNickle. Sir, I would say that you probably get a freer exchange now than you did previously.

Mr. Mahon. That is not saying a great deal, of course.

Mr. Minshall. What is "now" and what is "previously"?

Mr. Andrews. You mean about a year or 2 years ago?

General McNickle. A little over a year ago is "previously." I would say right now, as a witness, I am free to answer any questions, in any way, that you ask.

Mr. Mahon. Yes, but you would sort of lose face in Air Force Headquarters if you did not stand up stoutly for your program and look with condescending and jaundiced eye upon any alternative, I would think.

General McNickle. Yes, sir, I would say that, on the basis that when a decision is made, all the pros and cons and alternatives are considered. To me, to express a personal opinion is no problem. But I must at that time say that better heads than mine, and more of them, have come up with this decision and this is it.

Mr. Mahon. I would like to have General Jeffrey's comment on this. You have been in this business for some time.

General Jeffrey. Sir, these things are thrashed out in great detail. The pros and cons are discussed from the lowest level in the Air Force all the way up the line. The alternatives almost without end are presented for review. We attempt to select that one that seems to best meet our requirements and is in the best interests of the Air Force and the country.

Mr. Mahon. That is all correct and we understand that, General. If you could meet head on the specific issue here——

General Jeffrey. Once the decision has been made, that this is the approach that we should follow, we believe it appropriate that the team should support this approach.

Mr. MAHON. I do not think we would quarrel with the necessity for supporting it, but how willing are you to give the committees of Congress the same information the Pentagon had before a decision was made so we can make up our minds whether or not we thought you were wise in the decision which you made? That is the real point I was discussing here. Maybe I did not make myself clear.

General JEFFREY. Yes, sir. It is a difficult question to answer, sir. We have presented the President's budget, and we find ourselves in the position of having to support that budget.

Mr. MAHON. But could you in some way say "we are here supporting the President's budget. We are firmly convinced that this is the best thing to do under the circumstances. Now, with respect to the C–5A, or with respect to some other program, the various alternatives are thus and so. Here is the plus side, here is the minus side, this is on the plus side, this is on the minus side. We evaluated all of these things. We want you gentlemen of Congress to understand all of this. After much soul searching we decided to go forward with the C–5A."

This is what I am talking about. This is the kind of testimony that we do not get to the extent we need it. Do you get my point?

General JEFFREY. I understand your point.

Mr. MAHON. I would like some way to do this without calling for disloyalty on the part of the witnesses. I was searching for some contribution from you.

Can you make any?

General JEFFREY. I think this would be a desirable exchange. It is my presonal view that this would be a desirable exchange.

Mr. MAHON. General Boylan, do you have any comment?

General BOYLAN. Mr. Chairman, I think one of the problems that goes directly to your concern is that the total defense budget is comprised of many separate parts. If you start with the overriding consideration that there is only so much money, and we all firmly understand that, then relative priorities of programs, the timing of programs, to start development or procurement, et cetera, all become involved. I think, personally, that the Department and the Congress have to devise some way to make more clear the overall circumstances that in the final analysis drive the decisions on every program.

The real problem is going to be how much can we explain, not how much do we want to explain, of all of these separate things that influence one program.

For example, the decision on the FB–111 to not go beyond 76 production articles is driven in part by a proposal to support the B–1 in this budget. It is driven in part certainly by the total dollars. It is driven by the other production considerations around the FB–111.

All of these factors get involved. So, again, I agree with you, but if you carried it to the extreme, you would have to consider all of the detail that the Department considers in putting together its budget, and you would have to literally consider and weigh all of the alternatives and separate decisions that the Department must consider.

I think in previous years on occasions there has been a sort of backdrop provided to Congress for its subsequent considerations of the detailed appropriation and authorization acts. I would describe this as perhaps a several day working session of what is the Air Force pro-

gram in terms of people, facilities ,where it is, and why it is there. Why are the programs arranged as they are? What are the relative priorities viewed by the Air Force? Then, given this as a backdrop, perhaps your detailed review of the budget programs could be more meaningful to both of us.

Mr. MAHON. Is there any further comment from anyone?

NEW GUIDANCE POLICY FOR MILITARY WITNESSES BEFORE CONGRESS

General MCNICKLE. Sir, I think we must come before you to present the Air Force portion of the defense budget. If we do not, there could be a rebirth of interservice rivalry and the presentation of parochial views. We must present the decisions of the Secretary of Defense. I agree we should be prepared to discuss the alternatives on the controversial programs, and I think we are.

General PITTS. I might amplify that, sir, by saying it is policy in the Department of Defense that, whereas you are supporting to the Congress the President's budget—decisions have been made—that upon proper questioning a witness is free to express, upon request of proper authorities in the Congress, his personal opinion on a given program. That is a matter of policy.

Mr. LIPSCOMB. General, you were just mentioning a policy. There was a directive that was in force during the McNamara administration. Since the administration of Secretary Laird there has been an expression of policy which liberalizes to an extent McNamara's policy. This new guidance gives you much more flexibility in testifying before congressional committees. In fact, I believe in general it permits military witnesses to give any information that is desired.

General PITTS. That is the policy I was speaking to; yes, sir.

Mr. LIPSCOMB. Mr. Chairman, for the record, could we have the new policy guidance from Secretary of Defense Laird placed in the record at this point?

Mr. MAHON. Very well.

(The information appears on pp. 972 and 973.)

EXPRESSING PERSONAL OPINIONS BEFORE CONGRESSIONAL COMMITTEES

Mr. ANDREWS. General, let us take a program in which Air Force was extremely interested; it was denied by OSD, you reclamaed it, and OSD still denied the program. You subsequently come before this committee to justify the Air Force portion of the DOD budget as submitted by the Bureau of the Budget and signed by the President, which is the approved DOD budget. If I understand you correctly, you cannot bring up the subject of that deleted Air Force program, but if a member of the committee asks questions about it, you would be free to tell all you knew about it, to express your opinion and your desire for that program?

General PITTS. Yes, sir.

Mr. ANDREWS. Is that the size of it?

General PITTS. Yes, sir. Properly qualified that it is a personal opinion or an Air Force position versus the DOD or Presidential decision.

Mr. ANDREWS. You could still tell the committee that you as a general would like to get the program or new system; you requested it, you reclamaed it, you were still refused, but as of the time you were before the committee, you still wanted it.

General PITTS. Yes, sir.

Mr. ANDREWS. Even though it was not in the budget?

General PITTS. Understanding that I would be responding to a request for my professional opinion for the Air Force position and that the decision had been taken by proper authorities to overrule that personal opinion or Air Force position.

Mr. ADDABBO. That is not very helpful, really. You cannot expect an officer to lash out against his superiors in this kind of way.

Mr. ANDREWS. He would not be lashing out against his superiors.

Mr. MAHON. It would be so interpreted.

Mr. MINSHALL. Mr. Chairman, along the line of Mr. Lipscomb's request, I think it would be helpful to put not only Secretary Laird's policy guidance, but right with it, Secretary McNamara's policy memorandum, so that they may be compared.

Mr. MAHON. Without objection, this documentation will be placed in the record.

(The information follows:)

(NOTE.—Secretary Laird has not issued formal letter instructions to congressional witnesses. His policies and intentions in this matter, however, were clearly expressed during his confirmation hearings before the Senate Armed Services Committee on January 14, 1969. Pertinent excerpts from those hearings follow:[1]

"Senator STENNIS. Now, on another question, I am sure you realize better than most people that if Congress is to legislate effectively in the field of national affairs, we must have the full and uninhibited views of the Joint Chiefs of Staff, and the senior military officers. Now, can you assure this committee that all these officers or anyone from your Department of Defense or the services will not be discouraged from giving the committee their real views, will not be penalized for giving their honest opinion, even though that opinion might be in conflict with your views or even in conflict with the views of the President?

"Representative LAIRD. I can assure you, Senator, that I expect them to give their views to this committee. I expect them to carry out the decisions that have been made by me as Secretary of Defense, but as far as giving their views to this committee, I would expect them to make a full disclosure of their views.

"Senator STENNIS. That is a very wholesome attitude and it will be very helpful to the committee and I think to you, too.

"I think we all fully subscribe, of course, to the principle of civilian control over military matters, which is deeply rooted in our constitutional processes and I hope always will be. This concept, however, does not carry with it any implication that the views of the military leaders will be ignored in reaching your decisions. That is the way we see it. Can you assure the committee regarding your intentions to fully consult with the Joint Chiefs of Staff, and weigh and consider their opinions? You notice I didn't say follow.

"Representative LAIRD. I certainly can assure the committee of that procedure. It will be followed by me as Secretary of Defense, and I can assure you it will be followed by the Deputy Secretary of Defense.

"Yesterday I had my first meeting with the Joint Chiefs of Staff, and meetings will be held on a regular basis, and there will be an open door for them to the Secretary of Defense's office."

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[1] Hearings before Committee on Armed Services, U.S. Senate, 91st Cong., first sess., Jan. 14 and 15, 1969.

THE DEPUTY SECRETARY OF DEFENSE,
Washington, D.C., January 11, 1965.

Memorandum for: The Secretaries of the military departments; the Director of Defense Research and Engineering; the Chairman, Joint Chiefs of Staff; the Assistant Secretaries of Defense; the General Counsel; the assistants to the Secretary of Defense; and the Directors, defense agencies.

Subject: Congressional appearances by Department of Defense witnesses.

I have been asked by prospective witnesses to provide guidance for the benefit of personnel of the Department who, in the course of congressional hearings, are required to give their personal opinions on matters concerning which a Department of Defense position has been established by the Secretary of Defense with the approval of the President. If pressed for his personal opinion, the witness should make clear—

1. That his personal views were expressed (if such be the fact) to appropriate authorities within the Defense Department before the departmental position was established;

2. Where his views are not in accord with the departmental decision that, notwithstanding his personal views, he has accepted and will abide by the departmental position; and

3. The considerations or factors which support the decision; in other words, the pros and cons on the issue involved.

CYRUS VANCE.

Mr. MINSHALL. I wouldn't say it necessarily applies to the Air Force, General, but we on this committee have gone into a lot of these programs with extreme care. It is just too bad that time does not permit us to go into more detail. But when we had witnesses up here as in previous years, they said one thing before us in their official testimony that is finally printed, but when we met them outside in the hall or maybe at a little dinner party someplace, they provided a different story when they were able to talk more freely. I hope with this new look that we will receive the full story, and you will be able to tell us the same thing here at this witness table that you do privately when we meet you later.

I am talking right now about the F–111 program.

As this committee well knows, various admirals and captains told us that plane was not going to work. This was 3 or 4 years ago. Yet they came before our subcommittee and told a different story, apparently afraid of not getting an additional star or maybe losing all they had.

General MCNICKLE. Or becoming an ambassador.

Mr. MINSHALL. Something like that.

OTHER AIRCRAFT PROCUREMENT

RF–4C AIRCRAFT

Mr. MAHON. Thank you, General. Are the 12 RF–4C aircraft requested for fiscal 1970 attrition aircraft?

General BOYLAN. Yes, sir; they are.

Mr. MAHON. Since we have procured a total of 481 of these aircraft and since the bombing halt in North Vietnam has reduced our loss forecast of this aircraft to the extent that no new procurement funding is sought in fiscal 1970, why must we fund these 12?

General BOYLAN. If I understand your question correctly, we are buying no F–4's, the fighter bomber version, because the recomputed attrition resulting from the total cessation of bombing to the north indicated that the 1969 and prior procurements would carry the force structure through this time period.

The RF–4C continues to perform reconnaissance in both North and South Vietnam. The OSD attrition factors and Air Force attrition factors agree that some 12 aircraft are required.

Mr. MAHON. You are not buying additional F–4 aircraft. Why buy the reconnaissance version if you do not need the other version?

General BOYLAN. The RF–4C is the model designation of the reconnaissance airplane. The current fighter-bomber production model is the F–4E.

Mr. MAHON. I understand that, but why are you buying this aircraft since it is related in a way to the mission of fighter-bomber version?

General JEFFREY. Sir, we are continuing to fly the RF–4C over North Vietnam. We anticipated that its attrition rates could be greater under those conditions.

Mr. MAHON. What is your present attrition experience? You have later information now. Does this confirm your estimate of need or not?

General PITTS. Since the November 1, 1968, bombing halt, sir, the overall RF–4C attrition rate in Southeast Asia has been ——— losses per 1,000 sorties. The last 12 months experience, May 1968 to April 1969 was ——— losses per thousand sorties. So the attrition rate stayed about the same.

Mr. MAHON. Even since the bombing halt?

General PITTS. Yes, sir.

We are still conducting reconnaissance sorties over North Vietnam, whereas the bombing halt has stopped the fighter bomber aircraft going into that territory—losses still continue on the reconnaissance airplane.

General JEFFREY. This number of aircraft will maintain our force until the fiscal 1971 reorder point. Another problem here concerns the reconnaissance sensors that are used on the RF–4. If we had not procured any airplanes in this particular budget, the production of those sensors would have dropped off to the point that considerable effort would have been required, in order to reinstitute that production.

Mr. MAHON. Are you buying these planes to keep the line open?

General JEFFREY. We are buying principally for attrition but as a secondary reason to keep the line open.

Mr. MAHON. You are requesting $8 million for advance procurement for a buy of ——— RF–4C aircraft in fiscal 1971. If the bombing halt continues, will there be a requirement for ——— more aircraft next year?

General JEFFREY. These are advance attrition airplanes, sir, and the requirement would be based upon the same basis as this year.

Mr. MAHON. What if the war ends?

General JEFFREY. If the war ends, I thought you said if the bombing halt ends.

Mr. MAHON. If the war ends, this might be reevaluated?

General JEFFREY. Yes, sir.

O–2A AIRCRAFT

Mr. MAHON. Are there any questions? If not, with respect to the O–2A, the request for $2.6 million for procurement of 34 of these forward air control aircraft, is based on replacement losses. What was

the actual attrition of this aircraft in the last 6 months? What is the current total inventory of this O–2A aircraft.

General BOYLAN. For about a 6-month period, November through April—we lost ——— aircraft. Our average unit equipment (UE) level in Southeast Asia is about ———.

Mr. MAHON. Give us the attrition rate of the O–2A compared with that of the O–1, for the record.

(The information provided the committee is classified.)

Mr. MINSHALL. You say you lost ——— of these O–2's. Is that because of antiaircraft fire, or what was the reason for the loss?

General BOYLAN. There are a variety of reasons, sir.

Mr. MAHON. Does anyone in the group have the figure?

Mr. MINSHALL. We can put it in the record, Mr. Chairman, if you want to go ahead.

General BOYLAN. I am advised that about ——— to combat and ——— to operational losses.

Mr. MINSHALL. You found out generally it is a pretty good aircraft.

General BOYLAN. The aircraft is doing the job, sir. The general appraisal of the aircraft is that it is maintainable, it has had some problems because of the gear and the rough terrain. There has been a little foreign object damage, but its in-commission rate is at Air Force standards. It is doing the job. It is not an optimum forward air controller (FAC) aircraft. It is not what the Air Force would prefer to live with over the next 10 years.

Mr. MINSHALL. What do you want?

General BOYLAN. This year's budget is asking for only the attrition requirement for the O–2. The Air Force does have under study a Specific Operational Requirement (SOR) for an optimized forward air controller aircraft of the variety that the O–2 is—a light, easily maintained, inexpensive aircraft.

Mr. MINSHALL. What is the reason you do not like this one particularly? You say it is satisfactory, but you would rather design one of your own?

General BOYLAN. No, sir. I am saying that the aircraft is performing satisfactorily. It does have some aspects that the Air Force judges should be recognized, and if possible eliminated.

Mr. MINSHALL. What are they?

General BOYLAN. I touched on a couple. The experience with the gear, the foreign object damage, these kinds of things. But the aircraft is doing an acceptable job.

Mr. MINSHALL. That seems like a pretty credible performance.

General BOYLAN. We think it is very credible.

Mr. MINSHALL. Why would you want to go ahead and ask for money to design a new one?

If this is doing the job, I don't follow you.

General MCNICKLE. Yes, sir. We are going to use the O–2 and we are only asking for these replacements.

The problem with the present FAC aircraft is that they take a lot of runway.

Mr. MINSHALL. It doesn't take too much runway?

General MCNICKLE. Yes, sir.

Mr. MINSHALL. What do you mean by too much runway? What are you talking about?

General McNICKLE. Approximately 2,000 feet.

Mr. MINSHALL. That is not very much.

General McNICKLE. We think it is for an optimum FAC aircraft. We would like to be able to use 1,000-foot strips.

Mr. MINSHALL. You can get a V/STOL.

General McNICKLE. No, sir. Actually a newer O–1 with shorter takeoff is what the people would like to have. But the O–2 is satisfactory for the mission.

Mr. MINSHALL. How many runways do you have in Vietnam that are shorter than 2,000 feet?

General McNICKLE. There could be many shorter strips down with the brigade and company level where we would like these planes to operate, if they had the shorter takeoff capability.

A–37B AIRCRAFT

Mr. MAHON. With respect to the A–37B, how many of the 96 A–37B aircraft, for which you are requesting $38.5 million, are for the South Vietnamese Air Force? Is it the intention of the Air Force to maintain squadrons of A–37 aircraft in the U.S. Air Force after Vietnam?

General BOYLAN. The A–37's that are being procured in this request, sir, will not go to the Vietnamese. In ——— an additional ——— aircraft will be transferred to the Vietnamese from total A–37's available to the Air Force. The Air Force basically will not retain A–37's in its force structure as an end position, with the exception of the special operating forces.

For example, based on our current programing by end fiscal 1972—let me put that in another time frame—June of 1973, we will have some ——— aircraft in our special operations forces, ——— in the Air National Guard, and ——— in our training establishment.

Mr. MAHON. What is the total approved procurement of A–37 aircraft under present planning? How many of the total are for Vietnamese Air Force and how many for the regular U.S. Air Force, and how many for the Air National Guard?

Supply that for the record, please.

(The information follows:)

Total planned procurement of A–37B aircraft is ———. ——— aircraft are being procured for VNAF, ——— for the ANG, and the balance of ——— are being procured for the regular USAF. After allowing for attrition and command support, aircraft are to be diverted to both VNAF and the ANG.

Mr. MAHON. In the hearing on the fiscal 1969 supplemental appropriation bill, it was stated that the Air Force plans to replace F–100 aircraft in Vietnam with A–37's on a two A–37's for one F–100 basis.

Is this ratio still firm?

General BOYLAN. It is, sir.

Mr. MAHON. How large are the special operation forces which use the A–37B aircraft in training Vietnamese pilots? Will the aircraft they use be turned over to the Vietnamese?

General BOYLAN. As of the moment, sir, the Vietnamese have three squadrons. They will be receiving ———. The special operating force unit currently in the Air Force will remain in the Air Force.

Mr. MAHON. You can answer this question for the record. The prior approval reprograming number fiscal year 1969–94, which requests

approval of the reprograming of $28.2 million for procurement of 63 A–37 aircraft in fiscal 1969, picks up a request which was originally presented in the fiscal 1968 supplemental and later withdrawn.

Since we are now in the last two months of fiscal 1969, it would appear that the reprogramed funds would probably not be obligated in fiscal 1969 but rather in 1970. Have the delays in financial approval caused any stretchout of the A–37 production lines? Could we stretch out the fiscal 1970 procurement as a consequence?

General JEFFREY. Sir, the delay in program approval has been covered thus far by the use of fiscal 1968 advance buy money. We believe that schedule slips could occur beginning about the first of May, since the airframe contract cannot be awarded.

Mr. MAHON. You can amplify that for the record.

(The information follows:)

REPROGRAMING OF A–37 AIRCRAFT

Initially, it appeared that our delivery schedule would slip if the 63 aircraft in the reprograming request were not directed by May 1. However, the $2.1 million additional fiscal year 1968 advance buy money which we have directed has continued to protect the schedule to this point. Since our definitive contract has been negotiated based upon the total fiscal year 1969 quantity, we can still obligate the money and not slip the schedule if we receive program release by June 20, 1969.

OV–10 AIRCRAFT

Mr. MAHON. With respect to the OV–10, has that aircraft been a disappointment?

General JEFFREY. No, sir; it has not been a disappointment. To the contrary, the airplane used in the forward air control role over in Southeast Asia has performed exceedingly well.

Mr. MAHON. Why are you not asking for more of them?

General JEFFREY. It is an expensive airplane.

Mr. MAHON. You can amplify that for the record.

(The information follows:)

The average flyaway cost of the OV–10 over our total production run of 157 aircraft was $506,000. Based on our current experience with O–1's, O–2's, and OV–10's in the forward air control (FAC) and strike control and reconnaissance (SCAR) roles, we are convinced that the next generation FAC/SCAR aircraft will perform more effectively and will be acquired at a lower cost than the OV–10.

Mr. MAHON. Has a final resolution been made of the high speed flutter problem which caused failure of the horizontal stabilizer?

General JEFFREY. No, sir.

Mr. MAHON. Elaborate in the record.

(The information follows:)

OV–10 FLUTTER PROBLEM

The flight envelope has been restricted to ——— knots. Our normal operations do not require higher speeds so there has been no adverse effect on mission capability. The flight test program has been expanded by adding multiple accelerometers on the booms and stabilizers to identify the source and type of vibrations which led to the failure. Preliminary flight test results are expected in August In addition, computer simulations will be continued using estimated data until the actual flight test data becomes available.

Mr. MAHON. Has the final Air Force OV–10 been delivered?

General JEFFREY. It was delivered in April, this year.

Mr. MINSHALL. How many do you have?

General JEFFREY. 157.

Mr. MINSHALL. How many do you have in Vietnam?

General JEFFREY. We have a total of five squadrons. We have three squadrons in Vietnam; 74 airplanes.

Mr. MINSHALL. What has been their performance in Vietnam?

General JEFFREY. It has been excellent.

Mr. MINSHALL. In what role?

General JEFFREY. In a forward air control role.

Mr. MINSHALL. How much runway do these birds need?

General JEFFREY. They need 2,000 feet.

Mr. MINSHALL. About the same as an O–2.

General JEFFREY. About the same; yes, sir.

Mr. MINSHALL. What can this bird do that the O–2 can't?

General JEFFREY. This airplane has a much higher speed capability. It has the capability to carry ordnance; it has the capability to carry a half dozen passengers, as well as cargo. It can do more than the forward air controller role.

Mr. MINSHALL. You say this is a cargo plane or a passenger plane or forward air control?

General JEFFREY. We are using it as a forward air controller. It has other capabilities.

Mr. MINSHALL. What can this plane do as a forward air controller that the O–2 can't?

General JEFFREY. Very little.

Mr. MINSHALL. What is the difference in price?

General JEFFREY. This airplane costs about $500,000 a copy, and I think the O–2 is somewhere in the neighborhood of less than $100,000 a copy. We are not advocating this airplane as a replacement for the O–2. These airplanes have a considerable capability in the special operational forces. Really, this was the sort of thing that the airplane was designed for, an operation where we might have to carry a few people in the back and you might have to put machineguns on it and you could use it as a light attack airplane under some conditions.

Mr. MINSHALL. How many of these have you lost in Vietnam?

General JEFFREY. We have lost ——— in the last 6 months.

Mr. MINSHALL. Enemy activity or other causes?

General PITTS. ——— to operational losses, ——— to combat, sir.

QUESTIONABLE USE OF OV–10 AIRCRAFT IN FAC ROLE

Mr. MINSHALL. General, in reply to the question of the chairman about your opinion of the OV–10, in view of our philosophic discussion this morning about testimony before this committee, I would like to verify your answer as to the fact that you feel it is a satisfactory airplane. Is that your honest opinion?

General JEFFREY. Yes, sir. I will have to qualify that, of course——

Mr. MINSHALL. Now, you can put the "buts" in it.

General JEFFREY. With regard to the role of the airplane.

Mr. MINSHALL. It was primarily designed as a counterinsurgency aircraft.

General JEFFREY. That is the primary design; yes.

Mr. MINSHALL. Here you have a bird that won't go as fast as it should without getting tail flutter and at the present time you are not

using it in a counterinsurgency role; you are using it as an FAC aircraft over in Vietnam. How can you say it is a satisfactory aircraft when it doesn't meet the contract specifications? When we discussed the airplane during development, it came up with as long a list of deficiencies as any aircraft we have ever had, and it still has some. I just don't see how you can say it is 100 percent satisfactory.

General JEFFREY. My comments related to the role in which it is being used. The ——— knot restriction due to tail flutter isn't causing any operational problems because the airplanes in the FAC role are not flown up to that sort of speed.

Mr. MINSHALL. This aircraft wasn't designed for that FAC role in the first instance; was it?

General JEFFREY. No, sir, that is what we are using it for now. The flutter tests are being conducted. We anticipate having the results of those tests by August of this year and something will be done to correct them.

Mr. MINSHALL. I am just concerned that you would be using a $500,000 aircraft in a FAC role, when in fact you can use another type aircraft such as the O–2 or the O–1 that costs less than $100,000. You have already lost ——— of them over there for one reason or another to the tune of ———. These other aircraft wouldn't be anywhere near that amount if you lose them.

General JEFFREY. That is correct, sir. On the other hand, we have been, from an overall viewpoint, short in FAC airplanes and this provides us a wonderful opportunity to test this airplane under combat conditions, even though not specifically in the role for which the airplane was designed.

Mr. MINSHALL. But you said this aircraft couldn't do anything in a FAC role that the O–2 can. This is my point. Why you are testing a half million dollar aircraft over there in combat, whereas the O–2 would only cost, say $75,000 or $80,000, the Air Force version, and it can do exactly the same job.

General JEFFREY. It can do the same job, but it is to our advantage whenever we have the opportunity, to test out an airplane under actual combat conditions, to find out where its otherwise unknown deficiencies might be.

Mr. MINSHALL. You do know what these deficiencies are now to your satisfaction. Why do you continue to use such an expensive aircraft in this role?

General JEFFREY. We need FAC airplanes over in Southeast Asia.

Mr. MINSHALL. Why don't you order more of the cheaper variety then?

General JEFFREY. We are ordering them.

Mr. MINSHALL. They are off-the-shelf items for all intents and purposes and you can get them quite readily?

General JEFFREY. Yes.

Mr. MINSHALL. I am just trying to save the taxpayers a little money.

General JEFFREY. I understand, sir. We recognize that this airplane is too expensive an airplane for continued procurement in the FAC role and they are no longer being procured.

On the other hand, we have the airplanes, we need FAC airplanes; this is a good FAC airplane and it is desirable that we take this air-

plane out under combat conditions and that is the reason it is over there.

Mr. MINSHALL. Will this request for FAC aircraft that you have in the budget satisfy all of your needs for FAC aircraft?

General JEFFREY. I would defer to General Boylan on that.

General BOYLAN. The number is 34 O–2's proposed in this budget to replace our estimated attrition.

Mr. MINSHALL. How long will it take to get delivery on 34 O–2's with all the electronic gear and ready to be operational?

Colonel BUCKINGHAM. The first aircraft is scheduled for delivery in ——— and the last in ———.

Mr. MINSHALL. Why does this take so long?

Colonel BUCKINGHAM. That is about ——— months from the start of fiscal year 1970. The avionics is the long leadtime item. The airplane itself, as you know, is an airplane that is in commercial production. It is the peculiar equipment we put in it that in it that takes the additional time.

Mr. MINSHALL. Has this equipment been ordered?

Colonel BUCKINGHAM. Yes, sir. We had an advance buy of $1 million that was approved last year by the committee and that has been used to order the avionics equipment.

Mr. MINSHALL. Who is the manufacturer of this particular avionics equipment?

Colonel BUCKINGHAM. I do not have that information.

Mr. MINSHALL. Supply it for the record.

O–2 AIRCRAFT AVIONICS MANUFACTURERS

The O–2 avionics and the current manufacturer of each item follows:
Item and manufacturer:
ARC–51 BX (UHF/AM radio), Admiral, Chicago, Ill.
FM–622 (VHF/FM radio), Magnavox, Fort Wayne, Ind.
Wilcox 807 (VHF/FM radio), Wilcox, Kansas City, Mo.
ARN–83 (LF/ADF homer), Collins, Cedar Rapids, S.D.
KY–28 (Speech scramble/encoder), Magnavox, Fort Wayne, Ind.
APX–64 (IFF identification), Hazeltine, Little Neck, N.Y.
AIC–18 (interphone), Andria, Long Island, N.Y.
ARN–52 (TACAN), Republic, Huntington, N.Y.
SST–181X (Responder beacon), Motorola, Chicago, Ill.

Mr. MINSHALL. There is no way you can speed up delivery?

Colonel BUCKINGHAM. I do not believe so, sir, because the contractual action that has been taken on the advance buy was related to this schedule. They are matched together and the only way we would be able to do that would be to pay premium overtime to get the equipment and we don't believe that is necessary.

Mr. MINSHALL. Thank you, Mr. Chairman.

C–130E AIRCRAFT

Mr. MAHON. The C–130E, what is the total authorized inventory of the Air Force of the C–130 aircraft?

General BOYLAN. Approximately a month or so ago the Air Force had some 591 C–130's of all types. They were organized into 28 squadrons. We had an additional 20 in training.

General JEFFREY. It is planned to procure ——— C–130E's.

Mr. MAHON. We read in the paper a few days ago about an Air Force sergeant flying a C–130 off the base in England and disappearing. What kind of a C–130 was that?

General JEFFREY. I believe it was a C–130B, sir. I am corrected sir. It was a C–130E.

Mr. MAHON. Is the fiscal 1970 procurement based primarily on keeping the production line open so that the C–130 can be produced in large quantities if they are required, or do you have a military requirement for 18 C–130's?

General BOYLAN. Mr. Chairman, the 18 C–130's will satisfy a military requirement in our Tactical Airlift Force. We are not only seeing that the Tactical Airlift Force is gradually reduced by attrition, but we are gradually transferring to the Vietnamese ——— squadrons of C–123's for that country's airlift requirement. This transfer plus attrition on the C–130 and the C–7 aircraft account for the military requirement. It is a combination of attrition in the C–130 force, the C–7 and the transfer of C–123's.

Mr. MAHON. In making this decision, was there any problem at all? Did some people want none and some people want 18 and some people want 40? How did you come to this figure?

General BOYLAN. Mr. Chairman, the facts that principally came to bear on this decision, No. 1, attrition of C–130's. No. 2, the overall reduction in airlift capability that stems from attrition, on C–130's and C–7's and, No. 3, the transfer of C–123's to the Vietnamese.

The alternatives that were available were, No. 1, obviously do nothing. Because of the overall status of the force this was considered completely unacceptable.

Secondly, the Air Force could have procured C–7's, or perhaps C–8's, a little larger and more costly equivalent of the C–7. We couldn't procure C–123's. The decision then was made that the overall capability of the Tactical Airlift Force is best served by procuring the C–130E's.

Mr. MAHON. This is all very interesting, but I don't think you came completely to grips with my question. What was said in your discussions? Did somebody just pick this out and everybody agreed? What is the basis of argument and discussion? How long did it take? Did you do this on a Friday afternoon? How did this come about?

General MCNICKLE. The Air Force took a request to Secretary Packard for some C–7's and some C–130's. He made a decision to buy the C–130's.

Mr. MAHON. How many did you ask Mr. Packard for of each?

General MCNICKLE. I don't remember the figures now.

Mr. MAHON. Can you remember, General Boylan?

General BOYLAN. The first for C–7's would have been on the order of 53 airplanes. We were attempting to replace, in these alternatives, the transfer of 48 airplanes, three squadrons, and the attrition that is being sustained on the C–7's. The C–7 alternative would have added 70 airplanes. The C–130 alternative was computed to be one squadron of 18. The arithmetic, when you compute capability, sorties, ton-miles and so forth, the one squadron of C–130's will roughly equate, as I recall, to the three squadrons of C–7's. That is on mass of lift that you can produce with those airplanes.

Mr. MAHON. I don't understand this. You asked Mr. Packard for how many of what and what did you get? How many of each and what did you get?

General BOYLAN. May I correct the record?

Mr. MAHON. Oh, yes.

General BOYLAN. I think there are two alternatives that the Air Force considered.

Mr. MAHON. We are not interested in the alternatives. What did you ask for and what did you agree on?

General BOYLAN. The Air Force originally requested 70 C–7's. In follow-on discussions the Air Force changed its request to 11 C–7's and 18 C–130's.

Mr. MAHON. I know, but originally you asked him for how many? Did you ask him originally for 18?

General BOYLAN. No, sir.

Mr. MAHON. And then the C–7's?

General BOYLAN. The C–7 alternative, as discussed by the Air Force with Mr. Packard—was 11 C–7's and 18 C–130's.

Mr. MAHON. The Air Force originally didn't request what you are now requesting. There were decisions made within the Air Force different from what you are presenting here today.

General MCNICKLE. The Air Force asked for both types in discussions with Mr. Packard.

Mr. MAHON. He approved fully the 18 C–130's but he didn't approve the others?

General MCNICKLE. That is right, but during the discussions with Mr. Packard the Air Force agreed to accept the 18 C–130's.

Mr. MAHON. The Air Force decision was overruled with respect to this matter.

General MCNICKLE. Yes, sir; the Air Force request for other than C–130's was not approved.

Mr. MAHON. Was this on the basis of funds or basis of a faulty presentation by the Air Force to the DOD?

General MCNICKLE. I believe the basis for it was an austere budget. If we needed more C–130's, Secretary Packard said we would examine that at a later date.

C–130 AIRCRAFT COSTS

Mr. MAHON. The cost of these C–130's was $43 million in fiscal year 1968; some $48 million in 1969, and you are asking for approximately $51 million in 1970. Each buy involved 18 aircraft. Is the price increase of the C–130 due to any factor other than inflation?

General JEFFREY. In addition to inflation, sir, we would add the costs of a reduced production rate—the airplane would be down to three per month—and also to certain improvements that will be included in those airplanes as a result of operational experience over Southeast Asia.

Mr. MAHON. It would seem that an aircraft that has been in production as long as the C–130 would have had the benefit of learning curve experience, and that this would result in a significant reduction in cost. It looks like either Lockheed or the Air Force is not on the ball here. Why should this escalation take place?

General JEFFREY. It is principally inflation and the numbers of airplanes that are being produced down there.

This production is down, Mr. Chairman, to practically nothing. With that kind of a production rate, the cost is bound to go up.

Mr. MAHON. In my question I mentioned that each buy involved was 18 aircraft.

General JEFFREY. Yes, sir. But there have been certain foreign sales involved which have kept the production rate up a bit higher than this.

General PITTS. Plant loading in the C–130 line at Lockheed was up to a higher number per month. General Jeffrey said the production is down to three per month now. Foreign sales had that line up at a higher production rate in earlier years and, as a result of the reduction of the numbers of aircraft going down that production line each month, each aircraft bears a proportionately higher share of the overhead.

Mr. MAHON. Hasn't Lockheed a big order for modification work on the C–130 that would have kept the load up in the plant?

General TANBERG. They have an order on the center wing section of the C–130 but I believe this would have no bearing on the production line. I would like to ask General Jeffrey if I am correct on that.

General JEFFREY. You are right. As a matter of fact, modification work is done in a different facility down there.

Mr. MAHON. Will you provide for the record the detail involved in the cost increases per C–130 aircraft?

General JEFFREY. Yes sir.

(The information follows:)

DETAIL OF COST INCREASE ON C–130

By utilizing 50 inventory engines that were no longer required to support other programs, the cost of the fiscal year 1968 program was held to approximately $43.2 million. If it had been necessary to procure all new engines, the cost of the fiscal year 1968 program would have been approximately $47.7 million.

Aircraft modifications that have resulted from our experience in SEA include armor plating, fire suppressant foam in the fuel tanks, camouflage paint, and a strengthened center wing section. Nonrecurring and recurring costs for these improvements cost approximately $120,000 per airplane in the fiscal year 1968 buy. Recurring costs in fiscal year 1969 for these improvements cost approximately $91,000 per airplane.

The fiscal year 1970 budget request is an estimate of the program costs which includes recognition of such factors as economic escalation which is taking place, engine improvements which should result in a longer service life, and the possibility of a further reduction in the production rate.

T–38A AIRCRAFT

Mr. MAHON. With respect to the T–38A aircraft, what has been your attrition of this plane in each of the last 3 years? You may provide that for the record.

(The information follows:)

T-38A ATTRITION FOR THE LAST 3 CALENDAR YEARS

	Flying hours	Aircraft destroyed	Destroyed aircraft rate
Calendar year:			
1966	358,001	12	3.4
1967	447,443	13	2.9
1968	512,138	9	1.8
Total	1,317,582	34	2.58

PLANNED T-38A FLYING PROGRAM, 1969-73

	Flying hours	Programed aircraft attrition
Calendar year:		
1969	574,153	14.4
1970	625,065	15.6
1971	640,753	16.0

[1] Advance attrition aircraft are procured on the 2.5 aircraft per 100,000-hour average rate. This is the average rate over the lifetime of the T-38. To date we have not reached that rate.

T-X NAVIGATIONAL TRAINER AIRCRAFT

Mr. MAHON. With respect to the T-X navigational trainer, when will the selection of an aircraft to fill the T-X role be made? How will this decision be made? Do you have requests for proposals out on this aircraft? Since the aircraft has not yet been selected, how was your cost estimate of $14,050,000 per aircraft arrived at? Is this an underestimate of 30 or 40 or 100 percent? What would you estimate?

General JEFFREY. This estimate, sir, was based upon the cost, first, of the type airplane that we believe would be necessary to fulfill this requirement, this being an airplane such as the Douglas DC-9 or the Boeing 737.

In order to train the most economical number of navigators, the airplane is planned to be equipped with 12 individual navigator stations. The airplanes have to be modified extensively to incorporate the electronics equipment necessary to provide this training. Also, the ground flight simulators were included in this cost, so there was a breakout of these various pieces that went into making up this estimate.

Mr. MAHON. You can expand that for the record.

(The information follows:)

We intend to conduct a competitive source selection for the T-X aircraft and the ground simulators. The requests for proposals are being prepared but have not yet been released to industry. We hope to be able to complete the source selection process and select contractors for both the aircraft and simulators by the end of calendar year 1969.

The first year's cost of $28.1 million for the undergraduate navigator training system includes two airplanes modified to provide training positions for 12 navi-

gators at a cost of approximately $6.04 million each; nonrecurring engineering, equipment integration, and testing costs of $7.6 million; four navigator ground training simulator units at a total cost of $6.6 million; and AGE, technical data, etc., $1.8 million.

Our studies have shown that an airplane of the size of a DC-9 or 737 would be the most effective from both a cost and training standpoint. We know the approximate cost of an airframe of this size and have included our best estimate of costs of modifying and equipping the airplane for the navigator training mission. We intend to procure this system by fixed-price contracts, and since there is no R. & D. or equipment development involved we have a high degree of confidence in our ability to acquire the system within the funds we have requested.

Mr. MAHON. What navigational trainers in the present inventory will the T-X replace?

General JEFFREY. The proposed navigator training system consisting of 16 aircraft and 46 ground simulator units will replace 75 T-29's in the undergraduate navigator training program.

Mr. MAHON. Why can't we continue utilization of the present navigational trainers for another year?

General JEFFREY. We are asking for approval for this program to enable us to improve the quality of training being provided our student navigators and at the same time reduce the cost of this training. The T-29's presently being used have been with us since the mid-1950's and neither the aircraft nor their equipment are representative of current operational aircraft. The new system will produce better qualified navigators in a shorter period of time at a lower cost. It will also enable the operational commands to reduce the time they spend qualifying navigators in operational aircraft. Delaying start of this program for another year will delay for another year, the point at which we can expect to start achieving the economies inherent in this program.

Mr. MAHON. How much of the $7,394,000 average unit flyaway cost of T-X is for the aircraft and how much is for the navigation training equipment to be installed?

General PITTS. The average unit flyaway cost of $7.4 million includes $1.4 million for the navigator training equipment to be installed. The basic aircraft is estimated at approximately $4.6 million. The remaining costs are recurring and nonrecurring engineering/integration costs associated with installation of the equipment in the airplane.

Mr. MAHON. What is the total anticipated T-X program? How many aircraft do you propose to buy over what time period? How many ground-based simulators?

General JEFFREY. We propose to buy a total of 16 T-X aircraft and 46 ground simulator units over a 3 year period beginning in fiscal year 1970.

Mr. MAHON. Is the navigation training equipment proposed for the T-X existing navigation equipment or do you plan to develop and procure new equipment for this aircraft?

General JEFFREY. The navigational training equipment to be used in the T-X aircraft is the same equipment used in other Air Force aircraft. No new avionics equipment is being developed for this program.

Mr. MAHON. What is the total Air Force inventory of navigational training aircraft at the present time?

General BOYLAN. At the present time we have 79 T–29 aircraft configured for undergraduate navigator training. An additional 16 T–29's are utilized in support of navigator-bombardier training.

Mr. MAHON. What is the status of the development of the ground-based simulators proposed for the T–X program?

General MCNICKLE. The ground simulators will, in general, duplicate the navigator station aboard the aircraft. Design and fabrication of such simulators will be done by the application of existing simulator technology to this requirement. Requests for proposals have not yet been released to industry.

VALIDITY OF COST ESTIMATE FOR T–X PROGRAM

Mr. MAHON. There seems to me to be some doubt that this requirement is wholly valid at this time.

General JEFFREY. I am prepared to address this subject, Mr. Chairman.

Mr. MAHON. It does seem on a program like this you could make a pretty accurate, reasonably acceptable and accurate estimate of the cost. It will be interesting to read this record if the plane is eventually constructed, to see how accurate it is.

General JEFFREY. We intend to compete this procurement in the immediate future and we plan to make this award some time late during this calendar year.

It will be a very short period of time before we will know how accurate our estimates actually were. We hope within 6 months from this time.

Mr. MAHON. Are there any questions on the navigational training?

Mr. LIPSCOMB. Yes, Mr. Chairman. On the unit cost of which you are estimating over $14 million, does that include everything that goes with these trainers, such as spares?

This is the total request for these two aircraft?

General JEFFREY I have a listing of everything that is included here. It includes the aircraft, the training equipment installed, the integration engineering, both recurring and nonrecurring, anticipated engineering changes, peculiar AGE, training items and technical data. It includes the ground simulators and simulator technical data. Not included here are aircraft spares for $3.4 million.

Mr. LIPSCOMB. Then that raises the unit cost $1.7 million more per aircraft.

Colonel BUCKINGHAM. This really relates to a total buy of some 16 airplanes and some 46 simulators. Here again we are up high on the learning curve, however, there is a lot of modification work related to existing airplanes and using existing equipment. Therefore, we think we can reasonably accurately estimate it on that basis.

Mr. LIPSCOMB. Does this estimate include economic inflation?

General JEFFREY. Yes, sir.

Mr. LIPSCOMB. How much?

General JEFFREY. A total of 5 percent, sir.

Mr. LIPSCOMB. Have you the total program costed out?

General JEFFREY. Yes, sir; we have the total program costed out through 1972 at a figure of ——— million. This is for 16 airplanes and 46 flight simulator units. Plus—I will have to ask my support if spares are included in that figure, sir. Are they?

In addition to that, there would be ——— million for spares. This makes it ——— million. This is our estimate.

Now, I believe it might be appropriate to mention at this time, sir, that these airplanes, these 16 airplanes and trainers are to be used to replace 75 T–29's that are now used in the navigator training program. These are the Convair reciprocating engine trainers that are in the neighborhood of 20 years old. We are replacing 75 with 16. The cost to train a navigator under the present conditions is about $40,000. We expect to be able to train our navigators at a cost of approximately $27,000 each using this new equipment. We expect to amortize the cost of this equipment over a 7½-year period.

Mr. LIPSCOMB. This is a relatively small program when compared with others. From previous experience with contracts, is there any reason to figure in any changes in the size of the aircraft, or technical difficulties in your estimate of cost that you might encounter?

General JEFFREY. We don't anticipate any changed requirement pertaining to the size of the airplane. We are going to buy an airplane off the shelf, hopefully, to do this job. There undoubtedly will be engineering change orders associated with the installation of the navigation equipment and changes concerning the simulators that would be involved, but not the aircraft.

Mr. LIPSCOMB. Is there any research and development necessary for the equipment?

General JEFFREY. No, sir; there is no research and development involved.

Mr. LIPSCOMB. Is all equipment that you are going to put into this plane available?

General JEFFREY. Yes, sir. It will have to be integrated into the airplane and it will have to be engineered to fit it but we don't intend to develop new electronic gear.

Mr. LIPSCOMB. What I would like to see is the total program on this aircraft and have it in the record—what the Air Force is proposing to spend on this program, including everything that you can think of—so that we can follow the program's development, if we begin it.

General JEFFREY. Yes, sir. We will provide those figures. The figures we have given are the figures as we know them now.

Mr. LIPSCOMB. This would be a good exercise for both the Air Force and this committee.

General JEFFREY. It would; yes, sir. Following through and see what happened to it because it is not a long-range program.

(The information follows:)

COST OF OVERALL T–X PROGRAM

The Air Force estimate for this program, including 16 T–X aircraft and 46 ground simulator stations, by fiscal year, is as follows (in millions of dollars):

	Fiscal year—				
	1970	1971	1972	1973	Total
Procurement (above the line)	$28.1	——	——	——	——
Procurement (initial spares)	3.4	——	——	——	——
Total by fiscal year	31.5	——	——	——	——

In addition, some money will be required in fiscal year 1971 for a simulator facility at Mather AFB. However, until a simulator contractor is selected, we will not know the size of the building that will be needed.

UH–1H HELICOPTER

Mr. MAHON. With respect to the UH–1H helicopter, which you are procuring for the South Vietnamese, I would point out that the Army is the managing service for this aircraft and will contract for these aircraft. Why is the Air Force in this picture?

General JEFFREY. Sir, Congress approved an arrangement in 1966 whereby programs that had been funded under military assistance previously for Vietnam, Laos, and Thailand would be funded through the Department of Defense budget by a decision of the Joint Chiefs of Staff and approved by the Secretary of Defense. The specific service was designated to support its counterpart over in Southeast Asia and so, therefore, the Air Force was designated to support the Vietnamese Air Force. That is the reason that these funds show up in the Air Force budget. The Army is actually buying these vehicles. We are ordering them through the Army on a military interdepartmental purchase request.

Mr. MAHON. In what way does the Vietnamese Air Force utilize these helicopters to "cope with insurgency"?

General JEFFREY. The Vietnamese Air Force uses the UH–1H helicopter to rapidly transport Vietnamese Army troops to and from conflict areas. The Vietnamese tactics with the UH–1H closely parallel those employed by the U.S. Army in South Vietnam.

Mr. MAHON. What armament is included on the UH–1H helicopters for the Vietnamese Air Force?

General JEFFREY. Initially all VNAF UH–1H's will be armed with door mounted 7.62 millimeter machineguns. Eventually ——— of these UH–1H's will be equipped with M–21 armament systems which consists of a 7.62 millimeter machinegun and a 7-tube rocket pod mounted on each side of the aircraft.

Mr. MAHON. Does the Vietnamese Air Force utilize these aircraft in combat or are they in supporting roles?

General JEFFREY. Four of the UH–1H's will be assigned to a VNAF special air mission unit. The remainder will be assigned to combat units of the VNAF. Follow-on training and related activities will be accomplished with the helicopters assigned to the combat units.

Mr. MAHON. Will the 79 UH–1H helicopters which were procured for the Air Force's special operations forces eventually be turned over to the Vietnamese Air Force? What would be the effect of the denial of the procurement of the 175 helicopters? Why wouldn't the ——— procured through fiscal year 1969 be enough?

General JEFFREY. The 79 UH–1's procured for the Air Force's special operations forces in fiscal year 1968 and 1969 are UH–1N, twin-engine helicopters. These aircraft will not be given to the Vietnamese.

A quantity of ——— UH–1H's is required through fiscal year 1970, toward a total of ——— UH–1H's planned for full helicopter equipage of the VNAF squadrons. The —— UH–1H's procured through fiscal year 1969 only partially fill the quantity required to allow the Vietnamese to attain self-sufficiency in this force. Disapproval of the additional 175 UH–1H's requested this year would limit VNAF support of their combat operations.

HH–X HELICOPTER

Mr. MAHON. With respect to the HH–X helicopter, you are requesting $14.5 million for 30 of these aircraft. The helicopter has not yet been selected. Will the helicopter be an existing off-the-shelf buy or will it be otherwise?

General JEFFREY. This is going to be a competitive procurement, Mr. Chairman. It could be an off-the-shelf helicopter. However, anybody will be permitted to bid so, therefore, it is not impossible that someone could propose an airplane that is yet to be built.

Mr. MAHON. What is the status of the competition for the HH–X? When do you plan to award the contract?

General JEFFREY. We are currently defining our requirements for a long range program of replacing the aging, less capable HH–43's with the HH–X. Assuming program approval, the Air Force plans to issue the request for proposal (RFP) for this initial quantity of 30 HH–X's by September 1969 with contract award in December 1969.

Mr. MAHON. What has been the situation in local base rescue units since some HH–43 helicopters were diverted to Southeast Asia? Can you point to any loss of life due to the absence of the HH–43's?

General JEFFREY. I will have to do some research and provide that for the record.

Mr. MAHON. Very well.

(The information follows:)

EFFECT OF DIVERTING HH–43'S TO SOUTHEAST ASIA

Deployment of the HH–43 to SEA has necessitated the elimination of local base rescue (LBR) coverage at 13 bases and reduced coverage at five others. We presently have coverage at 67 bases, with requirements for coverage at 50 more. Since August 1968, 43 lives have been lost as a result of aircraft crashes at nine active USAF bases where coverage is authorized but not available. Twelve lives were lost in four crashes at Air Force Reserve and National Guard bases. We cannot state whether or not adequate LBR coverage could have prevented the loss of any of these lives. However, by comparison during 1967 and 1968 local base rescue helicopters responded to 113 crashes involving 245 aircrewmen. Of this number, 142 men were saved and assisted from the wreckage, 63 died in the crashes and 40 men required no assistance.

Mr. MAHON. To what extent are local base rescue helicopters utilized for administrative, training, and missions other than rescue missions?

General BOYLAN. Local base rescue helicopters are used only in rescue missions and the daily training associated with maintaining pilot and firefighter proficiency. The training requirements for the crews are quite demanding due to the high degree of proficiency required.

Mr. MAHON. How can you present a firm price for the HH–X helicopter to the committee if you have not even selected which helicopter you want and have not had the competition to establish the price?

General PITTS. This estimate is based on an appraisal of the current flyaway prices of present or soon to be available twin engine utility helicopters and includes a factor for the firefighting equipment.

Mr. MAHON. How many helicopters are in the Air Force inventory assigned to missions such as those to which the HH–X would be assigned? You may supply that for the record.

(The information follows:)

HH–X MISSION RELATED TO HELICOPTERS IN AIR FORCE INVENTORY

The Air Force currently has 143 HH–43 helicopters assigned to local base rescue missions and 10 assigned to the Air Training Command. The authorized strength is 176, which includes 26 for crew training, command support and attrition.

Mr. MAHON. What is the total Air Force inventory requirement for the HH–X?

General BOYLAN. The Air Force has an approved requirement for 30 HH–X helicopters. The Air Force has in preparation a request to OSD for permission to acquire ——— total HH–X's. This quantity would, over a multiyear procurement, provide LBR helicopters for bases currently without coverage and maintain the authorized inventory as the less capable HH–43's attrit from the inventory.

CH–53C HELICOPTER

Mr. MAHON. With respect to CH–53C, does the fiscal year 1970 request for eight of these helicopters complete your procurement of this aircraft?

General JEFFREY. I am told, sir, there are requirements for CH–53's and HH–53C's in 1971 that are currently being looked at but we are not sure what those requirements are at this time.

Mr. MAHON. The justification indicates that the eight CH–53C helicopters requested in 1970 are being procured for attrition purposes. Have any CH–53 helicopters been delivered? How can you establish meaningful attrition rates in this program at this point in time?

AIRCRAFT MODIFICATION

B–52 AIRCRAFT

Mr. MAHON. We now come to a consideration of aircraft modification. We still have with us the B–52. Prior to the war in Vietnam there were those who were about to write this aircraft off but it has played a very important role in this war.

How much of the $80 million you are requesting for modification of the B–52's is related to the short-range attack missile, the SRAM, as mentioned in your statement?

General PITTS. $40 million, sir.

Mr. MAHON. How much money has been spent per aircraft on modifications of the various series of B-52's which are now in the inventory subsequent to delivery of the aircraft?

General TANBERG. Through fiscal 1969, we spent $2.5 billion on the modification and modernization of the entire B-52 fleet.

Mr. MAHON. That is total?

General TANBERG. That would be on the total buy of B-52's which my figure shows as 744 aircraft.

Mr. MAHON. How does the modification figure compare to the original cost of all these aircraft?

General TANBERG. I would have to give you this by series aircraft, Mr. Chairman.

Mr. MAHON. Supply it for the record, but discuss it generally now.

General TANBERG. The last aircraft we bought, which was the H model, cost us $9.2 million per copy. Midpoint, for example the D model, which is the aircraft that has been modified and is now flying in Southeast Asia, cost us $6.5 million per copy at the time we bought it.

Mr. MAHON. Supply for the record, then, how the cost of modification of the B-52's compared with the cost of acquisition of the B-52's.

(The information follows:)

B-52 MODIFICATION COST COMPARED TO ORIGINAL COST

The original cost for a B-52 by series is as follows:	*Millions*
B-52B	$14.4
B-52C	7.2
B-52D	6.5
B-52E	5.9
B-52F	6.4
B-52G	7.6
B-52H	9.2

Based on the total B-52 buy program of 744 aircraft, the cost of modification and modernization of each B-52 is approximately $3.4 million. This will vary somewhat by series of aircraft.

EFFECT OF SRAM ON B-52 MODIFICATIONS

Mr. MAHON. The original fiscal year 1970 budget proposed $162 million for modification of the B-52's. To what extent is the reduction related to the cutback in the SRAM program?

General TANBERG. The total reduction of $81.5 million for B-52 modifications is all related to the cutback in the SRAM program.

Mr. MAHON. Why wouldn't it be prudent to delay these modifications until the SRAM testing program has been completed?

General TANBERG. The current Air Force proposal is to initiate SRAM production on ———. This will include the go-ahead to begin the necessary actions to begin modification of the B-52 force in order to have the aircraft equipped and ready to accept the SRAM operationally. Based on the current threat estimates the bomber force requires SRAM production to be initiated concurrent with the completion of the development testing program.

Mr. MAHON. To what extent will the B-52 striking force be reduced by this modification? How many aircraft will be modified at a time?

How long will the aircraft to be modified be out of service? How much were you funded through fiscal year 1969 to modify B-52's to carry SRAM?

General TANBERG. In January 1969, $46.4 million had been programed to modify B-52's for SRAM. When the SRAM program slipped, all but $950,000, which was used for production engineering, became available to finance other priority programs. The flow time for the installation of the SRAM modification is ———. The planned input rate is not finalized at this time, however, we intend to accomplish the majority during IRAN or other modifications, thus reducing to a minimum the number out of service specifically for the SRAM modification.

Mr. MAHON. Will the slippage in the SRAM program negate any part of the SRAM modification requirements for fiscal year 1970?

General TANBERG. Yes, sir, the B-52 modification program has been slipped with the SRAM program. The Air Force requested $142.6 million for this modification in fiscal year 1970. This request has been reduced to $40 million to reflect the slipped program.

AGE OF B-52 FORCE

Mr. MAHON. How long are we going to have the B-52 with us?

General MCNICKLE. Probably until it is replaced by the B-1—the AMSA.

Mr. MAHON. In other words, you expect to have the B-52's for some time?

General MCNICKLE. Yes, sir.

General JEFFREY. 1980.

Mr. ANDREWS. General Tanberg, your newest B-52 dates back to October 1962?

General BOYLAN. The last ones were delivered in fiscal year 1963.

Mr. ANDREWS. We have been told that the expected life of a B-52 was about 10 years.

General TANBERG. The age of our B-52 fleet as of today averages 10.3 years.

Mr. ANDREWS. With these modifications, will that add to the 10-year life expectancy?

General TANBERG. Yes; we have various structural mods to the various series of aircraft. As we accrue hours to the safe service life limitations on the older aircraft, as I mentioned the other day, we will have to make the modifications to keep them flying. These are basically structural mods. Some of the modifications in this program, such as the stability augmentation modification for the G and H models, will help to increase their life expectancy.

Mr. ANDREWS. You can't hope to have them much longer than 1975 or 1976, can you? That would be about 13 or 14 years.

General TANBERG. Without some additional mods on the older series aircraft yes, sir, or unless we run into some unknown that we don't know of at the moment, such as a serious corrosion problem or something like that.

Mr. ANDREWS. What about corrosion and other problems incident to tropical weather in Southeast Asia where you have had the B-52's?

General TANBERG. We have had an increased problem with respect to corrosion in Southeast Asia. However, we do have a very active program of corrosion treatment on those aircraft. Conversely, we are flying that aircraft in Southeast Asia at the highest utilization rate that the B-52 has ever flown. At this point in time it is flying about 3 to 4 times the hours that we are flying the same aircraft back here in the zone of the interior.

Mr. ANDREWS. This is the only war in which you have ever used the B-52?

General TANBERG. Yes, sir. It is doing very well.

B-66 AIRCRAFT

Mr. MAHON. With respect to the B-66 modification, it is noted you are requesting $38.8 million. Give us a statement as to the modifications, please, for the record.

(The information follows:)

The $38.8 million on the B-66 line was for four programs. First, to provide for attrition, ——— more RB configured aircraft will be modified to the EB electronics warfare configuration. There was another program to install ———. There was also a program to provide the EB-66 with additional ECM transmitters, oscillators, and antennas for alternate configurations for worldwide contingency operations. Twenty-five million dollars was budgeted to start a program of modernization of the EB-66 Tactical Warfare System. It was to have included the replacement of the J-71 engine with the TF—41 engine and installation of the most advanced electronic warfare systems.

F-4 AIRCRAFT

Mr. MAHON. With respect to the F-4 modifications, will you give us an explanation of this proposal and tell us what would be the effect of postpoining the F-4 modifications? You may provide that for the record.

(The information follows:)

The financing on the F-4 line provides for 14 modifications. The major modifications can be categorized into five general areas: Survivability, bombing improvements, AIMS, ECM, and reconnaissance.

The survivability program provides for adding fire suppressants and extinguishing systems, backup flight controls and the selective installation of armor plate.

The bombing and navigation improvements involve several modifications. Included is the installation of an improved cockpit TV display to enhance the acquisition, lock-on and launch of the Walleye weapon. The F-4's are being provided the capability to carry the AIM-9 missile. ———.

The AIMS program includes the modification of the aircraft to be compatible with the new FAA Air Traffic Control System. ———.

The ECM program includes several modifications. One program will provide for universal pod carriage to permit greater and more flexible ———.

Lastly, the reconnaissance portion includes two modifications. The RF–4C is being provided high resolution cameras to provide imagery from which tactical size targets can be identified. Also, the RF–4s are being provided ———.

All but approximately $5.0 million of the $64.4 million requested for F–4s relate to modifications generated by urgent Southeast Asia requirements. Of these Southeast Asia related modifications, approximately $45 million provides for the continuation or completion of programs begun in prior years. As indicated by the above listing of modifications, the postponement of these programs would have a significant effect on our survivability program and on our badly needed increased capability in bombing, electronic countermeasures, and reconnaissance. A significant portion of the program, not related to SEA, is planned for the AIMS program. The postponement of the financing of the AIMS program would affect our ability to complete the modification on the F–4 by ——— the presently established FAA completion date.

Aircraft Spare Parts

Mr. Mahon. Now we come to the discussion of spare parts.

Will you tell the committee what aircraft the $450 million for initial spares are for?

General Riemondy. I can provide for the record a detailed breakout of all the $450 million, but I might say here that 87.5 percent of the spare parts dollars are for three aircraft, namely, the C–5, the A–7 and the F/FB–111, with the biggest number of dollars tied to the C–5 itself. We have $209.8 million in the 1970 budget to complete the provisioning of the C–5 airplanes which we have bought to date and to start the provisioning for the airplanes which we have in the 1970 budget. The 23 aircraft that we are talking about. Also included in the $450 million is some $83.3 million to support the modification program that General Tanberg was talking about. This constitutes the bulk of these items.

Mr. Mahon. General, we have a rather tidy little sum here of $450 million for initial spares. Was that sum in the so-called "Johnson budget" and was it translated and approved by the so-called "Nixon budget"? Has there been any change in that figure?

General Riemondy. There have been changes to the figure included in the Johnson budget but these changes were tied specifically to the aircraft changes. As the aircraft programs were adjusted from the Johnson to the Nixon budgets, we also adjusted the spares.

Mr. Mahon. What was the original decision of the Air Force with respect to this $450 million requirement? Did you ask for a larger, or smaller sum originally, or did you arrive at a larger or smaller figure originally? Just tell us something about how this decision was arrived at. You are asking us to provide $450 million. How did you decide it?

General Riemondy. Generally speaking, the amount for initial spares that we asked for were computed on a percentage factor basis. We take the acquisition cost of the aircraft, the flyaway cost, and we generally apply a factor against that cost. This then is how we arrive at our budget estimate for initial spares.

Mr. Mahon. We have been talking about initial spares. Now, all spares would require, according to the estimate before us, approximately $935 million.

What is the general explanation of this larger figure?

General Riemondy. We have discussed the $450 million initial spares requirement. The residual $485 million is required to replenish and maintain our spares inventory at the level required to support the flying hour program. Knowing how much it cost to support this

year's program we are able to compute next year's requirement. We can generally break this out by weapon system. The total is quite accurate. In buying, each individual item is reviewed on its own merit prior to placing the order.

Mr. MAHON. If the Congress should reduce by a few hunderd million dollars the spare parts area, would the impact be too significant? I am saying, if we did it for the fiscal year 1970, perhaps it would have an impact in fiscal year 1971, but would there be much damage if we made reductions in this field?

General RIEMONDY. Yes, I think it would be rather false economy at this point in time. The simple reason is that the spares levels we have within the Air Force at the present time to support some 14,000-odd airplanes, and about 9.5 million flying hours, will only support issues for about 2.5 months. We have about 75 days worth of issues on our shelves.

C–5A AIRCRAFT INITIAL SPARES

Mr. MAHON. You are requesting $209.8 million for initial spares for the C–5A. How many initial spares will this buy?

General RIEMONDY. The $209.8 million completes the initial spares provisioning for all of the aircraft in the fiscal year 1970 and prior year procurement program except for the short leadtime items that will not need to be bought until fiscal year 1971. Initial spares are bought as layin support for the aircraft until such time as precise usage experience can be accumulated and the rebuy in the replenishment spares area can take over the continuing support requirement.

Mr. MAHON. In fiscal 1969, when 27 C–5A aircraft were funded, $127.2 million was requested for spares. For fiscal 1970, when 23 aircraft are requested, you want $209.8 million for spares. Is the difference due to price increases? How is the price of initial spares for the C–5A arrived at?

General RIEMONDY. The funds requested for initial spares contain that amount needed to be committed during the fiscal year. In fiscal year 1969 we did not ask for all initial spares funds required to support the 27 aircraft procured in that year because we did not need to commit and obligate some of the funds until fiscal year 1970. To have asked for these funds in fiscal year 1969 would have accumulated idle dollars. Budget requirements are derived from factors based on prior experience. During the procurement process, the price of each individual item is determined through negotiation.

VALUE OF AIRCRAFT SPARES AND REPAIR PARTS INVENTORY

Mr. MAHON. What was the value of the aircraft spares and repair parts inventory of the Air Force, at the end of fiscal 1968 or at the latest date for which you have this information?

General RIEMONDY. The value of the aircraft spares and repair parts at the end of fiscal year 1968 was $5.40 billion, excluding spare engines and auxiliary power units and items worn out but not yet disposed of.

Mr. MAHON. How does the inventory compare with the 3 years previous? You may provide that for the record.

(The information follows:)

COMPARISON OF AIRCRAFT SPARES AND REPAIR PARTS

Inventory comparison for 3 previous years excluding spare engines of auxiliary power units (APU's) and items worn out but not yet disposed of:

Fiscal year:	*Dollars in billions*
1968	5.40
1967	5.35
1966	5.31
1965	5.47

SPARES RELATIONSHIP TO AIRCRAFT INVESTMENT AND FLYING HOURS

Mr. MAHON. In the hearings last year, on page 398 you provided a tabulation which indicated that the spares level as a percentage of aircraft investment, had been reducing at the same time flying hours were increasing. Would you submit a similar statement for the record this year?

General RIEMONDY. Yes, sir; I will.

(The information follows:)

The ending fiscal year 1968 aircraft spares and repair parts inventory totals $7.5 billion, a slight increase to fiscal year 1967 levels. This consists of worldwide levels of recoverable items, and Logistics Command stocks of spare engines, spare auxiliary power units, and expendable items. In analyzing inventory assets fluctuations and trends, segregation of these segments allows comparison of true spares requirements to aircraft supported.

The trend of the pure spares and repair parts inventory, (excluding engines, items worn out but not yet disposed of, and auxiliary power units is portrayed and compared to the aircraft investment and flying hours supported on the following chart.

	Fiscal year						
	1964 actual	1965 actual	1966 actual	1967 actual	1968 actual	1969 projected	1970 projected
Aircraft (in billions of dollars)	27.03	27.88	28.73	30.10	30.57	(1)	(1)
Spares (in billions of dollars)	5.94	5.47	5.31	5.35	5.40	(2)	(2)
Flying hours (in millions)	6.66	6.67	6.82	7.53	8.07	8.52	8.96

[1] Not yet computed.
[2] In fiscal year 1969/70 repair parts procured in another appropriation. Projected inventories not identifiable to aircraft missile, and other programs.

Note: As indicated, our fiscal year 1965 spares level equating to 19.61 percent of aircraft investment has been reduced to 17.66 percent in fiscal year 1968. During the same period we have supported a 21 percent increase in flying-hour program, which is scheduled to further increase in fiscal years 1969 and 1970.

TOTAL SPARES AND REPAIR PARTS IN AIR FORCE BUDGET

Mr. MAHON. Last year, on page 396 of the hearings, you provided a tabulation indicating the total aircraft spares and repair parts in the Air Force budget request, not only in the aircraft procurement appropriation, but in other appropriations. Would you provide similar tabulation, showing the relationship of fiscal 1970 to the previous years?

(The information follows:)

SPARES AND REPAIR PARTS

[In thousands of dollars]

	Fiscal year 1968	Fiscal year 1969	Fiscal year 1970
Initial weapon system spares	285,100	386,100	359,300
Initial modification spares	93,200	90,000	83,300
Initial common AGE spares	5,000	6,500	8,000
Total, initial spares	383,300	464,600	450,600
Replenishment spares	923,000	457,000	485,000
Total, spares and repair parts	1,306,300	921,600	935,600

Note: Consumable spares and repair parts provided for in other appropriations in fiscal years 1969 and 1970 are not specifically computed separately against aircraft, missile and other programs, therefore accurate data to compare 1969 and 1970 total to 1968 and prior are not available.

SPARES FOR F–111 AND B–52 MODIFICATIONS

Mr. MAHON. How much of the $83.3 million for spare parts in support of the modification program is in support of modification of the F–111's? How much is in support of modification of the B–52's?

General RIEMONDY. The fiscal year 1970 spares requirements to support F–111 and B–52 modifications equate to $12.1 and $5.5 million respectively.

UNOBLIGATED BALANCES FOR AIRCRAFT SPARES

Mr. ADDABBO. General, getting back to your statement that you have about 75 days' worth of issues on your shelves. The $935 million worth of spares will be put on stock shelves——

General RIEMONDY. We are buying constantly as the wearout progresses.

Mr. ADDABBO. Have you had any carryover from the last fiscal year?

General RIEMONDY. A rather small amount of unexpended dollars.

Mr. ADDABBO. How much is a small amount?

General RIEMONDY. The question was, how many dollars did we carry forward from 1968 into 1969? From an obligation standpoint, sir, contractually obligated, we were close to 100 percent obligated in the replenishment spares area. I would say we were in the area of 90 percent obligated in the initial spares area. For the most part, all these dollars are working.

Mr. ADDABBO. There was some carryover?

General RIEMONDY. I can provide for the record the exact amount of unobligated dollars from 1968 that we carried forward into 1969.

Mr. ADDABBO. You say you had obligated dollars. Are they contracts that can be canceled?

General RIEMONDY. We can always terminate a contract. We actually have contracts in being.

Mr. ADDABBO. What contracts do you have in being?

General RIEMONDY. The list of them? I could provide that, but it would be a rather voluminous thing because we have thousands and thousands of contracts behind these spares.

Mr. ADDABBO. Are these contracts constantly reviewed?

General RIEMONDY. The spares program is constantly under review, both by my office and the Chief of Staff for Supply at the Air Force Logistics Command who is responsible for having these contracts effected. The contracts are under constant review.

I personally conduct a review quarterly. So, every time we go to make another buy, the requirements are reviewed in considerable detail.

Mr. ADDABBO. Are they also reviewed with the other services for interchangeable spare parts?

General RIEMONDY. Yes. This is generally accomplished through the DSA organization, specifically the Defense Logistics Services Center (DLSC). They have a record of all long supplies of the 4 million-odd stock items we have in the total defense inventory.

Mr. ADDABBO. No further questions.

Mr. MAHON. Place in the record, please, the unobligated balances at the end of the last 5 fiscal years for spares.

(The information follows:)

SPARES, UNOBLIGATED CARRYOVER, HISTORICAL END YEAR DATA

[Dollars in millions]

	Program	Commitment	Percent	Obligated	Percent	Unobligated	Percent
Fiscal year 1968 as of June 30, 1968:							
Initial spares	$407.3	$406.6	99.8	$354.2	87.0	$53.1	13.0
Replenishment spares	923.0	923.0	100.0	884.2	95.8	38.8	4.2
Fiscal year 1967 as of June 30, 1967:							
Initial spares	384.8	382.6	99.4	335.6	87.2	49.2	12.8
Replenishment spares	919.6	919.5	100.0	882.9	96.0	36.7	4.0
Fiscal year 1966 as of June 30, 1966:							
Initial spares	270.3	262.9	97.3	201.4	74.5	68.9	25.5
Replenishment spares	894.7	894.7	100.0	822.1	91.9	72.6	8.1
Fiscal year 1965 as of June 30, 1965:							
Initial spares	194.8	166.5	85.5	127.9	65.7	66.9	34.3
Replenishment spares	464.8	464.8	100.0	444.3	95.6	20.5	4.4
Fiscal year as of June 30, 1964:							
Initial spares	209.6	143.8	68.6	124.3	59.3	85.3	40.7
Replenishment spares	400.0	398.9	99.7	359.7	89.9	40.3	10.1

Note: The unobligated funds in both initial and replenishment equate to the paperwork processing time required between commitment and obligation, since both programs were better than 99.4 percent committed by yearend. It is doubtful if the obligation rates now being experienced can be increased, since the unobligated funds percentages equate to 33 working days processing time on initial and only 10.2 working days in the replenishment program. In initial spares, this time is required for the processing agency to validate/negotiate contractor proposed price data. In replenishment, the time relates to contractor acceptance. In either case, the current obligation rates clearly indicate that maximum utilization is being made of every available dollar and that there are no nonutilized funds remaining at yearend.

AIRCRAFT SUPPORT EQUIPMENT AND FACILITIES

COMMON GROUND EQUIPMENT

Mr. MAHON. With respect to aircraft support equipment and facilities, we come to a discussion of the common ground equipment. You are requesting $84.5 million for common ground equipment. This is only slightly less than last year's request but is considerably more than the level in previous years. Do you think we have reached a new plateau of around $92 million in common ground equipment, and to what extent is the equipment purchased through open competition?

General RIEMONDY. I think we will have a requirement for fewer dollars in this area in future years, Mr. Chairman. There are several

items included this year which are rather expensive items individually and for which I don't think there will be a recurring demand.

Mr. MAHON. Do you have in this area of requirement, and are you proposing financing here within this fund we are talking about, the C–5A loader?

General RIEMONDY. No, that would be financed out of the 3080 appropriation, "Other procurement," and I understand we will be reviewing that next week.

Mr. MAHON. That would be in the category of "Other procurement?"

General RIEMONDY. Yes, sir; and we will be discussing that next week.

In response to the second half of your question, most of the common ground handling equipment is procured competitively.

Mr. MAHON. We were told last year that the large increase was based from the fact that you were short in the previous year. Have we overcome that shortage?

General RIEMONDY. Yes, sir; to a substantial degree it has been overcome.

Mr. MAHON. To what extent is the $84.5 million for common ground equipment for the procurement of equipment needed for new weapon systems, and to what extent is it for the replacement of existing equipment in kind?

General RIEMONDY. About $79.8 million is required to provide initial equipage for newer type weapon systems entering the inventory. The remaining $4.7 million is to replace items which are worn out.

Mr. MAHON. Do you replace this equipment primarily because it is worn out or because newer and more efficient equipment becomes available?

General RIEMONDY. Common ground equipment is replaced because it is worn out. We do not retire useable items merely because newer or improved items come on the market. However, as more sophisticated weapon systems (aircraft) enter the inventory, new, different items of ground equipment are required since similar items in use are not capable of supporting the new system.

Mr. MAHON. What would be the effect of deferring the replacement of present common ground equipment this year?

General RIEMONDY. The equipment is worn out and it must be replaced or repaired. It will cost more to repair than it is worth.

GENERAL PURPOSE AUTOMATIC TEST SYSTEM

Mr. MAHON. How much are you requesting in fiscal year 1970 for the general purpose automatic test system?

General PITTS. $20.6 million is in the fiscal year 1970 budget for the general purpose automatic test system.

COMPONENT IMPROVEMENT

Mr. MAHON. Now with respect to component improvements, what major benefits have been achieved through the component improvement program in the past year?

General JEFFREY. During the past year certain problem areas occurred during SEA operations which required immediate correction. As an example, on the T56 engine (used in C–130 aircraft) excessive wear on parts in the reduction gear box was a primary cause for premature removals. The component improvement program (CIP) worked in this area to correct this difficulty. Another example, the J79–10/17–19 (used in F–4 aircraft) being put into operational use have resulted in the normal identification of weaknesses that occur when introducing new systems into the inventory. A specific problem was a stall flame out condition in certain areas of the operating envelope; a correction was developed and is being incorporated. Work will continue on the J79 engine toward developing a full 1200 hour time between overhaul (TBO) capability goal for this engine.

The CIP program is a continuous effort and the results cannot be identified with or limited to a specific year of CIP effort. For example, records indicate that we have increased the TBO on the T56 engine from the original 150 hours to 3200 hours on the current production engine over the past 5 years.

It is, therefore, understandably difficult to point out during any specific year what might be an accomplishment during that period.

Mr. MAHON. What are the major items included in the $42 million for which you are requesting for component improvement in 1970? Provide that for the record.

(The information follows:)

MAJOR ITEMS IN COMPONENT IMPROVEMENT BUDGET

[In millions of dollars]

Item nomenclature	*Fiscal year 1970*
T–56 turboprop engine (C/HC–130)	$1.8
TF–41 turbofan engine (A–7)	3.7
T–76 turboprop engine (OV–10A)	1.5
J–69 turbojet engine (T–37, BQM–34)	.5
J–79 turbojet engine (F–4)	1.5
J–85 turbojet engine (T–38, F–5, A–37, C–123, C–119)	1.5
T–58 turboshaft engine (UH–1V, CH–3C)	1.0
T–64 turboshaft engine (HH–53)	1.8
TF–30 turbofan engine (F/FB–111)	23.4
T–400 engine (UH–1N)	1.0
T–53 turboshaft engine (UH–1H)	.1
Other equipment	4.2
Total	42.0

Mr. MAHON. How far do you go under component improvement, in modifying aircraft engines? At what point does an engine modification change the engine to the extent that it is essentially a new engine and should be funded under R.D.T. & E.?

General JEFFREY. The component improvement program is used to correct service revealed problems on a priority basis with the highest priority given to the correction of safety of flight and mission essential items. After an engine has been qualified with R.D.T. & E. funds (150-hour qualification test), CIP funds are used to correct the problems that occur when this aircraft engine is introduced into the inventory. Engines are qualified on a test stand under the best possible simulated flight conditions; we have never been able to completely simulate all the actual problem areas that will occur during the early

operational flights of the aircraft. The Air Force has been using its component improvement program funds in accordance with DOD instructions which do not permit the uprating of engines under the component improvement program. There is no distinguishable point at which engine modification changes make the engine essentially a new engine. The continued correction of problems revealed during service use will normally over an extended period of time always result in some increased engine performance.

MAJOR INDUSTRIAL FACILITIES

Mr. MAHON. Will you discuss industrial facilities and tell us whether or not there are any brick and mortar constructions in the $38.5 million you are requesting for industrial facilities? Is there any funded under weapon systems?

General JEFFREY. Sir, there are none identified in the first part of your question. There are some involved in weapon systems. We had discussed this previously with the committee. We have indicated that, upon occasion certain facilities have been built as a part of our weapon system program, without prior knowledge of the committee.

I have testified that the Air Force has made a determination that this sort of thing will no longer be done and that we are preparing procedures to see to it that the committee—that the Congress is advised ahead of time in connection with this kind of thing and we were asked previously to provide copies of those procedures for the record, which we are doing, sir.

Mr. MAHON. At what installations of what contractors are you proposing major industrial facilities funded anywhere in the aircraft procurement account? Provide a list for the record.

(The information follows:)

MAJOR INDUSTRIAL FACILITIES FUNDED BY AIRCRAFT PROCUREMENT

Major industrial facilities projects, those over $500,000, requested in the aircraft procurement account include (1) nonrecurring, capital-type maintenance to Government-owned industrial real property and production equipment at the following locations:

Air Force Plant No. 4, General Dynamics, Ft. Worth, Tex.
Air Force Plant No. 3, McDonnell Douglas, Tulsa, Okla.
Air Force Plant No. 6, Lockheed, Marietta, Ga.
Air Force Plant No. 14, Lockheed, Burbank, Calif.
Air Force Plant No. 29, General Electric, West Lynn, Mass.
Air Force Plant No. 36, General Electric, Evendale, Ohio.
Air Force Plant No. 59, General Electric, Johnson City, N.Y.
Air Force Plant No. 43, AVCO, Lycoming Division, Stratford, Conn.
Air Force Plant No. 42, various contractors at the Air Force flight test facility, Palmdale, Calif.

(2) Replacement/modernization actions for Government-owned machine tools are planned at the following contractor locations: Bendix Corp., Teterboro, N.J.; Cleveland Pneumatic Co., Cleveland Ohio; General Dynamics Corp., Ft. Worth, Tex.; General Electric Co., Evendale, Ohio; and Convair Division, General Dynamics Corp., San Diego, Calif.

INDUSTRIAL PLANT EQUIPMENT

Mr. MAHON. In its report on the fiscal year 1969 DOD appropriation bill, the committee discussed at length the industrial plant equipment inventory of DOD. It was stressed at that time that the military

departments could effect significant savings in this are by encouraging private contractors to invest their funds in plant equipment modernization. What studies have you made in approaching the overall problem discussed in the committee report last year concerning industrial plant equipment?

General JEFFREY. Air Force Regulation No. 78-24 was issued on August 28, 1968, and it established the criteria for the industrial equipment modernization and replacement program. The program is designed to assure a modern industrial base which is necessary to meet current and future Air Force production, research, development, and mobilization requirements.

This regulation contains the following requirements:

(a) Contractors will be encouraged to replace old, inefficient Government-owned equipment with privately owned modern equipment. Air Force-financed replacement/modernization projects will be considered only after the contractor has stated in writing that he is unable or unwilling to replace the Government-owned equipment and continued Government-ownership of the machine tools is in the best interest of the Government.

(b) Only those contractors participating in the Air Force Industrial Mobilization Production Planning Program and listed, or in the process of being listed, in the Register of Planned Emergency Producers will be considered under the program.

OTHER PRODUCTION CHARGES

Mr. MAHON. You are requesting $101.3 million for "Other production charges." What are the major quick reaction capability projects included in this amount?

General JEFFREY. Sir, within the $101.3 million requested for other production charges $11.8 million has been requested for quick reaction capability projects. These funds are programed against providing limited quantities of x band kits for our in-service ECM pods ——— and an initial production quantity of a control box for our later generation ECM pods.

Mr. MAHON. What part of the $101.3 million is for classified projects?

General PITTS. Sir, $1.2 million of the $101.3 million is for "classified projects."

Mr. MAHON. How many ECM pods for what aircraft will you procure with the $50.1 million budgeted for this purpose in other production charges?

General MCNICKLE. Sir, we will procure 275 ECM pods with the $50.1 million requested in "Other production charges" for this purpose. These pods will be utilized primarily on F/RF-4 and F-105 aircraft.

SPARE AIRCRAFT ENGINES

Mr. MAHON. How many spare aircraft engines are in the Air Force inventory and what is the approximate value of the inventory?

General JEFFREY. As of December 31, 1968, there are 27,728 spare engines with a value of $1.898 billion.

Mr. MAHON. How many aircraft engines will be purchased with 1970 funds?

General PITTS. 346 propulsion engines and auxiliary power units costing $110.2 million will be purchased with fiscal year 1970 funds.

Mr. MAHON. A February 1969 draft report by the General Accounting Office on spare aircraft engine requirements, indicates that the fiscal year 1969 planned procurement of new aircraft engines, could have been reduced by about $35.5 million, $13.4 million in the Navy and $22.2 million in the Air Force if, in computing requirements, duplicate quantities for similar or identical contingencies had not been included. Has the Air Force made any recent studies, to determine the necessity or the validity of the depot stocks, and safety level factors used in the computation of aircraft engine requirements?

General JEFFREY. Air Force engine requirement computation procedures do not contain provisions for duplicative quantities. In responding to this GAO report, the Air Force pointed out the need for and the rationale behind the requirements computations methods used. The procedural techniques involved are currently under study by the Worldwide Engine Logistics Planning Board, however, it is expected that no quantitative reductions can be made. The Air Force intends to continue its policy of limiting engine procurement to the minimum essential necessary to support mission requirements.

Mr. MAHON. Of the total spare engine requirement, how many are to meet a safety level factor and how many are to fulfill a depot stock factor?

General RIEMONDY. Of the 346 engines/auxiliary power units programed to be procured in fiscal year 1970, approximately 55 are for the depot stock level and 74 are for the base safety level. Since engine failure rates are based on averages, many periods are encountered when failures or removals exceed the average. If these engines are not procured, it is highly probable that otherwise serviceable aircraft will be awaiting base or depot buildup and availability of serviceable engines during these cycles of higher demand.

Mr. MAHON. What is the cost for those engines to be purchased to satisfy the safety level factor and to satisfy the depot stock factor?

General PITTS. Approximately $17.5 million for depot stock and $23.5 million for base safety level.

INDUSTRIAL PLANT EQUIPMENT

Mr. ADDABBO. In your industrial facilities you are replacing obsolete Government-owned machine tools. Are these tools in the possession of the Air Force or in the possession of different manufacturers?

General JEFFREY. These tools are principally in the possession of industrial concerns at this time, sir.

Mr. ADDABBO. As a member of the Select Committee on Small Business, we have had small business machine tool manufacturers come before us and testify, that they have many of the tools which the Government is buying and providing to large manufacturers. They claim that small business is hurting because the Government is not looking to see if these same tools are available in private industry through small businesses.

Also it has been pointed out that the tools which the Government is providing to these large manufacturers are being used for purposes other than for work under the Government contract. Have you looked into this?

General JEFFREY. Yes, sir. We look into this continually. Our principal effort in the machine tool area is that of replacing old, obsolete, or wornout equipment with items of new equipment.

This is only done on the basis of the amortization of this equipment over a 3-year period from the time from which it is procured. There is a very minimum program for adding any new equipment to any of these Government-owned facilities.

It is a program we watch very carefully.

Mr. ADDABBO. Isn't it a fact that if the equipment is being used for other than Government purposes it is being wornout at a greater rate than if it is only being used for the Government work?

General JEFFREY. Sir, we recognize that this equipment is used for other purposes. We wouldn't want it to set idle in the various contractor plants and under the circumstances where this condition occurs, the contractor in question pays the Government rent for this.

I have the rental rates here for the different types of equipment. It goes for equipment at zero to 2 years old. Say, for instance, at 3 percent, and equipment that is from 2 to 3 years old at 2 percent and this sort of thing.

Incidentally, these rates have recently been increased since last year.

Mr. ADDABBO. Is it a fact that there is no control kept on this equipment as far as maintenance is concerned? If the equipment is destroyed or lost by the company, there is no penalty attached to it?

General JEFFREY. Control is kept on this equipment, sir. We watch very closely the condition of the equipment, the care that is exercised by the company on this equipment, through facilities contracts that the Air Force has with these people.

Mr. ADDABBO. Is the company responsible if the Government equipment is damaged or lost in any way?

General JEFFREY. If this is through his own fault, yes sir.

Mr. ADDABBO. You speak of $17 million for rehabilitation of plant facilities. Is this Government facilities or private facilities?

General JEFFREY. These are Government facilities, sir.

Mr. ADDABBO. Thank you, no further questions.

(Discussion off the record.)

Mr. MAHON. Mr. Minshall.

MISSION SUPPORT AIRCRAFT

Mr. MINSHALL. General, the Air Force ordered 11 Handley Page twin turboprop aircraft known as the Jetstream. The total cost of these aircraft is said to be $5.9 million. The Jetstream is a British-built aircraft. Funds for this procurement were appropriated for fiscal year 1967. At the time of the testimony before the committee, the discussion of just which aircraft might be procured for the mission support role gave no indication that any consideration was being given to foreign aircraft. The aircraft was at that time referred to as the "CX" and the Beech King Air was the example given of the type of aircraft requested. A statement was made that the King Air, a Mooney aircraft, and the Aero-Turbo Commander were the aircraft being considered. Describe the procurement competition and tell the committee what the bids were of the other competitors and tell the committee what the bid was of the Handley Page Co.

Also at the outset, would you tell us the date of the order?

General JEFFREY. Mr. Minshall, this was a competitive procurement for this small utility airplane. Beech was one of the competitors. I have forgotten the other competitors. The RFP was put out to anybody who had the capability to provide the airplane. Handley Page was one of these competitors. The British Government had been advised prior to this procurement that in the event such a procurement was undertaken, that they would be permitted to bid, this having to do with reciprocal purchase arrangements between the two countries, as I understand it.

Mr. MINSHALL. Namely the F–111.

General JEFFREY. This was one of the items; yes, sir.

Mr. MINSHALL. Was this part of the package, the reason that you purchased the Handley Page aircraft, because the British were going to buy F–111's?

General JEFFREY. The arrangement was that they would be permitted to bid in the competition for this utility type of airplane, and this related to the fact that the British had bought a number of F–4's and they were at that time scheduled to buy a number of F–111's. There was not any agreement that we would buy any Handley Page airplanes as a reciprocal arrangement for what the British were buying from this country.

Mr. MINSHALL. Are you sure of that?

General JEFFREY. Yes, sir; I am positive of this.

Mr. MINSHALL. You do not think that Mr. McNamara or others might have made other arrangements?

General JEFFREY. No, sir. If I might be permitted to proceed.

Mr. MINSHALL. Yes, sir.

General JEFFREY. In the competition which finally narrowed down to Beech and Handley Page, the proposal of Handley Page presented an airplane that was technically superior to that of Beech and at a lower price.

Handley Page was awarded this contract solely on the basis of what they proposed. There were no other considerations involved.

Mr. MINSHALL. Will you supply the bids for the record?

(The information follows:)

PROCUREMENT COMPETITION FOR MISSION SUPPORT AIRCRAFT

On July 10, 1967, requests for proposals (RFP's) were sent by the Air Force to nine companies (Aero Commander, Beech, Cessna, Fairchild Hiller, Handley Page, Helio, Mooney, Piper and Swearingen). North American and de Havilland also asked for copies of the RFP, which were furnished to them. Responses to the RFP's were received from only two contractors (Beech and Handley Page). After thorough evaluation and separate negotiation with each contractor, the contract award to Handley Page was announced on December 22, 1967. The negotiated prices for 11 aircraft, and associated training and data were: Handley Page—$4,692,834; Beech—$5,930,464.

Mr. MINSHALL. Also provide for the record a statement, as to the performance specifications of the respective aircraft.

General JEFFREY. The respective airplanes and with respect to the requirements that were established.

Mr. MINSHALL. Yes.

(The information follows:)

PERFORMANCE SPECIFICATIONS FOR MISSION SUPPORT AIRCRAFT

The request for proposal stipulated that the aircraft to be acquired must have a Federal Aviation Authority type certificate prior to delivery of the first aircraft. Other requirements and desires were identified as goals so as to minimize changes to the basic aircraft. Both of the proposed aircraft met the minimum requirements of the RFP. The Beech airplane was to be certified at 12,500 pounds, the upper limit of FAR 23. The Handley Page aircraft was to be certified at 14,500 pounds under the provisions of FAR 25. FAR 25 certification requirements are more stringent in such areas as structural integrity, systems safety and reliability. In addition to the price advantage and a significantly larger passenger/cargo area, the Handley Page aircraft possessed some potential for increasing its maximum gross weight without recertification.

Mr. MINSHALL. What are your plans for acquiring additional aircraft of this model?

General JEFFREY. We have no firm plans to acquire additional quantities of the Handley Page C–10A at this time. We feel there is a need for approximately 68 additional aircraft of this type over the next several years to replace C–47's and C–54's in the military assistance advisory groups (MAAG's), military groups (MILGP's) in Latin America, and the Attaché system. These aircraft were last produced in 1945, and we feel that their replacement is becoming a matter of some urgency. If further airplanes of this type are procured, we intend to complete them.

Mr. MINSHALL. What is the delivery schedule for these 11 aircraft?

General JEFFREY. These airplanes are currently scheduled to be delivered—the schedule is in the process of negotiation at the present time—which indicates that the first one of these airplanes will probably be delivered in October of this year, with deliveries completed in March 1970.

Mr. MINSHALL. Why has it taken from December 1967, when the contract was signed, until October 1969 to receive your first delivery of this aircraft?

General JEFFREY. I don't recall the details, Mr. Minshall, but I will provide the answer for the record.

(The information follows:)

The slippage was caused by a combination of problems—production difficulties, overweight condition, undesirable stall characteristics, and delays in obtaining Air Worthiness Registration Board/Federal Aviation Administration certification.

Mr. MINSHALL. You described them as a utility aircraft and/or a mission-support aircraft.

General JEFFREY. Yes, sir.

Mr. MINSHALL. What is the specific role of a utility aircraft of this type and/or mission support? How will you use it in the Air Force?

General JEFFREY. This was to be a 12-passenger airplane, an airplane that could carry passengers or a limited cargo on an interchangeable basis. Hopefully, it would be used to replace such things as the old C–47's and miscellaneous airplanes of that sort and operate on a much more economical basis, with about a 1,500 mile range with 12 passengers.

Mr. MINSHALL. Will you supply for the record what your situation is as of today on mission support aircraft of this type in your inventory?

(The information follows:)

We have approximately 53 C–47's, U–3's and C–54's in various support activities (exclusive of military assistance advisory groups, military groups, and attaché aircraft) for which a C–10 type aircraft would be suitable replacement.

Mr. MAHON. Thank you very much, gentlemen.

The committee will recess until 2 p.m.

AFTERNOON SESSION

MISSILE PROCUREMENT, AIR FORCE

WITNESSES

LT. GEN. MARVIN L. McNICKLE, DEPUTY CHIEF OF STAFF, RESEARCH AND DEVELOPMENT
MAJ. GEN. T. S. JEFFREY, JR., DIRECTOR OF PRODUCTION AND PROGRAMING, DEPUTY CHIEF OF STAFF, RESEARCH AND DEVELOPMENT
MAJ. GEN. L. F. TANBERG, DIRECTOR OF MAINTENANCE ENGINEERING, DEPUTY CHIEF OF STAFF, SUPPLY AND SERVICES
BRIG. GEN. WILLIAM F. PITTS, DIRECTOR OF BUDGET, HEADQUARTERS, U.S. AIR FORCE
BRIG. GEN. A. A. RIEMONDY, DIRECTOR OF SUPPLY AND SERVICES, DEPUTY CHIEF OF STAFF, SUPPLY AND SERVICES
COL. WILLIAM J. GROSSMILLER, DIRECTORATE OF AEROSPACE PROGRAMS, DEPUTY CHIEF OF STAFF, PROGRAMS AND RESOURCES
COL. T. H. ISLEY, DIRECTORATE OF PRODUCTION AND PROGRAMING, DEPUTY CHIEF OF STAFF, RESEARCH AND DEVELOPMENT
COL. DAN D. OXLEY, DIRECTORATE OF PRODUCTION AND PROGRAMING, DEPUTY CHIEF OF STAFF, RESEARCH AND DEVELOPMENT
LT. COL. WAYNE S. SCHMIDT, DIRECTORATE OF DEVELOPMENT, DEPUTY CHIEF OF STAFF, RESEARCH AND DEVELOPMENT

MISSILE PROCUREMENT, AIR FORCE

"For construction, procurement, and modification of missiles, rockets, and related equipment, including spare parts and accessories therefor, ground handling equipment, and training devices; expansion of public and private plants, Government-owned equipment and installation thereof in such plants, erection of structures, and acquisition of land without regard to section 9774 of title 10, United States Code, for the foregoing purposes, and such land, and interests therein, may be acquired and construction prosecuted thereon prior to the approval of title by the Attorney General as required by section 355, Revised Statutes, as amended; reserve plant and equipment layaway; and other expenses necessary for the foregoing purposes, including rents and transportation of things; [$1,720,200,000.] *$1,486,400,000* to remain available until expended. (*5 U.S.C. 3109; 10 U.S.C. 2271–79, 2353, 2386, 2663, 2672, 8012, 8062, 9501–02, 9505, 9531–32, 9741–42; 31 U.S.C. 649c, 718; 40 U.S.C. 523; 50 U.S.C. 451–62; Department of Defense Appropriation Act, 1969; additional authorizing legislation to be proposed.*)"

MISSILE PROCUREMENT, AIR FORCE

PROGRAM AND FINANCING (IN THOUSANDS OF DOLLARS)

	Budget plan			Obligations		
	1968 actual	1969 estimate	1970 estimate	1968 actual	1969 estimate	1970 estimate
Program by activities:						
Direct:						
1. Ballistic missiles	253,800	442,900	447,000	183,610	418,800	460,600
2. Other missiles	128,903	128,500	115,900	109,100	111,200	119,300
3. Modification of in-service missiles	237,400	177,100	176,600	211,607	195,300	174,300
4. Spares and repair parts	113,300	108,400	87,100	102,802	109,600	88,000
5. Other support	690,797	782,900	790,200	680,011	792,700	784,500
Total, direct	1,424,200	1,639,800	1,616,800	1,287,130	1,627,600	1,626,700
Reimbursable:						
1. Ballistic missiles	6,500	.....	.....	5,171	.....	.....
2. Other missiles	5,800	857	1,428	4,606	1,000	1,400
3. Other support	38,426	1,940	2,135	30,623	3,100	2,100
Total, reimbursable	50,726	2,797	3,563	40,400	4,100	3,500
Total	1,474,926	1,642,597	1,620,363	1,327,530	1,631,700	1,630,200
Financing:						
Receipts and reimbursements from:						
Federal funds (—)	−47,351	−1,797	−2,563	−49,563	−1,297	−2,313
Trust fund accounts (—)	−3,298	−1,000	−1,000	−2,968	−1,000	−1,000
Non-Federal sources (—)	−76	.....	.....	−187	.....	.....
Unobligated balance available start of year (—):						
For completion of prior year budget plans	.....	.....	.....	−226,109	−350,560	−335,957
Available to finance new budget plans	.....	.....	−105,400	.....	.....	−105,400
Reprogramming from prior year budget plans	−25,000	−25,000	−25,000	.....	.....	.....
Unobligated balance transferred from other accounts (—)	.....	.....	.....	−63	.....	.....
Unobligated balance available, end of year:						
For completion of prior year budget plans	.....	.....	.....	350,560	335,957	300,870
Available to finance subsequent budget plans	.....	105,400	.....	.....	105,400	.....
Budget authority	1,399,200	1,720,200	1,486,400	1,399,200	1,720,200	1,486,400
Budget authority:						
Appropriation	1,340,000	1,720,200	1,486,400	1,340,000	1,720,200	1,486,400
Transferred from other accounts	59,200	.....	.....	59,200	.....	.....
Appropriation (adjusted)	1,399,200	1,720,200	1,486,400	1,399,200	1,720,200	1,486,400
Relation of obligations to outlays:						
Obligations incurred, net	.....	.....	.....	1,274,812	1,629,403	1,626,887
Obligated balance, start of year	.....	.....	.....	987,703	874,675	1,034,078
Obligated balance, end of year	.....	.....	.....	−874,675	−1,034,078	−1,125,965
Outlays	.....	.....	.....	1,387,840	1,470,000	1,535,000

OBJECT CLASSIFICATION (IN THOUSANDS OF DOLLARS)

	1968 actual	1969 estimate	1970 estimate
Direct obligations:			
Transportation of things	2,840	3,900	3,900
Equipment	1,284,290	1,623,700	1,622,800
Total, direct obligations	1,287,130	1,627,600	1,626,700
Reimbursable obligations:			
Transportation of things	3,700	590	504
Equipment	36,700	3,510	2,996
Total, reimbursable obligations	40,400	4,100	3,500
Total, obligations	1,327,530	1,631,700	1,630,200

SUMMARY OF REQUIREMENTS

[In thousands of dollars]

Activity	Fiscal year 1968 actual	Fiscal year 1969 estimates	Fiscal year 1970 estimates
Ballistic missiles	$253,800	$442,900	$447,000
Other missiles	128,903	128,500	115,900
Modification of in-service missiles	237,400	177,100	176,600
Spares and repair parts	113,300	108,400	87,100
Other support	690,797	782,900	790,200
Total, direct program requirements	1,424,200	1,639,800	1,616,800

SOURCES OF FINANCING OF PROGRAM YEAR REQUIREMENTS

[In thousands of dollars]

	1968	1969	1970
Program requirements	1,424,200	1,639,800	1,616,800
Reprograming to or from (—) prior year budget plans	—25,000	—25,000	—25,000
Unobligated balance available to finance new budget plans	0	105,400	—105,400
Transfer from "Other accounts"	—59,200	0	0
Appropriation	1,340,000	1,720,200	1,486,400
Transfer from "Other accounts"	+59,200	0	0
Appropriation adjusted	1,399,200	1,720,200	1,486,400

Mr. MAHON. Will you proceed, General?

STATEMENT OF LT. GEN. MARVIN L. McNICKLE

General McNICKLE. Mr. Chairman, I will now present the Air Force missile procurement program for fiscal year 1970. This program is summarized in table II, and contains strategic missiles, air-to-surface missiles and air-to-air missiles. It also includes funds for target drones.

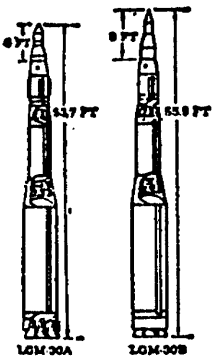
TABLE II.—*Fiscal year 1970 missile procurement estimates*

[In millions of dollars]

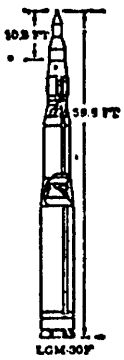
Type	*Estimates*
Minuteman II/III, strategic ICBM	$447.0
SHRIKE, antiradar	9.5
SRAM, air-to-ground	20.4
Standard arm, antiradar	23.5
Sparrow, air-to-air	43.8
Target drones, drone	18.7
Modifications	176.6
Spare and repair parts	87.1
Other support equipment and facilities	790.2
Reimbursable program	3.6
Total program	1,620.4
Less estimated available financing	130.4
Reimbursements	3.6
New authorization required	1,486.4

The required funding for this missile procurement program is $1.6168 billion which also includes the required aerospace ground equipment and services to support these programs. We anticipate a reimbursable program in fiscal year 1970 in the amount of $3.6 million which brings the total program to $1.6204 billion. To support this fiscal year 1970 procurement program for missiles, equipments, and services, new authority of $1.4864 billion is required. The balance of the financing will draw on the $3.6 million reimbursement program, a planned recoupment of $25 million from prior year funds, and $105.4 million available from the unobligated balance in fiscal year 1969.

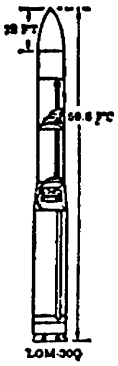
Minuteman II/III



Minuteman I



Minuteman II



Minuteman III

Our fiscal year 1970 ballistic missile procurement program is primarily the Minuteman III missile system. In fiscal year 1969, we made our initial procurement of Minuteman III missiles for the operational force. These improved strategic missiles will be deployed in the Minuteman wings.

The initial operational capability of the Minuteman III is scheduled for the near future, but the initial buildup of these missiles will be slower than was contemplated in the earlier fiscal year 1970 budgets. The basis for this revised deployment schedule is to reduce the concurrency of development and production in the Minuteman III program. In so doing, we will be able to develop greater confidence in the system before returning to increased production schedules.

As the Minuteman III program proceeds, we are continuing to modernize the current Minuteman force by replacing Minuteman I missiles with the more advanced Minuteman II. The Minuteman II provides us with substantial improvements in range, payload, accuracy, and flexibility of targeting. By July 1, 1969, our Minuteman force of 1,000 missiles will consist of Minuteman I and Minuteman II missiles. The Minuteman force modernization will continue with the introduction of the new Minuteman III until the schedule is completed. At that time we will have only Minuteman II and Minuteman III missiles in the force.

The fiscal year 1970 budget includes funds for Minuteman III missiles and related equipment at a cost of $447 million.

SUCCESSES OF THE CIVILIAN SPACE PROGRAM

Mr. MAHON. Before you proceed further, let me ask you a quick question. Do you think the spectacular success of NASA in the space program in which man on two occasions has orbited the moon, tends to lend credence to the reliability estimated for the Minuteman and the various missiles of the Army, Navy, and the Air Force?

General MCNICKLE. Yes, sir. I think you are aware, Mr. Chairman, that the contractors involved in the NASA space effort are the same contractors which are building the Navy, Army, and Air Force mis-

siles. I think the difference is that the Minuteman missile has a tougher requirement when you push the button the Minuteman must go, where with the NASA launches they have a weeklong countdown and if something shows up they can fix it and get back on the countdown again.

Mr. MAHON. It is a bit comforting to me, however, that the space program efforts have succeeded so well.

General MCNICKLE. Fabulously.

Mr. MAHON. It indicates that our technology in the field of space and rocketry has to be very good.

General MCNICKLE. Yes, sir.

Mr. MAHON. You may proceed.

OTHER MISSILES

General MCNICKLE. The fiscal year 1970 procurement program for air-to-air missiles, air-to-ground missiles, and target drones is based on projected training requirements, currently reduced Southeast Asia consumption, and the maintenance of minimum sustaining production rates. The funds requested for this procurement total $115.9 million, and provide for continuing procurement of Shrike, SRAM, standard ARM, and Sparrow missiles, as well as target drones for aircrew training.

SHRIKE (AGM–45A)

The Shrike is a Navy-developed antiradiation missile designed to detect and destroy enemy ground radars by homing on their source of radiation. It is currently carried on our F–105 and F–4 aircraft. This missile has been operational in Southeast Asia since April 1966 and has been used extensively. The versatility of this missile has been improved. We are also obtaining improved warheads and rocket motors which increase the operational effectiveness of these missiles. We are requesting $9.5 million in fiscal year 1970 to procure Shrike missiles.

SRAM (AGM–69A)

The short-range attack missile (SRAM) is an air-to-surface missile with a nuclear warhead. It is being developed to increase aircraft survivability by providing a standoff missile for suppressing enemy defenses. The missile will be compatible with modified B–52's, FB–111's, and the advanced manned strategic aircraft (AMSA).

The fiscal year 1970 SRAM procurement request is $20.4 million for long-lead-time items. This amount will protect our option to enter into production at a later time when we will have greater assurance that the entire system is meeting all of its requirements. In deferring the SRAM production, we have had to increase the SRAM development funds in fiscal year 1970 to cover the increased costs of development in the absence of the previously contemplated production program. I will describe what we are doing in the SRAM development program in my fiscal year 1970 R.D.T. & E. budget statement.

STANDARD ARM (AGM–78A)

The standard antiradiation missile (ARM) is an improved missile developed for joint service use in the detection and destruction of

enemy ground radar installations. This missile was deployed to Southeast Asia. The standard ARM is carried by the F–105F. We are requesting $23.5 million in fiscal year 1970 to procure standard ARM missiles.

SPARROW (AIM–7E/F/G)

The Sparrow is a Navy-developed air-to-air guided missile which we are using on the F–4 aircraft. Two models of the missile are in the current inventory: the AIM–7D, which is used for crew qualification training; and the AIM–7E, which is in use in Southeast Asia.

Production go-ahead of the AIM–7F missile is scheduled for the future. This missile has improved reliability and performance and it will be carried on the F–4E aircraft. We also plan to initiate procurement this year of the ground equipment to support the AIM–7G on the F–111 aircraft.

The fiscal year 1970 program is for a quantity of Sparrow missiles at a cost of $43.8 million. This includes the ground-support equipment for the AIM–7G.

TARGET DRONES

Target drones are airborne vehicles which can be used to simulate subsonic and supersonic enemy aircraft. They are used by the Air Force to develop air-to-air missile tactics, to train aircrews in air-to-air missile intercepts, and to test and evaluate our aircraft and missile weapon systems. The fiscal year 1970 budget includes $18.7 million for target drones.

MODIFICATIONS

Funds requested for modification of inservice missiles and updating of inproduction missile systems total $176.6 million for fiscal year 1970. These funds will permit us to continue the Minuteman force modernization program which includes the ground electronic system (operating ground equipment), depot maintenance ground equipment, and training equipment. In addition, we are updating the Minuteman I and II weapon systems to improve their capabilities, reliability and safety. Of the total request, $166.6 million is planned for the Minuteman weapon system. The remaining $10 million will be used to improve the performance, reliability, and safety of other missiles in the inventory.

SPARE AND REPAIR PARTS

The fiscal year 1970 program for missile spare parts and repair parts is $87.1 million. This amount provides support for all guided missiles in the Air Force inventory. Initial spare and repair parts account for $54.3 million. The total amount for initial spare parts is allocated as follows:

	Million
Minuteman (72 percent)	$50.4
Titan	.4
Others	3.5
Total	54.3

The other missiles include air-to-air and air-to-surface missiles described earlier as well as missiles which are in the inventory but no longer in production. Replenishment requirements total $32.8 million.

OTHER SUPPORT EQUIPMENT AND FACILITIES

The last missile category is "Other support equipment and facilities" for which we are requesting $790.2 million. This category includes industrial facilities funds to replace obsolete Government-owned production equipment and to provide for capital-type maintenance for Air Force industrial property and equipment. It also includes funds for the manufacturing methods program, operational space activity support, and other charges.

SUMMARY

In summary, the Air Force missile procurement program request for fiscal year 1970 totals $1.6204 billion for those missiles and that missile support essential for maintaining our military posture. Of that amount, $130.4 million will be obtained from recoupments and the available fiscal year 1969 unobligated balance. In addition, $3.6 million in reimbursements will be applied to finance the program. The remaining $1.4864 billion requires new authority for fiscal year 1970.

Mr. Chairman, this concludes the missile procurement program request. I would now like to highlight the progress the Air Force has been able to make in our management procedures.

HIGHLIGHTS OF PROGRESS IN MANAGEMENT

In fiscal year 1968, the Air Force supported a flying hour program 27 percent greater than in 1961, and with 11 percent fewer aircraft. During the same period, the spares inventory has been reduced 14 percent, and 400,000 fewer line items are stocked in the support system. The long supply inventory has been reduced by nearly 30 percent and there are 4 percent fewer personnel in our major systems and logistics activities. This improvement in output over input has been accomplished with an aircraft fleet that is growing progressively older and, more significantly, under wartime conditions in which repair and modification programs have significantly increased. The fact that we have been able to achieve this higher level of efficiency is a tribute to the hard work and dedication of our people in the field who have provided outstanding support under very difficult conditions. The Air Force is, of course, continuing its efforts to improve its logistics management systems.

The integrated weapon support management of multiservice aircraft programs is an example of the type of progress we are making. Through the use of joint support lists (a list of items having application to specific multiservice weapons systems), integrated managers are accounting for 7,000 F–4 items, 8,000 A–7 items, close to 1,000 OV–10 items, and 5,000 for the UH–1 helicopters. Further, the A–7 joint planning and scheduling group is continuing to examine the A–7 airframes, components, and accessories to determine the best way to assign depot support responsibilities.

Another example of improved logistics management is the Air Force recoverable assembly management system which came into full operation during the past year. This system provides up-to-date information on the condition and location of approximately 77,000 types of recoverable assemblies which are cycled for repair through our

depot level maintenance facilities. These assemblies are valued at $5 billion. The Air Force has also continued to improve and expand upon its standard base level system. We have also applied stringent controls to commodity and funds management. Semiannual reviews of supply requirements and buy programs are conducted by Headquarters, USAF, and Air Force Logistics Command teams to assure the best use of available resources. Even so, funds for aircraft spare parts are critically short and procurement of additional stocks have been deferred to remain within available funding. Any additional deferrals or drawdown of stocks can be expected to have an adverse effect on operational capabilities.

The Air Force has also been able to do an outstanding job in keeping the older aircraft in its inventory flying. The age of our active aircraft inventory is increasing and where 34 percent of the fleet was at least 9 years old in 1964, 56 percent of our aircraft have passed that age today. The problems of aging aircraft have become even more acute as we deferred modernization programs and concentrated our resources on urgent Southeast Asia requirements. To cope with this situation, we have developed improved diagnostic techniques to find potential structural problems at the earliest possible time. We credit these techniques with saving lives and facilitating aircraft maintenance activities. We are now in the process of repairing structural cracks in the wings of F–100, C–130 and A–1 aircraft—key aircraft in our Southeast Asia operations.

Southeast Asia requirements have also necessitated extensive modifications to many of our aircraft to extend their service lives or to adapt them to new roles. The T–37, C–47, C–119, C–130, and C–121 are examples of aircraft that have been modified and used in new roles. In some cases we have reclaimed aircraft from storage. All of this, of course, has placed heavy demands on our aircraft modification funds. Since 1966, the modification program solely in support of Southeast tion of the total modification funds available.

In still another example of progressive management, the Air Force, along with the other services, has initiated a life cycle costing program which takes into consideration maintenance and supply management costs. One aspect of life cycle costing is consideration of "service life" in the procurement of nonreparable equipment. We have already procured a large quantity of tires for the F–100, F–102 and F–106 aircraft on a "cost per landing" basis. In this case, we paid about 12 percent more in price and we expect to get about 62 percent more landings. This one procurement of 15,000 tires will reduce future tire requirements by more than 9,000 and save the Air Force some $600,000.

We have made improvements in several other areas. Significant improvements have been made in small purchase procedures wherein increased surveillance and emphasis by management personnel have minimized the possibility of overpricing of small purchases. We have also concentrated on improving our policies and procedures for procuring and pricing technical data. And, the Air Force has also placed increased emphasis on its industrial readiness and mobilization production planning program with the objective of assuring the delivery of equipment in peacetime and the capability to respond to the increased needs of wartime.

In summary, the Air Force is making progress in managing its resources so as to yield maximum utility. We are doing this through intensive management efforts to cope with the effect of rising costs and through the application of new management technology for more rapid responses and reduced inventory levels.

And now, Mr. Chairman and members of the committee, I will be most pleased to respond to your questions.

Appropriation Funding

STOCK FUND TRANSFERS

Mr. Mahon. The fiscal year 1970 appropriation request for "Missile procurement, Air Force" is $1,486,400,000. A total of $1,720,200,000 was appropriated last year. No transfers from the stock funds into this account are proposed. Considerable sums are transferred from the stock funds into the "Aircraft procurement" account. Why aren't some funds transferred to "Missile procurement"?

General Pitts. Basically, because most of the assets which were capitalized into the stock fund, from which these transfers were made available, were taken from the spares program previously funded from the "Aircraft procurement" account.

The number of items capitalized from this account—"Missile procurement"—was minimal. Therefore, the cash transfers were reflected in the "Aircraft procurement" account.

PROGRAM CHANGES

Mr. Mahon. The justifications, on page 3, indicate that the $105,400,000 will remain unobligated at the end of the fiscal year and will be available to finance a part of the fiscal 1970 program. What program changes occurred to make the $105,400,000 available?

General Pitts. Two, basically: The decision to defer initial production of SRAM and the reduction in the Shrike and Standard Arm. I have the amounts involved for those.

Mr. Mahon. Supply that for the record.

(The information follows:)

Missile Procurement Program Changes

[In millions of dollars]

	Amount
SRAM	$58.2
Titan	.2
Shrike	5.2
Standard arm	34.8
Spares (SRAM)	4.1
Other	2.9
Total	105.4

Mr. Mahon. In view of these program changes which resulted in a lessening requirement for funds in fiscal 1969, if everyone had had 100-percent foresight, could Congress have reduced this appropriation last year by an additional $105,400,000 without adverse effect on your current program?

General Pitts. I don't believe so, sir, because we would have had to reduce our procurement quantities. It was the reduced buy quantities that caused these fund reductions. With hindsight, we might have at that time, but we did not anticipate it.

Mr. MAHON. They were not anticipated?

General PITTS. No, sir.

Mr. MAHON. If everyone had had the information that they now have, with hindsight, would it have affected your program to have made those reductions?

General PITTS. No. I see what you are getting at. These reduced quantities of the Shrike and Standard Arm missiles are the consequence of the reduction of activity in Southeast Asia. The deferment of SRAM prouction was due to the rocket motor problem which was not known at that time. The answer to the question is "No."

Mr. MAHON. Last year, witnesses who appeared before the committee insisted that the entire $1.7 billion requested was needed in order to fund the Air Force missile procurements necessary to support our national defense objectives. Since $105 million was not needed during the fiscal year, that was not entirely the case. It was as we knew it at the time, but it did not turn out to be.

General PITTS. That is true, but it is because things happened since that decision was taken. It is reduced activity in Southeast Asia, and the motor problem with the SRAM missile which caused us to deter production on that missile.

FIRMNESS OF ESTIMATES

Mr. MAHON. With this kind of change in mind, how certain can we be of the firmness of the $1,500 million request for fiscal 1970?

Isn't it likely that similar program changes will occur which will indicate a lesser funding requirement in 1970 also?

General PITTS. No sir; at this point in time we do not foresee any changes in the program.

As you know, we go through quite a scrub down procedure between the Air Force and DOD prior to coming to the Congress with the President's budget. As we feel right now, this account has been thoroughly scrubbed down.

TRANSPORTATION COSTS

Mr. MAHON. What is the basis for your estimate of $3.9 million for "Transportation of things"? This is the same sum proposed for the current fiscal year in which a larger procurement program was carried out. With a smaller program, shouldn't this amount be reduced?

Geneal PITTS. No. This amount of dollars connected with transportation of things is a factored amount and is based on historical data.

The factored amount we used in 1969 and 1970 was a factor of something like 2.48 percent. The reason the amounts remain the same for 1969 and 1970 is the total direct obligations are nearly equal.

BUDGET REVISION

Mr. MAHON. Review at this time the items deleted from the original fiscal 1970 budget of $1,794 million. This is a reduction of $307,600,000. What items were deleted from the program of the January budget?

General PITTS. The major portion of this reduction is associated with the Minuteman and SRAM program? There is some $135 million connected with the reduction in the Minuteman III buy from ——— missiles, and the deferment of the production on the SRAM, some $153 million. The two other small items are a reduction in the Sparrow quantity, totaling some $9.6 million, and a reduction of a classified program of $10 million. This totals to $307.6 million.

Mr. MAHON. Do you consider the reductions to be acceptable?

General PITTS. Yes, sir.

UNOBLIGATED BALANCE

Mr. MAHON. Place a tabulation in the record at this point showing the original estimate of the unobligated balance in this appropriation and the actual unobligated balance for fiscal years 1963 through 1968.

(The information follows:)

MISSILE PROCUREMENT APPROPRIATION—UNOBLIGATED BALANCES

[In millions of dollars]

	Fiscal years					
	1963	1964	1965	1966	1967	1968
Original estimate	152.1	343.7	328.8	186.1	320.4	266.8
Actual	363.8	333.4	714.9	315.3	226.1	350.6

EXPENDITURES

Mr. MAHON. You estimate that expenditures from this account will total $1,535 million in fiscal 1970. Will you break down this amount to show the part of the expenditures from appropriations made in various fiscal years? Also include comparable information for fiscal years 1968 and 1969.

General PITTS. Yes, sir.

(The information follows:)

EXPENDITURES/MISSILE PROCUREMENT APPROPRIATION

[In millions of dollars]

	Expenditures		
	1968	1969	1970
Program year:			
1966 and prior	197.1	33.3	10.4
1967	681.6	178.3	16.4
1968	509.1	659.2	226.2
1969	0	599.2	763.6
1970	0	0	518.4
Total	1,387.8	1,470.0	1,535.0

UNEXPENDED BALANCES

Mr. MAHON. What are the unexpended balances in this account estimated for fiscal years 1969 and 1970 and what were the actual unexpended balances in fiscal years 1963–68?

Place that in the record.

(The information follows:)

Unexpended balance missile procurement appropriation

[In millions of dollars]

UNEXPENDED BALANCES

	Amount
Estimated:	
Fiscal year 1969	1,475.4
Fiscal year 1970	1,426.8
Actual:	
Fiscal year 1963	1,362.5
Fiscal year 1964	1,335.8
Fiscal year 1965	1,730.8
Fiscal year 1966	1,257.4
Fiscal year 1967	1,213.9
Fiscal year 1968	1,225.2

Mr. MAHON. How accurate have been your estimates of unobligated balances over the past 5 years for which actual figures are available?

General PITTS. Except for years when we had some radical changes in programs, we believe we have been fairly accurate. Years that come to mind are 1963 and 1965. In 1963 we had a difference of some $211 million connected with the cancellation of the Skybolt program. In 1965, some $386 million difference and that was in connection with the Minuteman II force modernization slip of 6 months. Other than that, the estimates have been fairly good.

SKYBOLT AND HOUND DOG PROGRAM EXPENDITURES

Mr. ANDREWS. General, how much was spent on the Skybolt program?

General PITTS. I will supply that for the record.

Mr. ANDREWS. The missile that preceded Skybolt, the Hound Dog, also supply these costs for the record.

General PITTS. Yes, sir.

(The information follows:)

Skybolt expenditure/Hound Dog expenditure

DEVELOPMENT AND PROCUREMENT COST

[In millions of dollars]

Program:	Amount
Skybolt	$414.8
Hound Dog	705.0

HOUND DOG PROGRAM

Mr. ANDREWS. Has Hound Dog been phased out?

General PITTS. No, sir; the Hound Dog is active in the force today on the B-52 aircraft.

Mr. ANDREWS. What success have you had with the Hound Dog?

General PITTS. Fairly good success. That is a fairly reliable system. SAC places a lot of credence in it.

Mr. ANDREWS. I was under the impression the Skybolt was to follow Hound Dog.

General PITTS. It was. We had high hopes for the Skybolt program but as you know, it was canceled. We do have the technology.

(Discussion off the record.)

COST OVERRUNS

Mr. MAHON. According to the best information available in the Air Force today, do you anticipate cost overruns in the missile programs presented in the 1970 budget which would invalidate the estimates which you are presenting to Congress for fiscal year 1970?

General PITTS. I do not think so at this time, sir. We feel our estimates are fairly good. We are reviewing our program and will probably have a better handle on our estimates after apportionment. As of right now we do not anticipate any problems.

Mr. MAHON. Are there any general questions in regard to the Air Force missile program before we go into more specific programs?

MINUTEMAN PROGRAM

MINUTEMAN III PROGRAM REDUCTIONS

Mr. LIPSCOMB. Yes, Mr. Chairman. General McNickle, I believe I heard you say, when you were reading from your statement about the Minuteman, that the program was reduced for budgetary reasons. Did I hear you correctly?

General MCNICKLE. Yes, sir.

Mr. LIPSCOMB. When did you come to that conclusion? As I read your statement earlier, it said that the basis for this revised deployment schedule is "to reduce the concurrency of development and production in the Minuteman III program."

General MCNICKLE. That was the result of the reduction.

Mr. LIPSCOMB. In so doing we will be able to develop greater confidence in the system before returning it to increased production schedules?

General MCNICKLE. That is right.

Mr. LIPSCOMB. Are you saying if you could get all the money you wanted, you would go ahead with it without developing the greater confidence? Is that what you mean?

General MCNICKLE. No. What happened is that we were looking for money. This program was identified at the same time the SRAM was for reduction. We did not argue or rebut this. We agreed in a meeting with Mr. Packard that this could be done and we would be able to get more test shots off at the time. I think the number of missiles fired since then have shown that we could have gone ahead at that rate. However, at that time we did not have enough shots off to argue that we should have the full production rate.

Mr. LIPSCOMB. Do you have any problems with the development of the Minuteman III now?

General MCNICKLE. No, sir.

Mr. LIPSCOMB. No problem.

General MCNICKLE We have had six firings ———. I am sure as time goes on we will have some random problems; but the way the tests are going now we could have gone ahead. However, we agreed with the decision and did not rebut because we recognized the need to take some money out of our overall program.

Mr. LIPSCOMB. I was not reading and listening at the same time. At what place in your statement did you insert this budgetary problem?

General MCNICKLE. I took out the words "schedule is to," and put in the words, "was budgetary but will reduce."

Mr. LIPSCOMB. I got the impression somehow or other, but evidently it is not so, that it was more than a budgetary problem with the Minuteman III.

General JEFFREY. No, sir. As a matter of fact, Minuteman III has been a very successful program. As General McNickle indicated, out of 6 firings that have occurred, ———. As a matter of fact, yesterday a Minuteman III was fired at the Eastern Test Range ———. We would be happy to supply all of these for the record.

(A classified statement was submitted.)

Mr. LIPSCOMB. So you can say now that you have no problem either in the development or your production schedule.

General JEFFREY. I would say we have no significant problems. I would like to qualify that. I am sure there are the usual problems that go along with this sort of thing.

Mr. LIPSCOMB. And the reduction in the program was strictly and entirely budgetary.

General JEFFREY. Yes, sir.

General MCNICKLE. Except at the time of the decision we had only fired two missiles. Such a small sample was not sufficient to justify going for full-rate production. That is why we accepted it, but we thought we ought to have more firings for confidence.

Mr. LIPSCOMB. The budgetary problem that you say you have here will permit you to develop greater confidence in the system.

General MCNICKLE. The slowdown in the production rate will give us more test shots relative to the number of fielded missiles during that period of time and hence more confidence in the system as the missiles come off the line. It will also reduce the impact of the retrofit requirements that might surface early in the program.

General JEFFREY. That is the sort of comment you could make with regard to most any system at that point in its life.

Mr. LIPSCOMB. In light of some of the testimony that is not a bad approach to take these days.

General JEFFREY. Agreed, sir.

Mr. LIPSCOMB. Thank you, Mr. Chairman.

Mr. MAHON. Are there any further general questions in regard to the missile program?

MINUTEMAN PROGRAM

If not, with reference to Minuteman, the Minuteman procurement program has been reduced from a total of $552.4 million in the January budget to $447 million. The quantity of Minuteman missiles to be procured has been reduced from ———. Your statement indicates that the basis for this revised deployment schedule is to reduce the concurrency of development and production in the Minuteman III program. What is the new deployment schedule as compared with the old deployment schedule? How was the delivery schedule changed?

General JEFFREY. The old deployment schedule called for a rate of ——— per year. The new schedule reduces that rate to ——— missiles per year for the first wing, ———. The initial operational capability of one flight of 10 missiles at that wing was scheduled to be ———. This reduced production rate will still permit the operational capability to be met. However, it will slip the end date for a period of ———.

this being from ——— until ——— assuming we go back up to the higher rate.

Mr. MAHON. Will this slip in the deployment schedule alter our strategic nuclear capability to a significant extent?

General JEFFREY. It will probably result in some ——— missiles that could otherwise be on a target, we estimate. To answer another way, to the extent of possibly ——— missiles.

Mr. MAHON. In your statement, General McNickle, you indicated that the Air Force is continuing to replace Minuteman I with Minuteman II missiles. Are you requesting any funds for the procurement of Minuteman II missiles with fiscal 1970 funds?

General JEFFREY. No; there are no funds for the procurement of Minuteman II missiles in the 1970 budget.

MODIFICATION OF MINUTEMAN II MISSILES

Mr. MAHON. Under "Modification of inservice missiles" you are proposing to obligate $80.2 million for the modification of Minuteman II missiles. What is proposed in this modification program? How many missiles are involved, what sites are involved? Will you put that in the record please?

What kinds of contracts do you have for these modifications? Will you add that also to the material placed in the record?

General JEFFREY. Yes, sir.

Mr. MAHON. Also indicate to what extent there is competition in the Minuteman modification program.

(The information follows:)

MODIFICATION OF MINUTEMAN II/NUMBERS INVOLVED, SITES, CONTRACTS, COMPETITION

Funds requested in the fiscal year 1970 request are not for the modification of missiles per se; but are for the modification of other items associated with the Minuteman force such as reentry vehicles, penetration aids, ground power system, equipment in the launch control facility, and launch facility (silo). Site activity is planned for wing V (Warren AFB, Wyo.) for updating the power system, at wing VI (Grand Forks, N. Dak.) for incorporating an ultra-high-frequency radio launch system for use with the airborne command post, and at Hill Air Force Base, Utah, to modify the missile assembly and checkout equipment associated with the Minuteman III.

Usually fixed-price-incentive-fee-type contracts are used for this effort.

Since the cost of developing the technical knowledge and the procurement of tooling would be prohibitive, most modifications are accomplished by the original manufacturer.

MINUTEMAN III MODIFICATION PROGRAM

Mr. MAHON. A total of $84 million was programed in fiscal 1969 and $85.4 is proposed in fiscal 1970 for the modification of Minuteman III. What modifications are required? To what extent is this modification program concerned with the missile itself, and to what extent with the siting of the missiles? How many Minuteman III systems will be modified for the $85.4 million? How many Minuteman III missiles have been delivered to date and what deliveries are anticipated during fiscal 1970?

General JEFFREY. Our Minuteman modification program for fiscal 1970 falls into two principal categories: One, that of updating which, in the normal sense of the word as we use it in connection with air-

plane modifications, is the term that would apply here. We refer to this as updating of missiles. In the 1970 budget the number of dollars associated with the updating program is $59.7 million. This money is to convert ——— MK–I, to MK–IA penetration aids, to convert ——— MK–11B's to MK–11C, RV's, for use on Minuteman II, correct specific deficiencies in the launch control centers and launch control facilities, and to update training equipment, tools and test equipment to the Minuteman III configuration. I have a breakout of each of these. The second principal part of the Minuteman modification program would be what we refer to as "force modernization."

The money involved here amounts to $104.6 million in 1970, which would procure ——— hardware ———. These funds procure the hardware necessary to convert that wing from the Minuteman I to the Minuteman II/III configuration and also provides for site activation costs of ——— on the reduced deployment schedule that we referred to a bit earlier; that is, ——— to the ——— missile per year deployment schedule. It also provides for Minuteman III trainers and certain miscellaneous equipment such as data, periscopes, et cetera, including Class IV modification of $2.3 million. This amounts to a total modification figure for fiscal 1970 of $166.6 million.

Mr. LIPSCOMB. General, when you go into one of these programs, from I to II, or from II to III, or work on the modification or changing the configuration, how long is a silo nonoperational?

General JEFFREY. We generally figure that the sequence would keep about ——— of them down at a time.

(Discussion off the record.)

Mr. LIPSCOMB. Does this mean you will have probably ——— out?

General JEFFREY. At one time. ———. Throughout the entire wing there would be approximately ——— down at any one time.

Mr. LIPSCOMB. That would be out of your total force which consists, by July 1, 1969, of ——— Minuteman I and ——— Minuteman II.

General JEFFREY. Sir, this would be ——— out of the ——— Minuteman I force.

Mr. LIPSCOMB. By July 1, 1969, how many of that force would be fully operational?

General JEFFREY. By July 1, 1969, sir?

Mr. LIPSCOMB. Yes.

General JEFFREY. We expect to have a full 1,000 force operational by that time ———.

Mr. LIPSCOMB. They would be fully operational and capable.

General JEFFREY. They are running somewhere in the neighborhood of ——— percent operational, excluding this force modernization period. There are a number of missiles that are down for maintenance, having the guidance and control sections changed, or something of this nature. I cannot say that all 1,000 are in commission at one time.

Mr. LIPSCOMB. How do you keep track of those so you know how many are ready to go?

General JEFFREY. These are known every minute at the Strategic Air Command Headquarters. Each one of the wings reports on a continuous basis into SAC Headquarters at Omaha as to the status of the force. Every time one goes off alert that is immediately reported to SAC Headquarters. There are some that also go down for scheduled maintenance on a periodic basis. This can be predicted. Of course, this is very important.

This information is also reported directly in here because when anyone of them goes off a target, something else has to be put on to cover it.

Mr. MAHON. Did you say that when a missile or a number of missiles are under repair or not operational, the targets which the missiles are designed to handle are retargeted to other missiles?

General JEFFREY. I said when any significant number of them are taken down, that this is done. I cannot answer your question specifically with regard to one missile. I have been told it is on every missile.

Mr. LIPSCOMB. You do not mean the priority of the target is changed every time a missile goes down.

General JEFFREY. Sir?

Mr. LIPSCOMB. Every time you have a missile off alert, you would not target another missile.

General JEFFREY. I am told we target something else to it. It might be an airplane.

Mr. MAHON. Let the colonel talk on this.

Colonel GROSSMILLER. We have primary and alternate target capability. There are prime targets, maybe ——— different missiles, set to go against that target. When the primary missile goes off alert, an alternate missile will pick up from another target, which may be the ——— missile on that particular target. This is for the Minuteman I, which has a ——— capability.

Minuteman II has ——— capability, which gives more flexibility to make these changes.

General JEFFREY. These can be retargeted from one to another right there. It is a selected targetable arrangement.

Colonel GROSSMILLER. The changes are immediately reported to the SAC Command Post and here in Washington.

Mr. MAHON. Will any part of the $85 million you are requesting for modification of Minuteman III missiles be used to modify missiles procured with fiscal 1969 funds?

General JEFFREY. No, sir.

Mr. MAHON. Are you modifying Minuteman II missiles scheduled to be replaced with Minuteman III missiles?

General JEFFREY. No, sir; Minuteman III missiles are not programed to replace Minuteman II missiles.

USE OF PROCUREMENT FUNDS FOR MISSILE DEVELOPMENT

Mr. MAHON. To what extent are you performing R.D.T. & E. efforts on the Minuteman III missile with modification funds in the procurement account?

General JEFFREY. I am told that there are no procurement funds being used for R. & D.

Mr. MAHON. A report of the GAO dated May 7, 1969, states that during the period 1964 to 1967, the Air Force awarded supplemental agreements for a product improvement program totaling $22.5 million to the three Minuteman missile motor contractors. Although these agreements were financed from missile procurement funds, most of the work performed involved R. & D. effort rather than product improvement. It was found that the disclosure and approval

procedures of Air Force Procurement Instruction 59–500 had not been followed.

This R. & D. was performed without the usual and appropriate reviews to determine whether or not the work was of a higher priority than unfunded R. & D. projects.

What action has been taken to discourage further funding of R. & D. work with procurement funds?

General JEFFREY. May I ask Colonel Oxley to address this question?

Colonel OXLEY. Sir, appropriate action has been taken to preclude this from happening again.

Mr. MAHON. Would you place in the record just specifically what those actions are?

(The information follows:)

Air Force Regulation 170–3, dated March 28, 1968, was published which clearly delineates the circumstances for the use of R.D.T. & E. and production funds for "product improvement" purposes.

Air Force Systems Command and Air Force Logistics Command were requested to review their existing programs for propriety of funding and report those instances where fund applications were not appropriate. (None were reported.)

Since the fiscal year 1968 budget submittal specific details covering each "product improvement" proposal have been submitted to Headquarters USAF.

Mr. MAHON. Was any disciplinary action taken with regard to the utilization of funds?

Colonel OXLEY. No, sir; there was not.

NEED FOR CONCURRENCY IN PROCUREMENT AND R. & D.

Mr. MAHON. There is still considerable concurrency in the development and procurement efforts on Minuteman. In Minuteman III, where most of the money will now be spent, the budget proposes $324.3 million for R.D.T. & E. and $417.7 million for procurement. Large sums have been spent and are proposed to be spent for modifications to the Minuteman missiles. Could we safely slow the procurement of the missiles further and thus greatly reduce our requirement to modify the missiles after they are procured?

General JEFFREY. Your question is; Would we be safe in slowing what, sir?

Mr. MAHON. Slowing down procurement of Minuteman III missiles in order that we might avoid modification of those missiles since the R. & D. effort is still active.

General JEFFREY. Sir, as I previously stated, we are not requesting funds to modify missiles. Of the $166.6 million requested for Minuteman modifications, the major portion is for force modernization to provide the new hardware and effort required to change launch complexes from Minuteman I to Minuteman II/III configurations. Now, in response to your question, I do not believe so. The production program has been slowed down to what might be considered to be a minimum rate or minimum acceptable production rate. We believe that it is compatible with the research and development and testing effort.

We believe this is a desirable rate to proceed when considering the capability that we will achieve through the Minuteman III program. Therefore, we would take care of such minor deficiencies as would show up through the use of our missile update program.

Mr. DAVIS. To what extent are we talking about actual deterioration of any of these missiles or their systems, or are we talking here about advances in technology that require updating of the various missiles and their related systems?

General JEFFREY. We are talking principally about advances in technology, changes in the threats that develop as we go along, that would require some additional hardening. Changes that would permit penetration into a hostile environment, or improve penetration capability into a hostile environment, and things of this nature, rather than replacement of pieces due to deterioration, or the fact they are worn out, although I hesitate to use the word worn out because we do not exercise them.

Mr. DAVIS. How old must a missile be before it is reworked or modified?

General JEFFREY. We have some Minutemen I missiles which have been in the program since 1961 and they are still in the holes.

Colonel OXLEY. The guidance systems have been changed as they go out of commission, and other components are replaced as necessary. Basically we have not experienced any deterioration due to aging.

SECURITY OF MISSILE SITES

Mr. ANDREWS. Have you had any actual sabotage or theft around your missile installations, General?

General JEFFREYS. Not that I have heard of. I would suspect that we have not.

Mr. ANDREWS. Have you got them pretty well secured?

General JEFFREY. Yes, sir. They are probably more secure than anything else in the Military Establishment.

Mr. ANDREWS. Are any of the sites open to the public?

General JEFFREY. No, sir. You can drive by and see them from the road but they are not open to the public.

Mr. ANDREWS. Are they enclosed by wire fences?

General JEFFREY. They are enclosed by wire fences. There is electronic surveillance of the site so that if anything enters the fenced in area a signal goes back to the launch control center indicating that something is out of order. As a matter of fact, these systems are so sensitive they have given us trouble in having a cow bump up against a fence, or in some cases a bird flying into the facility will trip the alarm indicating that something is wrong out there. From the time such a signal is received until someone gets out there to take a look at what might have tripped it, is very short.

Mr. ANDREWS. How many silos do you have?

General JEFFREY. At any given complex, such as Minot, N. Dak., there are 150 silos, except at Great Falls, Mont. there are 200, and Cheyenne, Wyo. there are 200. All other wings have 150. There are 1,000 in all.

Mr. MAHON. Mr. Rhodes?

DOD GUIDANCE TO AEC ON FUTURE WEAPONS

Mr. RHODES. In questioning the AEC on their request for appropriations for R.D. & E. I asked them some few days ago how they

decided what to work on, and they indicated they got long-range guidance from the DOD as to what you might have in mind in the future. I assume this is extremely highly classified. If under the limits of classification you can tell us, can you give us some idea of what present guidance they are working under and what the thinking of the DOD is as to the preparation of future weapons that have a nuclear warhead.

General McNICKLE. Off the record.

(Discussion off the record.)

General McNICKLE. Yes.

Mr. RHODES. This is ——— they are working on at the present time.

General McNICKLE. Those are the latest ———.

COMPUTATION OF FISCAL YEAR 1970 REQUEST

Mr. MAHON. Both the statement and the P–1 indicate that the flyaway cost for the Minuteman III missile is $2,284,000. You are requesting ——— of these missiles in the fiscal 1970 program. This would indicate a need for about ——— for flyaway cost.

Information furnished separately to the committee indicates that the total funds for Minuteman III, $371.2 million is for flyaway costs. Why is the flyaway cost in excess of ———?

General JEFFREY. The unit flyaway costs of $2.284 million indicated in the P–1 includes only the airborne hardware, whereas the total flyaway costs also include tooling, advance buy, and other nonrecurring costs. I will supply for the record a detailed cost breakout.

(A classified statement was furnished.)

COST INCREASES

Mr. MAHON. What cost increases have occurred in the Minuteman II and III programs since you last appeared before the committee last year?

General JEFFREY. We estimate that to be approximately 30 percent, sir.

Mr. MAHON. Thirty percent in the weapons system cost? Just what area are the increased costs in?

General JEFFREY. It would be principally in the areas of the subsystems. By subsystems here I am referring to the principal components of the Minuteman system, such as the stage I, stage II, stage III, the guidance section, the reentry vehicle, and so forth.

Mr. MAHON. What has happened to lead to a 30-percent cost increase in a year's time?

General JEFFREY. These increases are not due to overruns, but instead they are due to certain design and process control changes which have been put into effect to protect the missiles, and the missile systems, the airborne systems, from nuclear radiation, the radiations to which they might be subjected from enemy action. This is the reason for this increase.

Mr. MAHON. You already had some protection and this gives you more protection?

General JEFFREY. This would give us additional protection.

There is a breakout which would indicate what the particular increases are by subsystem. The reduced quantity has also affected this to some degree.

Mr. MAHON. Does this 30-percent cost increase make the missile 30 percent more reliable? Is there any ratio between cost increase and reliability here?

General JEFFREY. I would doubt there is a ratio between the cost increase and reliability. I would say that the 30-percent increase here wouldn't make the missile 30 percent more reliable.

Mr. MAHON. Do you have any indication of how much more reliable it would be? Is it 2 percent?

General JEFFREY. I would like to request we be permitted to supply that for the record. I couldn't calculate it here.

Mr. MAHON. There are other major components in which these costs took place. Show those and indicate the increases for the record.

General JEFFREY. All right.

(The information follows:)

MINUTEMAN II AND MINUTEMAN III COST INCREASES/RELIABILITY RELATIONSHIPS

Since the cost increases are related to nuclear effects and quantity production, the changes in reliability would be negligible.

	Fiscal year 1969 column in fiscal year 1969 budget			Fiscal year 1969 column in fiscal year 1970 budget		
	Quantity	Unit cost	Total	Quantity	Unit cost	Total
Interstages	———	0.120	———	———	0.150	———
Stage I	———	.289	———	———	.346	———
Stage II	———	.190	———	———	.221	———
Stage III	———	.147	———	———	.203	———
NS20 G. & C	———	.654	———	———	.952	———
Postboost	———	———	———	———	———	———
Prop system	———	.366	———	———	.407	———
Downstage units	———	.202	———	———	.256	———
MK-12 Chaff	———	.113	———	———	.174	———

COMPETITION IN GUIDANCE SYSTEM

Mr. MAHON. Last year, General Jeffrey, you testified a major effort was being made to undertake competition in some part of the guidance system for Minuteman III. This system had previously been awarded to Autonetics without any competition. What progress has been made in this effort?

General JEFFREY. The "request for proposal" was sent to industry on the first of March of this year. Those proposals have been received and are in the process of being evaluated. Of 10 contractors solicited, four have responded with proposals. These contractors are Litton, IBM, AC Electronics, and Minneapolis-Honeywell.

We expect the contract to be awarded, or the winner of this competition should be announced by the first of July of this year. We have been a long time getting started on this. This was due primarily to delay in obtaining approval of the Office of the Secretary of Defense. This was obtained in December of last year so we believe that since that time we have made good progress in this direction. I indicated last year that we thought that this would be a very desirable thing to do,

to institute competition into this field, and we think that it is going to be a very beneficial thing to us. We have had contracts up with Autonetics, who has done a good job in this field for a long time, but we have been in a sole-source position with them for, in our opinion, too many years. That is the reason for this effort. We look forward with considerable anticipation to the outcome of this.

Mr. ANDREWS. This is the same company you had trouble with on the Mark II?

General JEFFREY. This is the same company that is building Mark II, yes, sir.

GROUND EQUIPMENT COMPETITION

Mr. MAHON. What part of the aerospace ground equipment for Minuteman III is being procured competitively?

General JEFFREY. I would like to preface my answer with the remark that the aerospace ground equipment is based to a great extent upon the development of the piece of equipment that the aerospace ground equipment is to support.

We, as a general rule, cannot develop the aerospace ground equipment (AGE) prior to the time we develop the system upon which it is supposed to be used. Therefore, it is often necessary to a considerable extent, to buy AGE, sole-source from the prime manufacturer.

As I say, this represents the majority of the facts, or the majority of the cases. Even though the figure I am going to give you might not be too good since it pertains only to 1969, we would estimate some 30 percent of the aerospace ground equipment is procured competitively.

FLIGHT TEST PROGRAM

Mr. MAHON. Would you outline for the committee in the record the accomplishments in the Minuteman III flight testing program since you were before the committee last year, and in particular detail the performance of the Mark-12 reentry vehicle?

General JEFFREY. All right, sir. This would be in addition to the remarks made a few moments ago in connection with that.

Yes, sir, we will do that.

(The information furnished the committee is classified.)

OTHER MISSILES

MINUTEMAN INVESTMENT COSTS

Mr. MAHON. Do you have the figures with you as to the latest estimate of the total investment costs of Minuteman II and III?

General JEFFREY. Yes, sir, we have that with us.

The total investment cost for the Minuteman II and III is $9.45 billion. This will go through 1974 fiscal year. This includes research and development, construction, other procurement—all program costs associated with this.

SHRIKE MISSILE PROGRAM

Mr. MAHON. Under "Other missiles" with reference to the Shrike missile, how successful has the Shrike missile been in Southeast Asia? Do you have any measure of how many Shrikes have been fired at enemy radar installations and how many installations have been

knocked out by the Shrike missile? Has the missile gained in effectiveness, in use, month by month, or has the effectiveness of the missile been degraded by the exposure to the enemy which it has seen?

General JEFFREY. Shrike has been in operation in Southeast Asia since April 1966. Of those fired, we estimate, or intelligence indicates that some ——— percent have resulted in suppression of antiaircraft radars at which these missiles were aimed.

Our intelligence also indicates that ——— percent of the firings resulted in damage to the missile radar installations. ———.

Mr. MAHON. Are you inclined to have more or less confidence now in the Shrike than you had last year?

General JEFFREY. I would say we have comparable confidence in it.

Mr. MAHON. What is entailed in the requirement of $1 million for modification of the Shrike in 1970?

General TANBERG. That is for class IV modifications, Mr. Chairman. Class IV mods are those which involve safety of flight, maintainability, and reliability problems. These funds are estimates based on past experience of similar modifications that have gone into that missile.

SHRIKE COST INCREASES

Mr. MAHON. Information indicates the average unit cost of the missile has risen from $17,000 in fiscal year 1967 to $32,000 in fiscal year 1970. It is further indicated that the average price in 1969 was $22,000. How do you explain this rather precipitous cost increase?

General JEFFREY. This is due, Mr. Chairman, to two principal reasons: One has to do with a significantly reduced quantity of missiles, whereas in 1968—between 1968 and 1970 the numbers were reduced from some ——— as a first point and the second point is that the 1970 budget includes a quantity of missiles to provide an ——— capability which has increased the cost to a figure of something like ——— each.

When we average this out, it indicates a significant increase in cost from the one figure to the other figure that you mentioned.

Mr. MAHON. Now, the Shrike missile homes on an active radar site, is that right?

General JEFFREY. That is right.

Mr. MAHON. ———?

General JEFFREY. That is right.

Mr. MAHON. Off the record.

(Discussion off the record.)

Mr. MAHON. Does the standard ARM——

General JEFFREY. Antiradiation missile?

Mr. MAHON. Yes; antiradiation missile. Does it operate like Shrike ———?

General JEFFREY. The standard ARM missile represents a significant improvement capability over the Shrike. ———. It is a much more capable missile, but it is also much more expensive.

Mr. MAHON. The Shrike is in the area of ——— thousand. The ARM is in what area?

General JEFFREY. In the area of ———. We, therefore, think that these missiles complement each other. The standard ARM is a very effective missile, much more effective, but they are just too expensive to buy too many of them.

Mr. SIKES. Is it ——— as effective?

General JEFFREY. I think it probably is. I would say ——— as effective.

Colonel ISLEY. ———.

SRAM PROGRAM

Mr. MAHON. With respect to the SRAM will you discuss the difficulty that caused you to delay procurement of the missile until 1971?

Colonel SCHMIDT. Sir, the development program encountered technical difficulties, particularly in the area of the SRAM motor in the 1968 time period. A reexamination was made at that time and also a corresponding delay in the initiation of the production contract option was also made in late June of last year. The motor redesign has been undergoing severe environmental testing. It demonstrates the redesign is satisfactory and that the motor is capable of carriage and launch from the bomber force as planned, primarily the B–52–G and H.

Mr. MAHON. You may elaborate for the record.

(The information follows:)

The flight test program of SRAM has been delayed in parallel with the above motor redesign. Based on these development delays it was determined in late March 1969, that it was not prudent to initiate production until there was additional assurance that the SRAM weapon system was performing satisfactorily in the development program. Based on the current development planning schedules, the Air Force is proposing a production program ——— with the initial production funding currently in the fiscal year 1970 budget.

Mr. MAHON. What Air Force officer or official has primary responsibility for the SRAM program? Are you the man?

General JEFFREY. This would be the program director at Wright Patterson AFB, Col. David Falk.

Mr. MAHON. Is this delay fully justified, do you think, General?

General MCNICKLE. Yes, sir.

Mr. MAHON. How far has SRAM slipped under the old schedule?

Colonel SCHMIDT. We are about ——— behind the original schedule.

Mr. MAHON. Do you think you will slip further?

Colonel SCHMIDT. We might slip another month. We have two more motor firings to go before our first powered launch.

Mr. MAHON. Detail the request for $20.4 million for SRAM in fiscal 1970.

Colonel ISLEY. The $20.4 breaks down to $16.2 for tooling and $4.2 for advanced procurement of material.

SRAM COST INCREASE

Mr. MAHON. How does the present estimated cost of SRAM compare with the original estimate?

Colonel SCHMIDT. Sir, we are working up estimated costs of a proposed production program for the Air Force. It appears that going outside of our fixed price contract that we had, production costs of the SRAM missile may be two to two and a half times what was originally planned.

Mr. MAHON. Is this par for the course, as we say?

Colonel SCHMIDT. It could be considered so, sir.

General McNICKLE. When we were not ready to pick up the production option due to the motor problem, we had to break the fixed price production contract. Boeing got off the hook from that fixed price contract and we are now in a negotiating position.

Mr. ANDREWS. They weren't hooked, were they?

General McNICKLE. Yes, sir.

Mr. ANDREWS. Why?

Colonel SCHMIDT. Under the fixed price total package contract that we had, they were responsible for producing production missiles that were of the configuration that we actually will have tested on the development program. So had we picked up those production options, they were responsible under a fixed price total package contract for any changes that would have come out of the development program. So today, when we go out to buy production SRAM missiles under a new environment, we will have to pay for any changes incorporated in the production missiles resulting from the R. & D. test program. Previously they were a part of the fixed price production options which were the responsibility of Boeing.

Mr. MAHON. What is the total estimated cost of the SRAM program in R.D.T. & E and procurement funds?

Colonel SCHMIDT. Sir, an estimate for R.D.T. & E. is $413.4 million.

Mr. MAHON. And the original estimated cost was?

Colonel SCHMIDT. $161.6 million, sir, excluding contract definition.

Mr. MAHON. What is the total cost—you can expand on that for the record if you will.

Colonel SCHMIDT. It should be $167.6 million.

(The information follows:)

The original approved program for development contained in Secretary of Defense decision F-5-072 dated September 3, 1965, was $167.6 million, of which $6 million was originally planned for usage in contract definition. The remaining $161.6 million included an approved program to cover the target price of $143.2 million of the original contract, and other effort and anticipated engineering changes of about $18.4 million. The total estimate is not available at this time. The estimated production cost for SRAM is currently being prepared by the Air Force for submission to OSD in late June 1969 for program approval.

Mr. MAHON. What is the total approved production program?

Colonel SCHMIDT. Today we have no approved program for production. The estimate we intend to submit to OSD for approval at the end of June, will request modification of the entire B-52-G and H fleet, which is 283 aircraft.

We also intend to ask for modification of the existing 76 FB-111 aircraft program. We will also ask for ——— SRAM to equip those aircraft. This would be comparable to the approved program we had before it was delayed on the first of April, sir.

Mr. MAHON. Let us assume, for the purposes of this discussion, that the FB-111 is canceled. What would be your SRAM requirement?

Colonel SCHMIDT. If the FB-111 were canceled, we would still plan to go head and equip the 283 B-52-G and H aircraft with SRAM. We are only planning the hang ——— unit equipment SRAM on the FB-111. The ——— would come down to about ——— when the operational launches associated with the four squadrons of FB-111 aircraft are removed.

Mr. MAHON. Is it anticipated that the proposed AMSA follow-on bomber would carry the SRAM?

Colonel SCHMIDT. Yes, sir. It is proposed to carry, up to a quantity of ——— SRAM's. It is being sized for that.

SRAM EXPENDITURES

Mr. MAHON. At this point in the record, state the amount of money which has been spent on SRAM to date and also advise to what extent have the B–52's been modified in anticipation of SRAM?

Colonel SCHMIDT. Yes, sir.

(The information follows:)

MONEY SPENT ON SRAM TO DATE/EXTENT OF MODIFICATION OF B–52'S

Through June 3, 1969, $293.713 million has been released for the SRAM program. No B–52 aircraft have been modified to carry operational SRAM.

SRAM CONTRACT DID NOT PROTECT GOVERNMENT

Mr. MAHON. General McNickle, I believe you said Boeing was let off the hook, so to speak, as a result of the failure of the SRAM motor. Who was responsible for the failure of the SRAM motor? Who provided the motor?

General MCNICKLE. What I said was, when we did not pick up the option for production it broke our fixed price contract with Boeing.

Mr. MAHON. And you didn't pick up the option—

General MCNICKLE. The option to produce at that time.

Mr. MAHON. Because of—

General MCNICKLE. Because we did not feel at that time that we should give them a go-ahead because of the motor problem.

Mr. MAHON. Who is responsible for the motor problem?

General MCNICKLE. Well, actually it was a Lockheed motor on a sub-contract in this total package contract with Boeing.

Mr. MAHON. Under the contract, with Boeing as the prime contractor, was the motor Government-furnished equipment or was it part of that contract?

Colonel SCHMIDT. It was part of that original contract, sir. It was Boeing's responsibility. Lockheed is a sub to Boeing for the motor.

Mr. MAHON. Was Boeing in default on the contract when they didn't deliver the motor on time according to spec?

Colonel SCHMIDT. Not really, sir, with regard to development. You see, under our development contract with Boeing, the Government, in the total package, does not accept any of the development missiles which will fly in the development program. Under the total package concept Boeing is responsible for demonstrating so many flight objectives as written into the contract. We accept final completion of the development contract insofar as the testing complies with the total development program requirements.

So you can't really accuse Boeing today, since they still have time to go on their contract, that they have not complied with the development end of the contract. They are obviously behind their original plan. Their original plan was not a milestone, per se, upon which you can penalize them because the Government was not involved.

Mr. MAHON. Under the contract at the time the option was to be taken, the Government had to take the option whether or not the contractor had performed adequately at that point in time?

Colonel SCHMIDT. Yes, sir. Mr. Mahon, you will recall I indicated that in June of 1968 the Air Force decided not to pick up the production option on the first of July in 1968. The contract had written into it a 9-month slide provision which we exercised. In other words, we could pay a small penalty. As I recall, it was about $225,000 per month and we could slide it up to 9-months maximum. That was the maximum that the contract allowed the Government to slide it, and when that ran out, that was it. We have lost all production that we had in our original total package contract.

Mr. MAHON. So the Government was not protected under this contract from faulty performance of the contractor in the development program.

Colonel SCHMIDT. That is right, sir.

STANDARD ARM

Mr. MAHON. Now, with respect to Standard ARM, what modifications must be made to the F–4D aircraft in order to carry Standard ARM? What is the cost per aircraft of these modifications?

General TANBERG. On the F–4D for Standard ARM, we have in the fiscal year 1970 budget, $7.5 million and this will provide us with engineering a prototype and ——— aircraft which will be capable of carrying the Standard ARM.

Mr. MAHON. We have talked here during the afternoon about the effectiveness of Standard ARM, vis-a-vis, Shrike in Vietnam. These weapons have been tried out in Vietnam, as I understand it?

General JEFFREY. To a very limited degree, Mr. Chairman. We got these missiles in operation over there in March 1968, and it was just at that time that the bombing halt stopped. We had dropped ——— of those missiles during the month of March 1968.

Mr. MAHON. ——— of Standard ARM?

General JEFFREY. ——— Standard ARM's in the Air Force with ——— probable kills of SAM radars in the Hanoi area, and damage for ——— of the others. We don't have specific results, however, with regard to the remainder.

SPARROW MISSILE

Mr. MAHON. With respect to the Sparrow, the average unit cost of the Sparrow missile has increased from ——— in fiscal year 1967 to ——— in fiscal year 1970. Is that just another case of everything going up rather sharply, or is there some further explanation?

General JEFFREY. Sir, the unit flyaway cost of the "E" version of which we are planning to procure ——— increased from ——— due to reduced quantity procurement. The reason for the overall average unit cost increase, is due to the initial procurement of only ——— of the more complex "F" version.

Mr. MAHON. Your statement shows the unit flyaway cost of ——— for the AIM–7–E Sparrow and ——— for the AIM–7–F and G. What is the reason for this large price increase in new models?

General JEFFREY. Well, Mr. Mahon, the AIM–7–F is a much improved missile over the AIM–7–E.

Mr. MAHON. Five times increase?

General JEFFREY. Let me, if I may, indicate the extent of the improvement in certain special areas. ———.

We think it will produce a significantly improved capability over the AIM–7–E.

I can't answer your question as to whether it is five times the value in operational capability.

Mr. MAHON. Most of the instances you cited were ——— increases.

General JEFFREY. They fall into that category. The increased cost results from a relatively small initial quantity buy of —— missiles and the improved capability.

Mr. MAHON. How many of each model are included in the proposed fiscal year 1970 buy? Will you provided this for the record, please?

(The information follows:)

NUMBER OF EACH MODEL OF SPARROW IN FISCAL YEAR 1970 BUY

Our proposed fiscal year 1970 buy is for ——— AIM–7E and ——— AIM–7F missiles.

Mr. MAHON. How many Sparrow missiles have been fired in combat in Vietnam and how many enemy aircraft have been destroyed by them? Is this an effective missile in Southeast Asia?

General JEFFREY. We think this is the most effective missile we have in the inventory. It is carried on all of our principal fighter aircraft, the F–4 types of aircraft. We have fired ——— AIM–7–E missiles. These have accounted for ——— enemy airplanes.

Mr. MAHON. How is the actual consumption of Sparrow missiles in fiscal 1969 compared with the estimates of this consumption made last year?

Colonel ISLEY. Our planned consumption through fiscal year 1969 is ——— missiles. The reason for this low expenditure rate was because of no SEA combat expenditures, and we stopped training. ———. As a result our consumption rate was very low this year.

Mr. MAHON. What was the estimate as compared to that rate?

Colonel ISLEY. I do not have the estimate.

General JEFFREY. This was only used for training purposes, I believe.

Colonel ISLEY. We formulated our requirement based on 40 per month for SEA consumption.

General JEFFREY. How many have we been shooting?

We will have to supply that for the record, Mr. Mahon.

(The information follows:)

COMPARISON OF CONSUMPTION DATE FISCAL YEARS 1968–1969 SPARROW

During last years formulation of the fiscal year 1969 budget and prior to the bombing halt in SEA, our fiscal year 1969 Sparrow expenditures were projected as a total of ——— missiles ——— expenditures to support a hot war in Southeast Asia and ——— for weapon system evaluation and for pilot qualification prior to rotation to the SEA area. During formulation of the fiscal year 1970 budget, this projection was reduced to a total of ——— missiles. This reduction recognized the lull in SEA and essentially no expenditures in combat

as well as other factors which significantly reduced projected expenditures. ———. Second, technical problems developed in the missile which caused the missile to be temporarily grounded and a further reduction in training expenditures. Finally, there was a delay in production receipts during fiscal year 1969. After full consideration of these factors, our projected expenditures fiscal year 1969 were reduced to ——— missiles. During the first three quarters of fiscal year 1969, we have expended a total of ——— missiles against this new projection. Training has now been fully resumed and we are projecting expenditures at a rate of ——— per month for the rest of fiscal year 1969.

Mr. MAHON. Has the AIM–7F been flight tested?

General JEFFREY. Yes; the AIM–7F is currently being flight tested.

Mr. MAHON. Can you provide for the record a statement on the results of the flight tests of this new missile?

General JEFFREY. Yes, sir.

(The information follows:)

RESULTS OF TEST FLIGHT OF AIM–7F

The Navy, which has been designated the responsible agency to design and develop the AIM–7F missile for both services, is currently conducting the flight tests on this missile. ——— of these missiles have been launched, tested and evaluated to date. ——— of these launches were successful and met the full test specification requirements. In summary, problems have been found in ——— and in ———. These problems are presently being corrected through redesign effort. Consequently, we deferred our original planned procurement in fiscal year 1969 and will hold our planned fiscal year 1970 procurement in abeyance pending completion of the flight tests. The Navy has programed an additional quantity of ——— AIM–7F preproduction missiles to be used for extensive testing on an expanded operational evaluation test program. Final release of production funds will be based on test data which insures that the missile fully meets our requirements.

AGM 79/80 MISSILE

Mr. MAHON. Last year you requested funds for the AGM 79/80 but no funds were requested this year. Was this money spent on this program? What is the status of this program?

General JEFFREY. There is a slip in the research and development of this program. The fiscal year 1969 funds were reprogramed to cover increased costs of the Minuteman, the modification of AIM–4–D Falcon missile and increased cost of certain classified programs.

This money was reprogramed on reprograming action fiscal years 1969–72 dated January 18, 1969.

Mr. MAHON. Have you given up on this missile or do you still expect results from this program?

General JEFFREY. We haven't given up on the program. It just looks like more testing is required prior to going into production. We want to look into this further prior to the time that we go ino quantitative production of these missiles.

TARGET DRONES

Mr. MAHON. Relative to the request for target drones, would you supply for the record a listing of the target drones to be procured at the $18.7 million requested? This should include the quantities of each drone to be procured and the unit price of the individual drone.

General JEFFREY. Yes, sir.

(The information follows:)

TARGET DRONES TO BE PROCURED AND UNIT PRICE

Our fiscal year 1970 request for target drones proposes procurement of a total of ——— drones for the $18.7 million. We plan to procure ——— BQM-34A subsonic drones for $11.1 million at unit cost of ——— and ——— BQM-34E/F supersonic drones for $7.6 million at a unit cost of ——— each. The unit cost for the BQM-34E/F drone is based on cost data provided by the U.S. Navy, the developing and procuring agency for this supersonic drone. The vast difference in unit cost between the BQM-34A and the BQM-34E/F is due to this being only the second year procurement of a very small quantity of the BQM-34E/F drones which include initial tooling and other nonrecurring costs. Future procurements should see these unit costs decrease. The Navy and the Air Force are presently reviewing the Ryan Aircraft Co. contract proposal for our fiscal year 1969 initial procurement of the BQM-34E/F supersonic drone. The results of this review could possibly cause some minor adjustments as to the currently planned mix of these drones during fiscal year 1970 procurement.

Mr. MAHON. To what extent are the target drones in your program also to be procured by the Army and the Navy?

Colonel ISLEY. They are essentially the same drone, sir. The BQM-34A is procured by the Air Force for all three services. The Navy procures the BQM-34E/F for the Navy and the Air Force.

Mr. MAHON. Is the Air Force negotiating with the Ryan Co. for the development of an Air Force version of the Navy's BQM-34E target drone?

Colonel ISLEY. No, sir, we are not negotiating with the Ryan Co. directly. We are working through the Navy for development of the BQM-34-E.

Mr. MAHON. Why does the Air Force need modification of this Navy drone? Why couldn't you use the Navy version?

Colonel ISLEY. I would have to supply that for the record, sir.

(See material supplied hereafter:)

Mr. LIPSCOMB. That is a good question and very applicable. Isn't there someone here now who can answer that?

General JEFFREY. I am afraid not, Mr. Lipscomb.

Mr. LIPSCOMB. Here we are dealing with the same type of drone. The Air Force is putting more money into a new version while the Navy already has a version that is reasonably successful.

General JEFFREY. Since it doesn't seem that we have anyone here who can answer the question, I would like to look into this and provide this information for the record, and also provide it to you personally.

Mr. LIPSCOMB. All right.

(The information follows:)

REASON FOR AIR FORCE MODIFICATION TO NAVY BQM-34E DRONE

The Navy supersonic drone (BQM-34E) and the Air Force supersonic drone (BQM-34F) are essentially the same. The airframe, the engine and the autopilot/remote control equipment are identical and are produced on the same production lines. There are minor differences in the type of electronic equipment that must be accommodated internally for each service. The scoring equipment is different to provide compatibility with existing Air Force Ground Scoring Systems. A different radar augmentation equipment is also used to provide for a more realistic radar reflection to simulate the supersonic performance of the known enemy aircraft threats. Additionally, due to shipboard operation and overwater range operations, the Navy requires a water recovery system. The Air Force, since our ranges are mostly over land, will utilize a Mid-Air Retrieval System (MARS) using helicopters to recover the drones for refurbishment and reuse.

INCREASED REQUEST FOR TARGET DRONES

Mr. MAHON. There is an increase in the request for funds for target drones. The fiscal 1968 program was $9 million. This year you are requesting $18.7 million. What is the reason for this increase? Is it increased price of drones, increase in the training program, or what?

General JEFFREY. This can be attributed primarily to three things: Increased drone requirements; a minimum procurement of the BQM-34-A in fiscal year 1968, while awaiting the BQM-34-E in 1969, and finally, the BQM-34-E supersonic drone is more expensive due to its increased capability and due to smaller quantities.

MISSILE MODIFICATIONS

TITAN II MISSILE

Mr. MAHON. Under modifications you are requesting $2.1 million for the modification of Titan II missiles. What modifications are proposed for the Titan II and what benefits will be realized as a result of these modifications?

General TANBERG. These again, Mr. Chairman, fall in the category of the Class IV, safety, maintainability and reliability mods. Again, we are just anticipating what we would spend these funds for based on past experience. They would fall into categories, such as modifications to the launch system to assure a more positive control, mods to improve the reliability of the propellant tank pressures and that type of thing.

BOMARC MISSILE

Mr. MAHON. You are requesting $400,000 for the modification of BOMARC missiles. What are the modifications here?

General TANBERG. Again, this is class IV and we have no specific mods. It is anticipated on the basis of past experience that we will need this for the safety and reliability-type modifications.

Mr. MAHON. Are these missiles being converted to target drones use?

General TANBERG. No, however, we have another line item for that particular purpose where we are converting some of the other missiles to target drones.

Mr. MAHON. What was done with the $800,000 programed for modification of BOMARC in fiscal year 1969?

General TANBERG. I would have to supply that for the record. I haven't that answer.

(The information follows:)

FISCAL YEAR 1969 MISSILE MODIFICATION

These funds were also used for class IV modifications. Two of the more significant modifications were: (1) Conversion of telemetering frequency to "S" band (FCC requirement) and (2) Modification of the air conditioning system to prevent missile electronic system contamination.

TARGET DRONE MODIFICATIONS

Mr. MAHON. Also supply for the record a listing of the target drones to be modified with the $2.3 million request. Is this also a historical——

General TANBERG. I have that. That is on three missiles, the Mace, the Firebee and the Sandpiper. These will be converted for drone use as scoring devices.

MISSILE SPARE PARTS

TITAN MISSILE SPARES

Mr. MAHON. Under spare parts, you request $4.2 million for spare parts for the Titan missiles. This is a substantial increase over the $1.7 million for spare parts for Titan programed last year. What is the requirement for this increased sum?

General RIEMONDY. This is specifically to replace certain time change items on the 54 missiles that we still have in the inventory. These are in fact time-change items. After so many months go by, we have to replace them. A number of these time-change items are coming due during this budget period.

BOMARC MISSILE SPARES

Mr. MAHON. You are requesting $2.6 million for spare parts for BOMARC missiles. The same amount is programed in the current fiscal year. What is the basis for this request?

General RIEMONDY. What we are doing here, we talked a little bit earlier on the aging of these missiles and what you do with some of the components. In the case of the BOMARC, the items we are replacing on it is principally the rocket motors. We have bought a number of cases and we are in the process of filling those cases with new propellant. About fifty of them. This constitutes the great majority of these particular dollars. Through our surveillance program we have found, after so many years, we have to replace these things in order to keep up the reliability of the missile.

MINUTEMAN MISSILE SPARES

Mr. MAHON. Will you provide for the record some data on the $63.1 million request for spares for Minuteman II and III, including information as to how much of this is for initial spares, how much is in support of modification and modernization programs, the cost of spares for each unit missile and facility, an indication of just what makes up the $63.1 million request.

(The information follows:)

SPARES FOR MINUTEMAN II AND III MISSILES

[In millions of dollars]

	Initial	Replenishment	Total
Minuteman II	2.5	8.8	11.3
Minuteman III	47.9	3.9	51.8
Total	50.4	12.7	63.1

Within the $2.5 million total for Minuteman-II initial spares, the sum of $0.1 million is included for modification spares.

For Minuteman-III there is nothing included for modification spares. Minuteman spares dollars include support only for the operational program. There is no inclusion for the modernization program.

TARGET DRONE SPARES

Mr. MAHON. Also supply for the record a listing of the target drones for which you are requesting a total of $2.7 million and show what target drones are involved.

(The information follows:)

The target drones for which we are requesting $2.7 million are the BQM-34A and E (Firebee).

FALCON MISSILE SPARES

Mr. MAHON. There is a large increase requested for spares for Falcon missiles. Last year $1.8 million was programed and $6.9 million is requested for 1970. What is the basis for this large increase?

General RIEMONDY. Primarily for time-change items. The aging of the fleet itself, and these come due on calendar dates. Again we are projecting our requirements for replacing these time-change items during the 1970 budget period.

EXTENT OF BREAKOUT OF MISSILE SPARES

Mr. MAHON. Place some information in the record pertaining to the extent missile spares are procured through sole source contracts and to what extent you break out and compete the missile spares, or buy directly from the vendors involved rather than through prime contractors.

General RIEMONDY. In this particular case, we don't enjoy the same degree of competition because of the need to protect the high reliability of the missiles. We generally go back to the prime manufacturer, or directly back to the vendor of the particular item. We cannot afford to degrade the reliability of these missiles by going out and strictly competing for the particular component.

Mr. MAHON. Can't you save money by going directly to the vendor? To what extent is that done?

General RIEMONDY. In every case where we can do this, we go directly to the vendor rather than going through the prime manufacturer of the missile itself. A good example of this, of course, is the guidance system that constitutes the largest amount of our dollar investment in spare. We generally buy these guidance systems from the manufacturer of the guidance system rather than from Boeing, in the case of the Minuteman.

Mr. MAHON. Give us the overall statistics on this point for the record.

General RIEMONDY. Yes, sir.

(The information follows:)

During the first 9 months of fiscal year 1969, replenishment spares were procured at a contract value of $10,628,000. Of this amount, $5,425,000 (51 percent) was procured through sole source contracts: $2,659,000 (25 percent) was procured on a competitive basis, and $2,544,000 (24 percent) was procured directly from the manufacturer.

During the same time period indicated above, initial spares were procured at a value of $47,323,962. All of this amount was procured through sole source contracts.

INVENTORY OF MISSILE SPARES

Mr. MAHON. What is the value of the Air Force's inventory of spare parts for missiles and what has been the value of this inventory over the last 5 years? Is this inventory increasing or decreasing generally?

General RIEMONDY. During the past 5 years the value of the spares in relationship to the total value of the missiles has been going down and is now fairly constant. At the present time we estimate the value of the inventory of the missiles to be in the order of about $3 billion and our spares are in the order of about $485 million, or roughly about 16 percent of the total value of the missiles that are being supported.

This is going down. The amount of spares in proportion to the investment in the missiles is going down somewhat. I can provide 5 years of history on this.

(The information follows:)

MISSIES SPARE PARTS INVENTORY

The value of spares expressed in relationship to the value of the missile inventory supported has declined from 38.3 percent in fiscal year 1965 to 16.8 percent in fiscal year 1968. The ending fiscal year 1969 level is estimated to be 16.5 percent. A table portraying this data is as follows:

[Dollars in billions]

	Fiscal years				
	1965	1966	1967	1968	1969 [1]
Missile inventory	$1.2	$1.1	$3.1	$2.9	$2.9
Spares inventory	$0.46	$0.39	$0.44	$0.49	$0.48
Percentage	38.3	35.4	14.1	16.8	16.5

[1] Current estimate.

Mr. MAHON. In general, are spares inventories for missiles low as compared with spares inventories for aircraft? The missile only flies one time and you would think you wouldn't need the backup of spares which we require for aircraft which put in many flight hours.

General RIEMONDY. Actually it is a little bit higher. This is principally due to the fact that while the number of line items that make up the spares inventory is rather low, the cost of the individual item is rather high. It is the mix of the spares.

In the case of the aircraft, we have an investment spares inventory—if we exclude the engines and items worn out—of about $4.4 billion against an inventory of about $30 billion and that is in the area of 14 percent. In the case of the missiles, it is about 16 percent. It is predominantly due to the high cost of the inertial guidance systems which run from $440,000 to about $814,000 a copy. That is the principal hot item. When I say "hot," I mean it is the item that is kept running in the missile. It is the item then that wears out.

MACE MISSILE SPARES

Mr. MAHON. For the record, can you provide information as to what the inventory of spares for the MACE missile is? The MACE is no longer an operational missile. MACE's are being used up as drones, I believe. Do we have significant inventory remaining of spare parts?

General RIEMONDY. We don't have a significant inventory but let's correct the record a bit here. We do have an operational MACE in Okinawa. We have one operational squadron. The amount of spares would be relatively small.

Mr. MAHON. That squadron has been there a long time, hasn't it?

General RIEMONDY. Yes.

Mr. MAHON. Do you suppose it ought to be scrapped?

General RIEMONDY. I don't know when the program calls for it going out. We may have the date here. The MACE missiles will phase out during ———.

Mr. MAHON. Provide something for the record on the value of the spares for the MACE.

(The information follows:)

INVENTORY VALUE OF MACE SPARES

The value of spares for the MACE program is $37,676,000 which amounts to 6.8 percent of the missile and aerospace ground equipment acquisition cost. Of this total, $36,702,000 is in a "hold" status pending evaluation of the capability of this system to be used as a drone. The value of the spares for the remaining MACE B operational program is $974,000.

INDUSTRIAL FACILITIES

Mr. MAHON. Under "Industrial facilities," is there any brick-and-mortar construction included in the missile procurement appropriation either under industrial facilities or under the individual weapons systems, or elsewhere?

General PITTS. No, sir; there is none.

INDUSTRIAL FACILITIES IN SUPPORT OF MINUTEMEN

Mr. MAHON. What facilities in support of the Minuteman program are you planning for the $300,000 requested? Will you put something in the record on that?

General PITTS. Yes, sir.

(The information follows:)

A sum of $300,000 identified in the industrial facilities budget for Minuteman includes: $100,000 at General Electric, Valley Forge, Pa., to provide spin-table and shock vibration instrumentation in support of the Mark 12 reentry vehicle production. There is no commercial work at this facility, and this instrumentation has no ready commercial application; $60,000 at Air Force plant No. 75 (Boeing, Seattle) for nonrecurring maintenance to this Air Force-owned plant. Work includes rehabilitation of pilings under portions of the plant. The plant is used for Minuteman production; and $140,000 for nonrecurring maintenance (capital-type rehabilitation) to Government-owned industrial production equipment located at various plants in support of Minuteman production. The contractors include AVCO Corp., Wilmington, Mass., and Thiokol Corp., (AF plant No. 78), Brigham City, Utah.

INDUSTRIAL PREPAREDNESS

Mr. MAHON. Discuss the request for $7.9 million under "Industrial preparedness." At a time like this, when defense spending is high and when a war is being supported, why must we spend additional funds

for industrial preparedness? What is the area where you are unprepared and need to spend this money?

Provide a statement on that for the record.

(The information follows:)

The $7.9 million requested for industrial preparedness is to maintain, prepare for shipment, and modernize existing Government facilities. None of $7.9 million provides additional production capacity. It includes such items as $0.600 million for the packing, crating, and handling of Government-owned production equipment as it is prepared for shipment to the Defense Industrial Plant Equipment Center or to other priority users. The amount requested for the nonrecurring, capital-type maintenance to Government-owned property at four Air Force plants and four contractor locations is $2 million. Funds planned for the replacement-modernization of Government-owned industrial production equipment at approximately eight contractor locations is $2.2 million. Such projects are undertaken only where there is sound justification for continued Air Force ownership based upon essential current and mobilization production requirements; $3 million is planned for the manufacturing methods program. Individual projects in this program bridge the gap between research and development and production by the application of practical new production processes or techniques. It results in greater product reliability, shorter leadtimes, and lower production costs.

Defense Satellite Communications System (DSCS)

Mr. Mahon. Under the "Defense communications satellite," is all of the $49.6 million requested for the defense satellite communications system for phase II of this program?

Colonel Isley. The answer is "Yes," Mr. Mahon.

Mr. Mahon. Would you provide a statement for the record describing phase I of the program, including the total cost of phase I, the number of satellites produced, the number launched, and the effectiveness of the program. Also the similar information on phase II, much of which will have to be estimated.

(The information follows:)

The space segment of the DSCS phase I consists of 26 spin stabilized solar powered satellites in a slowly drifting equatorial orbit. These satellites weigh approximately 100 pounds and operate in the 7000–8000 MHZ frequency band. A total of 34 flight model satellites were produced and launched by Titan III–C boosters in June and August 1966, January and July 1967, and June 1968. All but the August 1966 launch were successful. The August 1966 launch resulted in loss of eight satellites. Of the 26 satellites which were successfully deployed, as of June 1, 1969, 23 are being scheduled routinely by DCA for operational use. The phase I satellites have exceeded their original design lifetime goal by several years. They are operating to specification and are providing a very significant capability to long-range military communications. The total contract cost of the space segment for the phase I of the DSCS was approximately $57.5 million. The phase II DSCS space segment will consist of four geostationary 900-pound high-powered satellites with each satellite having two narrow beams and an earth coverage antenna. Two of these advanced satellites will be launched on each Titan III–C booster. The current program includes procurement of six flight satellites and three boosters. The total cost of the phase II space segment is now estimated to be approximately $134 million.

TOTAL COST OF DSCS PHASE II

Mr. Mahon. When will phase II be completed and at what total cost?

Could you provide that for the record and a breakdown showing how much of the cost is for satellites, how much for boosters and other equipment?

(The information follows:)

The DSCS phase II space segment consists of four satellites. Two satellites will be launched on each Titan III–C booster. The two launches are now scheduled for the first half of 1971: therefore, the earliest date the phase II space segment can be completed is mid-1971. The other two satellites being procured will be available as backup launch if required or for replenishment.

The following is a breakdown of program costs.

	Dollars in millions
Satellites	71.4
Boosters	57.0
Other (GSE/TD and unique equipment)	5.5
Total	133.9

Mr. MAHON. Are the boosters bought from this appropriation?

General PITTS. Yes, sir. In fiscal year 1970, $31.8 million of the $49.6 million programed is for the six satellites and $15.3 million is for the Titan III–C booster. The other $2.5 million is support costs.

Mr. MAHON. Is the entire phase II program to be funded in Air Force budget or are funds also budgeted by the Defense Communications Agency or by other military services in support of this program?

General PITTS. We have the airborne portion, sir. The Army has the ground portion of the system; Navy, the shipborne.

PROCUREMENT AND R.D.T. & E. COSTS OF DSCS PHASE II

Mr. MAHON. In the R.D.T. & E. budget, there is a request for $20.8 million for this program. Would you supply some information for the record at this point as to what part of this program is paid for with R. & D. money and what part with procurement money?

General PITTS. Yes, sir; we will.

(The information follows:)

The estimated costs of the DSCS phase II space segment is divided between R.D.T. & E. and investment funds as follows:

	Dollars in millions
R.D.T. & E. total	33.8
Investment total	100.1
Program total	133.9

The R.D.T. & E. funds will be used for design, development, and fabrication of engineering, and qualification models of the satellite. The investment funds will be used to procure the flight hardware, boosters, and services required to launch the satellites.

Mr. MAHON. How much concurrency between R. & D. and procurement is there in this program? How much risk are we taking by funding procurement heavily at this early stage of the phase II program?

General PITTS. I would like to correct it for the record, sir, but I don't feel we are taking too great a risk in view of our success with phase I. I believe that the program is not one of a high risk by virtue of concurrency.

TARGET MILESTONES AND COST FOR DSCS PHASE II

Mr. MAHON. Would you also place in the record the target milestones and target costs in phase II of the defense satellite communica-

tions program, and an indication of how firm you think these costs and milestones are at this point in time?

General PITTS. Yes, sir.

(The information follows:)

The following significant milestones have been established for the space segment of the DSCS phase II. This schedule reflects a realistic schedule and we do not foresee any significant changes at this time.

Event and date:

Preliminary Design Review, June 1969.
First article compliance inspection, 3d quarter fiscal year 1970.
First satellite delivery, 3d quarter fiscal year 1971.
First launch, 3d quarter fiscal year 1971.
Second launch, 1st quarter fiscal year 1972.

Our estimate for the design and R. & D. test of the phase II satellite is $31.6 million. The production costs for the six satellites is $39.8 million, of which $8 million was funded in fiscal year 1969 for long-lead procurement items. The schedules and costs look firm at this time.

ADEQUACY OF OUR ICM FORCE

Mr. MAHON. General McNickle, there is an argument going on in the country as to the adequacy of our missile program in relation to that of the Soviet Union. There are those who say we ought to increase our ICBM force. They advocate more missiles in launch silos and greater advances in the sophistication of the missile force.

Are the witnesses here this afternoon fairly well satisfied with the magnitude of our ICBM program? We will discuss these matters in detail with the Secretary of Defense, the Chairman of the Joint Chiefs, the Chiefs of Staff of the Army and Air Force, the Chief of Naval Operations, but what do people on your level—you occupy a rather high level—feel about the adequacy of the ICBM force?

General MCNICKLE. I think we feel that the number is adequate. I think the improvements we are making, as far as MIRV, chaff and Pen-Aids, the hardening to get away from the nuclear effect, putting them in hardened silos and other measures, the Safeguard, I think those are the areas we need to pursue. I haven't heard any discussion by anybody who thinks we need more missiles. I think the discussion has been that we need to protect our missiles more and we need to have a mix—make sure we keep a viable mix of aircraft and missiles in case we have problems with the missiles, which we have had. We might also have a problem with silos and we would have something to fall back on.

Mr. MAHON. I am surprised there are not, here at this table, people who would argue and urge a more ambitious ICBM program. What do you think about this, General Jeffrey?

General JEFFREY. I generally agree with what General McNickle says in this regard. I think from the viewpoint of numbers, that the numbers of ICBM's that we have is probably adequate. I think that our missiles need improvement from the viewpoint of hardness. ———.

Mr. MAHON. If money were no consideration, you would like to proceed more rapidly with the hardening?

General JEFFREY. Yes, sir. ———. Minuteman III is going to provide us with a much increased capability. I believe that we need to pursue this program aggressively. The Minuteman III, we project

to be a great improvement to our capability. We believe that we need to get on with our hard rock silo program which will improve the survivability of these missiles in the ground. The hard silos would be for the Minuteman III, or an advance type of ICBM. I don't believe we should stop in our development of our ICBM program, however, I do believe, as I indicated, that the numbers that we have are probably adequate at this time.

HARD ROCK SILO PROGRAM

Mr. MAHON. We have talked about the hard rock silo program. I know when you were thinking about locating missile sites at various bases years ago you wanted a certain type of soil and so forth. Now, have you changed your views as to the type of soil you want to place the silo in?

General JEFFREY. Using hindsight, at the time we built these and considering the urgency for building them and considering the state of the art at the time, the type of soil they were put in was adequate for the purpose. Our launchers are hardened to ——— pounds per square inch over pressure and our launch control centers to ——— pounds per square inch. We believe with the projected larger yields and improved accuracy of the Soviet warheads that our force should be hardened to a greater extent than it is. This is something that requires a greater degree of sophistication and a greater effort in locating suitable terrain in which to place these missiles and, of course, this is a more difficult problem or job than digging the holes and testing them, but we firmly believe this is something we should go to.

Mr. MAHON. In the beginning you didn't want hard rock to place the missiles in. You shied away from that, is that correct?

General JEFFREY. Yes. We shied away from it on account of the difficulty related to digging the holes and generally the location of this type of material.

Mr. MAHON. Would granite or rock of the hardest type be the most desirable in your opinion for future silos?

General JEFFREY. I believe so; yes.

Mr. MAHON. Are there adequate places where you can locate this kind of silo?

General JEFFREY. Yes, sir; there are places in the country, Washington State, the Northwest.

Mr. MAHON. In the area where we now have the missile sites?

General MCNICKLE. Yes, in the Northwest.

STUDY TO LOCATE HARD ROCK SITES

Mr. LIPSCOMB. You do not know that yet do you? It is my understanding that we have a big study costing several hundred thousand dollars to determine this.

General MCNICKLE. There is a team out now looking at the rock-beds.

Mr. LIPSCOMB. If we know we have adequate hard rock sites available why are we spending all this money looking them up?

General MCNICKLE. We will have to bore into them.

Mr. LIPSCOMB. They are not now doing that kind of technical work, are they?

General PITTS. Yes; they are taking core samples. That was brought out in the O. & M. hearings.

We have these site surveys going on at various locations.

I think Mr. Andrews spoke of locations in the Georgia-Alabama area.

Mr. LIPSCOMB. I knew they were looking for hard rock areas, but I didn't know they had made determinations and now were looking at the feasibility of specific sites and locations.

General PITTS. Core sampling; yes, sir.

CONTINUE ADVANCED MISSILE TECHNOLOGY

Mr. MAHON. Do you have anything to add to this conversation, General Boylan?

General BOYLAN. Mr. Chairman, I certainly share the remarks made about the size of the missile force and underscore what General Jeffrey said about technology. As will be discussed later, there are funds being applied to missile advanced development and reentry propulsion. I think the critical two factors to judge the size of this force are to what extent the Russian continues his growth in ICBM's and second, the extent to which U.S. programs that are currently projected are brought to fruition. I think this question will become much clearer in the next 2 to 3 years. I think for that reason it is important that our technology keep pace with the problem.

Mr. RHODES. General, I was intrigued at your statement that you would like to have ———.

What shape would this take?

Would you acquire this capability by a vehicle that could ———?

General JEFFREY. Both, sir. ———.

Mr. RHODES. You will have to get some work done on a different type of warhead, won't you?

General JEFFREY. Yes, sir; work has been going on in this area. As I pointed out, it has been sort of in and out of the program. It has been an off and on again proposition.

Mr. RHODES. Where are they doing this experimentation for this different type warhead?

General JEFFREY. I cannot answer that, sir. I don't know.

Mr. RHODES. Are you thinking in terms ———.

General JEFFREY. I am thinking in terms of ———.

Mr. RHODES. Would this require a completely new missile to propel this reentry vehicle?

General JEFFREY. No, sir. This could be propelled on the same missiles we have now.

Mr. MAHON. Are there any further questions?

Gentlemen, we will have you before us on other procurement.

General JEFFREY. Yes, sir.

Mr. MAHON. Will you be able to tell us when you come back on Monday where these ———.

General JEFFREY. Yes, sir; that was the question.

Mr. MAHON. Give us a report on that.
(The information provided the committee is classified.)
Mr. MAHON. Thank you very much, gentlemen.
The committee will reconvene Monday at 10 o'clock.

MONDAY, JUNE 2, 1969.

OTHER PROCUREMENT, AIR FORCE

WITESSES

GEN. ROBERT G. REUGG, DEPUTY CHIEF OF STAFF, SYSTEMS AND LOGISTICS
MAJ. GEN. GORDON T. GOULD, JR., DIRECTOR OF COMMAND CONTROL AND COMMUNICATIONS, DEPUTY CHIEF OF STAFF, PROGRAMS AND RESOURCES
MAJ. GEN. GEORGE S. BOYLAN, DIRECTOR OF AEROSPACE PROGRAMS, DCS/PROGRAMS AND RESOURCES
MAJ. GEN. L. F. TANBERG, DIRECTOR OF MAINTENANCE ENGINEERING, DCS/SYSTEMS AND LOGISTICS
BRIG. GEN. WILLIAM F. PITTS, DIRECTOR OF BUDGET, HEADQUARTERS, U.S. AIR FORCE
BRIG. GEN. A. A. RIEMONDY, DIRECTOR OF SUPPLY AND SERVICES, DCS/SYSTEMS AND LOGISTICS
BRIG. GEN. LEE M. PASCHALL, DEPUTY DIRECTOR OF COMMAND CONTROL AND COMMUNICATIONS, DCS/PROGRAMS AND RESOUCES
COL. G. W. RUSSELL, DIRECTORATE OF SUPPLY AND SERVICES, DCS/SUPPLY AND SERVICES
COL. VITO VELLA, DIRECTORATE OF DATA AUTOMATION, CONTROLLER OF THE AIR FORCE
D. N. P. PRITCHETT, CHIEF, AIRCRAFT AND LOGISTICS DIVISION, DIRECTORATE OF BUDGET, U.S. AIR FORCE

OTHER PROCUREMENT, AIR FORCE

For procurement and modification of equipment (including ground guidance and electronic control equipment, and ground electronic and communication equipment), and supplies, materials, and spare parts therefor, not otherwise provided for; the purchase of not to exceed one thousand five hundred and twenty passenger motor vehicles [(including eleven medium sedans at not to exceed $3,000 each)] for replacement only; and expansion of public and private plants, Government-owned equipment and installation thereof in such plants, erection of structures, and acquisition of land without regard to section 9774 of title 10, United States Code, for the foregoing purposes, and such land, and interests therein, may be acquired and construction prosecuted thereon prior to the approval of title by the Attorney General as required by section 355, Revised Statutes, as amended; [$2,718,000,000]. $1,938,300,000 to remain available until expended. (*5 U.S.C. 3109; 10 U.S.C. 2110, 2353, 2386, 8012, 9505, 9531-32; 31 U.S.C. 638a, 638c, 649c, 718; 50 U.S.C. 491-94; Department of Defense Appropriation Act, 1969.*)

Explanation of language change.—The change in language provides for deletion of the authorization to purchase medium sedans within the total quantity of passenger motor vehicles authorized to be purchased for replacement only.

PROGRAM AND FINANCING (IN THOUSANDS OF DOLLARS)

	Budget plan			Obligations		
	1968 actual	1969 estimate	1970 estimate	1968 actual	1969 estimate	1970 estimate
Program by activities:						
Direct:						
1. Munitions and associated equipment	1,555,758	1,833,279	1,294,261	1,537,505	1,728,000	1,282,000
2. Vehicular equipment	94,247	71,153	74,112	97,516	81,000	79,000
3. Electronics and telecommunications equipment	346,160	378,626	488,460	414,873	388,000	459,000
4. Other base maintenance and support equipment	499,935	418,989	453,420	524,092	420,000	460,000
Total direct	2,496,100	2,702,047	2,310,253	2,573,986	2,617,000	2,280,000
Reimbursable:						
1. Munitions and associated equipment	17,536	9,320	9,300	16,192	12,000	11,000
2. Vehicular equipment	1,070	820	800	915	1,000	1,000
3. Electronics and telecommunications equipment	6,879	6,320	6,300	15,602	7,000	7,000
4. Other base maintenance and support equipment	11,023	3,540	3,600	9,271	7,000	4,000
Total reimbursable	36,508	20,000	20,000	41,980	27,000	23,000
Total	2,532,608	2,722,047	2,330,253	2,615,966	2,644,000	2,303,000
Financing:						
Receipts and reimbursements from:						
Federal funds	−40,996	−15,430	−11,000	−37,162	−12,430	−7,500
Trust fund accounts	−24,770	−17,845	−12,750	−33,651	−17,845	−12,750
Non-Federal sources [1]	−221	−1,725	−1,250	−512	−1,725	−1,250
Unobligated balance available, start of year:						
For completion of prior year budget plans				−773,447	−679,533	−490,580
Available to finance new budget plans			−266,953			−266,953
Unobligated balance transferred from other accounts				−4,727		
Reprograming from prior year budget plans	−10,621	−264,000	−100,000			
Unobligated balance available, end of year:						
For completion of prior year budget plans				679,533	490,580	414,333
Available to finance subsequent year budget plans		266,953			266,953	
Budget authority	2,446,000	2,690,000	1,938,300	2,446,000	2,690,000	1,938,300

[1] Reimbursements from non-Federal sources are derived principally from sales to foreign governments, international organizations, individuals, and commercial enterprises (10 U.S.C. 2210).

PROGRAM AND FINANCING (IN THOUSANDS OF DOLLARS)

	Budget plan			Obligations		
	1968 actual	1969 estimate	1970 estimate	1968 actual	1969 estimate	1970 estimate
Budget authority:						
Appropriation	2,429,800	2,718,000	1,938,300	2,429,800	2,718,000	1,938,300
Transfer to emergency fund, Defense		−28,000			−28,000	
Transfer from emergency fund, Defense	16,200			16,200		
Appropriation (adjusted)	2,446,000	2,690,000	1,938,300	2,446,000	2,690,000	1,938,300
Relation of obligations to outlays:						
Obligations incurred, net				2,544,641	2,612,000	2,281,500
Obligated balance, start of year				2,322,617	1,925,943	1,812,943
Obligated balance, end of year				−1,925,943	−1,812,943	−1,818,843
Outlays				2,941,315	2,725,000	2,275,600

OBJECT CLASSIFICATION (IN THOUSANDS OF DOLLARS)

	1968 actual	1969 estimate	1970 estimate
Direct obligations:			
Transportation of things	99,100	115,000	103,500
Supplies and materials	1,572,337	1,637,000	1,215,000
Equipment	902,549	865,000	961,500
Total direct obligations	2,573,986	2,617,000	2,280,000
Reimbursable obligations:			
Supplies and materials	15,952	9,000	8,000
Equipment	26,028	18,000	15,000
Total reimbursable obligations	41,980	27,000	23,000
Total obligations	2,615,966	2,644,000	2,303,000

SUMMARY OF REQUIREMENTS (IN THOUSANDS OF DOLLARS)

	1968 actual	1969 estimate	1970 estimate
Direct program requirements:			
1. Munitions and associated equipment	$1,555,758	$1,833,279	$1,294,261
2. Vehicular equipment	94,247	71,153	74,112
3. Electronics and telecommunications	346,160	378,626	488,460
4. Other base maintenance and support equipment	499,935	418,989	453,420
Total direct program requirements	2,496,100	2,702,047	2,310,253
Reimbursable program	36,508	20,000	20,000
Total requirements	2,532,608	2,722,047	2,330,253
Less portion of program to be obligated in subsequent fiscal years	314,948	357,727	324,266
Plus obligations incurred against prior-year program funds	398,306	279,680	297,013
Total obligations	2,615,966	2,644,000	2,303,000

SOURCE OF FINANCING OF PROGRAM YEAR REQUIREMENTS

[In thousands of dollars]

	1968	1969	1970
Program requirements	2,532,608	2,722,047	2,330,253
Federal funds	−40,996	−15,430	−11,000
Trust funds	−34,770	−17,845	−12,750
Non-Federal sources	−221	−1,725	−1,250
Reprograming of prior-year funds	−10,621	−264,000	−100,000
Unobligated balance available to finance			
(a) Subsequent year budget plans (no year accounts)		266,953	
(b) New budget plans (no year accounts)			−266,953
New obligational authority	2,446,000	2,690,000	1,938,300
Appropriation	2,429,800	2,718,000	1,938,300
Transferred to other accounts		−28,000	
Transferred from other accounts	16,200		
Appropriation (adjusted)	2,446,000	2,690,000	1,938,300

Mr. MAHON. We will resume our hearing with the Air Force.

We begin the hearing on the title "Other procurement, Air Force."

The committee welcomes General Ruegg before us. He is the Deputy Chief of Staff for Systems and Logistics.

The original budget which was submitted to Congress in January requested $2,320 million. The revised budget submitted in April reduced this by $382 million. The request before the committee is for $1,938,300,000. These are rather large figures.

General, who have been your last three predecessors in this office of Deputy Chief of Staff for Systems and Logistics?

General RUEGG. General Gerrity was the one I succeeded.

Mr. MAHON. Before him?

General RUEGG. Gen. Mark E. Bradley. Prior to that, General Irvine

Mr. MAHON. What sort of presentation do you propose this morning, General?

GENERAL STATEMENT

General RUEGG. Mr. Chairman, I have a prepared statement that I would like to present for the record.

Mr. MAHON. You may proceed, General.

General RUEGG. Mr. Chairman and members of the committee, it is again my pleasure to appear before this committee in support of the Air Force procurement program. I will present for your consideration the Air Force "Other procurement" appropriation program request totaling $2,330.3 million in fiscal year 1970 for munitions, vehicles, electronics and telecommunications and organizational equipment.

New obligating authority of $1,938.3 million is requested to support this program. The balance of $392 million required will be made up from unobligated balance of prior-year funds, estimated recoupments of funds from prior-year programs, and anticipated reimbursements.

The following table (table I) shows the fiscal year 1970 program requirement for each major category of equipment:

TABLE I.—*Department of the Air Force other procurement program, fiscal year 1970*

[In millions of dollars]

	Fiscal year 1970 program estimate
Munitions and associated equipment	$1,294.3
Vehicular equipment	74.1
Electronics and telecommunications equipment	488.5
Other base maintenance and support equipment	453.4
Total direct program	2,310.3
Reimbursable program	20.0
Gross program	2,330.3
Less:	
Reimbursements	25.0
Unobligated balance of prior-year funds available to finance 1970 program	267.0
Recoupments	100.0
New obligating authority required	1,938.3

That portion of the fiscal year 1970 program which provides support of Air Force activities to Southeast Asia is estimated at $1,383.1 million. The balance of the program—$947.2 million—will provide for the continued acquisition of electronics and telecommunications systems and support of weapon systems deployed throughout the other areas of the world.

Major objectives of fiscal year 1970 for which these funds are required include:

(*a*) Continued support of Southeast Asia requirements, including the free world forces allied with the United States through June 1970 at current level of activities. Beyond that point, provision has been made to reduce munition production to the minimum sustaining rate.

(*b*) Replacement of equipment due to attrition or because it is no longer economical to operate.

TABLE II.—*Department of the Air Force munitions and associated equipment*

[In millions of dollars]

	Fiscal year 1970 program estimate
Rockets and launchers	$96.1
Cartridges	76.7
Bombs	786.6
Atomic ordnance	6.6
Targets	8.9
Other items	226.3
Spare and repair parts	4.1
Modifications	1.0
First destination transportation	88.0
Total	1,294.3

The fiscal year 1970 munitions program (table II) for $1,294.3 million is based on the following criteria:

(*a*) Continued support of consumption requirements for the Southeast Asia approved deployments of the United States and free world forces through June 1970. This includes monthly SAC (B–52) sorties, support of fighter-attack aircraft, and our pipeline-stock level.

(*b*) Provide only for minimum sustaining production rates for the period July 1 through December 31, 1970.

(*c*) Continued support of essential training programs required to insure the highest state of proficiency and readiness of our combat forces.

In the rocket and launcher category we are requesting $96.1 million. The major item is the 2.75″ rocket motor and warheads totaling $80 million. Other requirements are training items, launchers, and meteorological rockets.

Cartridges of various types require $76.7 million. Of this amount, $55.6 million is for 20 millimeter ammuntion. The balance is required to provide for aircraft engine starter cartridges, bomb ejection cartridges, and small arms munitions.

In the bomb category, we are requesting $786.6 million. Of this amount, $775.9 million is in direct support of the Southeast Asia effort. The conventional "Iron bombs" account for $466.3 million of the total bomb procurement. The balance is required to provide for dispenser munitions, fire bombs, and aerial mines.

The atomic ordnance category supports our atomic weapons programs. We are requesting $6.6 million to provide training items and test projects.

In our target category we require $8.9 million to continue support of combat crew training.

For other munitions items we are requesting $226.3 million. Included are fuzes, flares, and other items. For eight different types of fuzes, $156.8 million is requested. For night illumination flares, $33.1 million is requested.

For spare and repair parts, modifications, and first destination transportation, $93.1 million is required.

TABLE III.—*Department of the Air Force vehicular equipment*

[In millions of dollars]

	Fiscal year 1970 program estimate
Passenger carrying vehicles	$5.4
Cargo and utility vehicles	13.4
Special purpose vehicles	10.3
Firefighting equipment	8.6
Materials handling equipment	14.0
Base maintenance equipment	11.1
Spare and repair parts	7.5
Modifications	1.3
First destination transportation	2.5
Total	74.1

For the total vehicle program for fiscal year 1970 (table III), $74.1 million is required. This includes $23.2 million for replacement of vehicles in Southeast Asia which are no longer economically repairable.

We are continuing to extend the age and mileage criteria for a minimum of 1 additional year or until excessive repairs are required. Application of these guidelines resulted in a savings of approximately $22.8 million since we instituted them in fiscal year 1968.

Applying this criteria, replacement of passenger vehicles requires $5.4 million and $13.4 million will provide for replacement of cargo and utility vehicles.

Replacement of special purpose vehicles will require $10.3 million, and provides no equipment modernization.

To procure firefighting equipment, $8.6 million is required. Three types of crash trucks are peculiar to the Air Force—the P–2 2,500 gallon water and foam truck; the O–6 carbon dioxide truck; and P–4 1,500 gallon water and foam truck. The P–2 and O–6 are designed for the larger, greater capacity and transport aircraft such as the C–5A. The P–4 is used for all other aircraft. Fire trucks, such as the class 750 and P–8 pumpers, are Department of Defense standard and will be procured from the Defense Supply Agency utilizing standard military specifications.

The $14.0 million for materials handling equipment consists of $6.8 million for the mechanized air cargo handling system; $2.9 million for mechanization of supply, transportation, base maintenance, and depot activities; and $4.3 million for normal replacement of standard forklifts and warehouse equipment.

For base maintenance, $11.1 million is required to replace cranes, tractors, and other equipment.

To support the current vehicle fleet, $7.5 million is required for spare and repair parts; $1.3 million for modifications; and $2.5 million for first destination transportation.

I will now discuss the electronics and telecommunications equipment program as shown on table IV. The fiscal year 1970 requirement for this program is $488.5 million. This includes $154.3 million in support of Southeast Asia.

Most of the systems in this program have been presented previously to this committee in considerable detail. My discussion of these systems, therefore, will be brief.

TABLE IV.—*Department of the Air Force Electronics and Telecommunications Equipment*

[In millions of dollars]

	Fiscal year 1970 program estimate
Cryptographic equipment	$22.7
404–L Traffic control and landing system	14.8
407–L Tactical air control system	71.9
416–L Continental U.S. aircraft control and warning system (backup interceptor control system)	6.4
433–L Weather observation and forecasting system	1.2
440–L Over-the-horizon radar system	6.2
492–L USSTRICOMM	2.3
494–L Emergency rocket communication system	1.9
496–L Spacetrack system	8.5
Integrated tactical air control system	4.2
Range and space communications support	62.5
Special communications-electronics projects	18.2
Defense communications planning group	71.4
Intelligence data handling system	1.6
Tactical security support equipment	13.0
Air Force communications	16.3
Defense communications system communications	27.9
Defense special security communications system	6.7
National military command system	2.5
Organization and base equipment	28.3
Spare and repair parts	56.1
First destination transportation	3.0
Modifications	37.2
Industrial facilities	3.7
Total program	488.5

CRYPTOGRAPHIC EQUIPMENT

The first item in the electronics and telecommunications equipment program is cryptographic equipment for which $22.7 million is required. This includes $17.3 million to support worldwide Air Force requirements for encryption/decryption of defense communications system and other teletype data and voice circuitry for communications security purposes. Included are—the space-ground link subsystem which provides security for the satellite control facility operation including telemetry and command and control functions; the KG–30 family series which provides for encryption of point-to-point data, secure voice communications, and air-to-ground secure voice and data; and the KW–7 electronic tactical teletypewriter equipment which will provide teletype security for communication systems, mobile communication groups and tactical air control groups.

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Total program	488.5

CRYPTOGRAPHIC EQUIPMENT

The first item in the electronics and telecommunications equipment program is cryptographic equipment for which $22.7 million is required. This includes $17.3 million to support worldwide Air Force requirements for encryption/decryption of defense communications system and other teletype data and voice circuitry for communications security purposes. Included are—the space-ground link subsystem which provides security for the satellite control facility operation including telemetry and command and control functions; the KG–30 family series which provides for encryption of point-to-point data, secure voice communications, and air-to-ground secure voice and data; and the KW–7 electronic tactical teletypewriter equipment which will provide teletype security for communication systems, mobile communication groups and tactical air control groups.

The $5.4 million is for communications intelligence and electronics inteliigence equipment, which is used by the Air Force Security Service world-wide.

404–L TRAFFIC CONTROL AND LANDING SYSTEM

The 404–L traffic control and landing system provides the essential equipment for controlling air traffic such as control towers, instrument landing systems, approach control radars, air/ground communications and other navigational aids. Where joint operations with Federal Aviation Agency exist, we design our requirements on a "common user" basis and procure only those equipments not provided by the FAA. The $14.8 million requested will provide for the procurement of long leadtime components for a new generation of ground controlled approach radars at the cost of $2.5 million. The remaining funds will continue our efforts to improve our existing programs.

407–L TACTICAL AIR CONTROL SYSTEM

The 407–L tactical air control system provides the mobile communications, electronic equipment and operating facilities required for the command and control of deployed tactical air forces. It will also provide supporting communications and air traffic control facilities needed for the operation of contingency air bases. All equipment is designed to be modular and transportable, providing flexibility in the choice of equipment required for any level of contingency. The program consists of three phases. We have virtually completed phase I, which was begun in fiscal year 1965. Phase II is providing an upgraded tactical air control system through "state-of-the-art" improvements in all equipment and will continue through fiscal year 1970. Phase III, scheduled for the 1971–1975 period, will continue to push current technology in an evolutionary manner.

Although not specifically procured to meet the Southeast Asia requirements, much of the direction air support equipment procured in Phase I is now in Vietnam.

We are requesting $71.9 million in fiscal year 1970 to support this program.

416–L CONUS AIRCRAFT CONTROL AND WARNING SYSTEM

The 416–L Conus aircraft control and warning system is designed to provide a reliable air defense interceptor control network in the post-strike situation. This is accomplished by widely dispersed backup interceptor control (BUIC) sites capable of operation independent of the semiautomatic ground environment (SAGE) direction centers. Funds in this request for $6.4 million complete the procurement and installation of the BUIC III equipment at the 15 approved sites and completes the procurement of common digitizer equipment to enable the FAA to make use of Air Force surveillance radar facilities in air traffic control operations.

433–L WEATHER OBSERVATION AND FORECAST

The 433–L weather observation and forecasting system provides up-to-date equipment and techniques for use by the Air Weather Service in providing specialized military weather support to the Air Force and Army.

In fiscal year 1970, $1.2 million is needed for tactical operations control center weather element and manual meteorological set equipments.

440–L OVER-THE-HORIZON RADAR

The 440–L over-the-horizon radar is a forward scatter radar detection system. The system complements the ballistic missile early warning system (BMEWS) and also supplements the BMEWS by being able to detect low angle missiles.

The $6.2 million in fiscal year 1970 will provide new equipment, improved communications and permit installation and test.

492–L U.S. STRIKE COMMAND SYSTEM

The 492–L U.S. strike command system supports Cincstrike in planning for joint operations and exercising centralized command direction of highly dispersed assigned forces, and which will interface with other command control systems of the worldwide military command control system. In fiscal year 1970 we are requesting $2.3 million for (1) data display equipment for the new Strike Command Center, (2) an automated tactical message exchange system in support of field forces, and (3) system engineering/design integration and test requirements preparatory to future acquisition of a third generation automatic data processing system.

494–L EMERGENCY ROCKET COMMUNICATIONS SYSTEM

The 494–L emergency rocket communications system is operational but will require $1.5 million to procure operational training launch communications payloads. For aerospace ground equipment, technical data, and system engineering for communication payloads in the system, $0.4 million is required.

496–L SPACETRACK SYSTEM

The 496–L spacetrack system provides for detecting, tracking, identifying and cataloging all manmade objects in space. This system also provides data for space defense control and supports research and development efforts for future systems. The system consists of a worldwide sensor network, a communications network, and an operational control center with a central data processing facility. The Space Defense Center, the focal point of the spacetrack system, is located in the Norad Cheyenne Mountain Complex. In fiscal year 1970, we are requesting $8.5 million for improved data processing equipment and computer programing.

32-845—69—pt. 3——67

INTEGRATED TACTICAL AIR CONTROL SYSTEM

The integrated tactical air control system is a combination of several interrelated efforts required to prevent inadvertent air violations. It provides the 7th Air Force Command Center at Tan Son Nhut with information pertinent to the air situation over North Vietnam and contiguous areas of operation. Employment of BUIC II-type equipment will permit the Air Force, as Joint Chiefs of Staff executive agent, to integrate elements of the Navy and Marine tactical data system, and the Air Force Security Service in Southeast Asia. The fiscal year 1970 program of $4.2 million is to complete this effort in Southeast Asia.

RANGE AND SPACE COMMUNICATIONS SUPPORT

We are requesting $58.7 million to continue the procurement of dedicated ground readout stations to work in conjunction with the satellite early warning system. The fiscal year 1970 funding will complete the acquisition of the readout stations.

Additionally, we are requesting $3.8 million to improve the satellite control facility capability by expanding communications between the remote tracking stations and the satellite test center.

SPECIAL COMMUNICATIONS—ELECTRONICS PROJECTS

We are requesting $18.2 million for the procurement of electronic and communication equipment for six special projects. It provides ground communication equipment for the free world forces—Vietnam, Laos, and Thailand. We are providing the engineering management and computer programing to interface the Navy and Marine tactical data systems with the semiautomated Japan air defense systems (Badge). We plan to initiate procurement for console equipment to be used in the control centers operated jointly by FAA and DOD. It has become necessary to replace the obsolete FSQ-31 computers in the SAC automated command and control system. Our minimum essential emergency communications network must be changed to enable it to be fully compatible with Navy equipment. The Creek Rib project provides various equipments for the USAFE operations plan 145-64.

DEFENSE COMMUNICATIONS PLANNING GROUP

In fiscal year 1970, $71.4 million (excluding $3.6 million for spares) is required for electronics and telecommunications support of this Southeast Asia project. This funding is divided between two major areas—the command and control element, and the data collection element.

In the command and control element we require $20 million to provide relay and terminal stations to communicate, relay, analyze, and interpret the information provided by the data collection element.

For the data collection element, we require $51.4 million. The element consists of a mix of sophisticated sensing devices. We use various methods of deploying these sensors.

INTELLIGENCE DATA HANDLING SYSTEM

The intelligence data handling system provides automated data processing assistance to Air Force intelligence activities. It is an integral part of the defense intelligence system which supports the national defense effort.

In fiscal year 1970, we are requesting $1.6 million for procurement of display consoles, video facsimile document delivery equipment, and plotters in support of intelligence activities.

TACTICAL SECURITY SUPPORT EQUIPMENT

The tactical security support equipment program will significantly improve our ability to protect our more critical airbases in Vietnam. While not replacing the use of sentries and dogs in base security, it will provide our security police with the most modern surveillance and detection equipments. These equipments are of sufficient sensitivity to enable the all-weather monitoring of all movements on or around the area adjacent to the base. The $13 million requested will continue the procurement of equipment to augment our security forces in Southeast Asia.

AIR FORCE COMMUNICATIONS

The Air Force communications program consists of the worldwide ground-to-air-ground communications systems, the terminal and control facilities required for Air Force access to and use of the worldwide defense communications system (DCS), facilities required and utilized for operation of the military affiliate radio system (MARS). Excluded are other Air Force communications systems integral to weapons system control such as the Strategic Air Command's command and control system, special purpose communications system, emergency rocket communications system, and the tactical air control system. To support this program in fiscal year 1970, $16.3 million is required to upgrade and expand Air Force ground-to-air-ground communication facilities and terminals in the worldwide DCS and MARS.

DEFENSE COMMUNICATIONS SYSTEM COMMUNICATIONS

The defense communications system (DCS) is programed, acquired, installed, and operated by the military departments under the management of the Defense Communications Agency. The Air Force operates and supports assigned DCS transmission systems, major DCS switching centers and other miscellaneous DCS facilities. To support DCS programs in fiscal year 1970, $27.9 million is required to continue the 490–L switch (Autovon) program, the technical control improvement program, the phase II ground segment of the defense communications satellite program, preconfiguration of DCS entry stations, the autodin subscriber terminal equipment program and the program for elimination of compromising emanations.

DEFENSE SPECIAL SECURITY COMMUNICATIONS SYSTEM

The defense special security communications system (DSSCS), a part of the defense communications system, is designed to provide a

fully automated, integrated intelligence communications system to support the DOD intelligence community. The DSSCS will include the CritiCOMM network, and its various subsidiary networks and the Air Force portion of the special intelligence communications (SpintCOMM) network. Pending the completion of DSSCS automatic message handling system, selected communication improvements will be required. To support this program in fiscal year 1970, $5.6 million is required for CritiCOMM, and $1.1 million is required for SpintCOMM.

NATIONAL MILITARY COMMAND SYSTEM

The national military command system (NMCS) is the principal subsystem of the worldwide military command and control system which directly supports the national command authorities (NCA) in directing the national military effort involving U.S. forces or forces under U.S. control. It provides the NCA with an integrated, survivable and jointly manned system which contains communications required for such direction. Communications in support of the NCA have been and are continually being developed and improved. To support this program in fiscal year 1970, $2.5 million is required to improve the emergency message automatic transmission system and to integrate warning and attack assessment information from operational sensor systems. The two items are part of the overall concept for continued development of the NMCS based on user experience, new techniques and capabilities.

ORGANIZATION AND BASE EQUIPMENT

In fiscal year 1970, we require $28.3 million in the organization and base category. Equipment is of the type issued to bases and units and consists of individual radios, teletype and telephone equipment, training equipment, meteorological and other electronics equipment not provided elsewhere in this estimate. In addition to regular Air Force units, support is furnished to the Air National Guard, the Air Force Reserve, and Strike Command.

SPARE AND REPAIR PARTS

For spare and repair parts, $56.1 million is required to procure initial and replenishment spare parts in support of the Air Force ground communications-electronics maintenance system. Of this total, $27.9 million is required to continue the support of the Southeast Asia operation.

FIRST DESTINATION TRANSPORTATION

For first destination transportation of electronics and telecommunications equipment delivered by manufacturers in fiscal year 1970, $3.0 million is required.

MODIFICATIONS

The ground communications-electronics modification program requires $37.2 million. We will continue the programs started in prior years for the ground portion of the Mark XII which provides positive identification capability and improved air traffic control radar beacons.

The space detection and tracking system will be improved by the upgrading of communications and the detection environment. The Southeast Asia requirements will also be supported.

INDUSTRIAL FACILITIES

The industrial facilities budget request for fiscal year 1970 is $3.7 million. Of this request, $1.1 million will provide additional production facilities in support of air munitions production programs. For the manufacturing methods program in the munitions and electronics area, $1.0 million is required, and the remaining $1.6 million is budgeted for nonrecurring, capital-type maintenance and preparation for shipment of industrial equipment.

Table V.—Department of the Air Force—Other base maintenance and support equipment

[In millions of dollars]

	Fiscal year 1970 program estimate
Test equipment	$17.3
Foreign Technology Division	2.2
Air Force Technical Application Center	3.6
Personal safety and rescue equipment	16.5
Organization and base	394.2
Spare and repair parts	8.6
Modifications	1.0
First destination transportation	10.0
Total program	453.4

For the other base maintenance and support equipment program summarized in table V, $453.4 million is requested. This activity provides for a variety of support equipment essential to the operation of our global Air Force.

We require $17.3 million within this activity for common test and calibration equipment to support our modern weapon and communication systems.

To support the Foreign Technology Division, we require $2.2 million. These funds will provide for the procurement of various items including data conversion, stereo optical mechanism, and RADINT data processing and analysis equipments.

In the next category, Air Force Technical Application Center, $3.6 million is required. These funds will provide for the procurement of new complex and sophisticated mission equipment for deployment to new stations or for supplementing or replacing existing equipment.

In the personal safety and rescue equipment category we are requesting $16.5 million. This activity includes safety of life and survival items such as life rafts, life preservers, flying helmets, anti-exposure garments, and pallets and nets to support the air cargo mechanized handling system.

Next is $394.2 million for organization and base support. Included in this category is $296 million for the classified program. The remaining funds will provide for the many and varied items of photographic equipment, shop machinery, electrical generators, base procured equipment, automatic data processing equipment, and other miscellaneous items.

For spare and repair parts, modifications, and first destination transportation, we require $19.6 million. These funds will obtain the spare parts required to maintain the wide range of items included in this activity, and provide for the delivery of equipments from contractor to its first destination during fiscal year 1970.

SUMMARY

In summary, the other procurement appropriation program for fiscal year 1970 totals $2,330.3 million including $20 million for reimbursable program. New obligational authority in the amount of $1,938.3 million is requested to support this program.

That completes my prepared statement Mr. Chairman. I will be pleased to respond to any questions you or members of the committee may have.

Mr. SIKES. Thank you, General Ruegg.

COMMUNICATIONS SYSTEMS

I have been observing one of the tables which you presented, table No. 4, "Electronics and telecommunications equipment," total $488.5 million, which contains a score or so of communications and communications-related activities. It seems a very complex and difficult to follow type of thing. Do you in the Air Force get as confused with all of these different communications programs as we on this side of the table do?

General RUEGG. I am sorry, I did not catch the last.

Mr. SIKES. Do you in the Air Force get as confused over all of these different types of communications activities as we on this side of the table do?

General RUEGG. No, sir; I think all of these individual items are identified and there is a firm requirement for them. They have all been examined rigorously. We need each one of them. In the conglomerate they are odds and ends of different systems, and I can see where it would be confusing to look at the whole package. I have some experts here who can answer questions on those, but they are examined quite rigorously.

OVER-THE-HORIZON DETECTION CAPABILITY

Mr. SIKES. Under 440–L you say we have had a limited over-the-horizon detection capability since ——— and we expect to have an additional operational capability in ———. Is that the facility at the Eglin Air Force Base?

General RUEGG. No, sir.

General GOULD. ———. This system has been in the R. & D. stage and still is.

Mr. SIKES. What use is now being made of the facility at Eglin?

General GOULD. That is the FPS–85 which is not an over-the-horizon type.

Mr. SIKES. I thought it had that capability.

General GOULD. It will be part of the worldwide detection and tracking system for space objects. It is not in the same classification as the

over-the-horizon radar which is the one I described a minute ago. It is a different type of radar system.

Mr. SIKES. Is it performing according to expectations?

General GOULD. Yes, sir; generally speaking it is what is called a phased array radar, which means instead of moving your beam by rotating an antenna in the normal way, you actually track electronically by changing the phasing of the antenna. It is a well-worked-out technique and it is working satisfactorily.

NATIONAL GUARD PROBLEM

Mr. SIKES. I talked with a young guardsman over the weekend and he discussed with me a problem which his company-size unit is encountering. I doubt that this would apply to the Air Force but I want to check it to be certain.

The Army National Guard has been reorganized several times in recent years, and this has created considerable difficulty on the part of the personnel in getting the schooling they need for proficiency and for advancement. It also has resulted in confusion on the part of the personnel of the unit. About as soon as they have learned one type of activity they find themselves with another. In addition to that there has been a very great problem in obtaining the necessary equipment. The Guard Reserve units have been bled in order to obtain equipment for Vietnam and other parts of the world. Much of this equipment has not been replaced. When a unit has changed its designation it is sometimes left without any of the equipment which would accompany the new designation. Have you had any of that type of problem in the Air Force National Guard?

I know this is not your field, but I wonder if there is anybody here who can comment on it.

General RUEGG. By and large our outfits are kept pretty well equipped. As you know, we have called them up and they performed very satisfactorily. We have at times had to draw down some of the critical equipment but we managed to put it back together in pretty good shape. I think General Boylan can probably speak to that more accurately than I can.

Mr. SIKES. If you do not have the problem there is no reason to spend much time on it, but you might review this and add anything you wish for the record, General Boylan.

General BOYLAN. Mr. Sikes, just one small comment. For the last 2 years because of the floor on reserve forces, and personnel strengths, we have been transitioning certain units that were scheduled to deactivate to other types of missions. However, in each case the equipment and the training requirements for such transition has been available. We project no particular problem whatsoever as you have described.

Mr. SIKES. That is good.

APPROPRIATION FUNDING

UNOBLIGATED FUNDS

Mr. SIKES. General, back to your statement. You are requesting new obligating authority of $1.9 billion in support of a $2.3 billion program. In addition to the new obligational authority requested, you plan to fund the $2.3 billion program with $267 million of unobligated

balances which are available to finance new budget plans, and with $100 million which will be reprogramed during the fiscal 1970 from prior year budget plans. What program changes have occurred or are expected which will free up $367 million in this account?

General RUEGG. I will let General Pitts speak to that.

General PITTS. Mr. Sikes, the $267 million you spoke of as being in hand, derives from a reduction of munitions program support of B–52 sorties in Southeast Asia for $108.2 million. A reduction of munitions program support of Southeast Asia operations in general, based on consumption and changes in requirements of $108.6 million, and recoupments of $50.2 million realized from prior year appropriations during fiscal year 1968 and 1969, which are not required to finance the current fiscal year 1969 program, of $2,722.1 million. This totals the $267 million in hand and we anticipate additional $100 million in recoupments during the forthcoming fiscal year.

Mr. SIKES. Information provided to the committee last year estimated that at the end of fiscal year 1969, $504.4 million would be unobligated in "Other procurement, Air Force," but that none of this amount would be available to finance subsequent year budget plans. The justifications for the fiscal year 1970 budget, show that you estimate a total unobligated balance at the end of fiscal 1969, of more than $750 million of which $267 million will be available to finance the 1970 program. What unforeseen program changes account for this discrepancy?

General PITTS. Those are the programs I just mentioned, sir. The B–52 sortie reduction, the support reduction in Southeast Asia and the $50.2 million that pertain to recoupments realized from prior years, during fiscal years 1968 and 1969 which are not required to finance the current fiscal year 1969 program.

Mr. SIKES. I would like to have for the record, information indicating your accuracy over the past 5 years, in estimating unobligated balances remaining at the end of the various fiscal years.

Show the original estimate of the unobligated balance for a fiscal year, when first presented to this committee, and what the actual amount proved to be.

(The information follows:)

ESTIMATED AND ACTUAL UNOBLIGATED BALANCES

[In millions of dollars]

	End of each respective fiscal year				
	1964	1965	1966	1967	1968
Estimated unobligated balance	336.0	243.2	468.5	360.1	435.6
Actual unobligated balance	410.9	421.7	611.3	773.4	679.5
Underestimated amount	+74.9	+178.5	+142.8	+413.3	+243.9
Changes in net availability between the 1st and 3d year of each program	−73.2	+73.3	+1,428.7	+536.0	−31.0
Explanation of net availability adjustment:					
Congressional adjustments to Air Force NOA requests	−73.2	−22.9	−5.4	.....	−47.2
Air Force supplementals	.....	.....	+1,016.4	+536.0	.....
Air Force portion of OSD supplementals	.....	+116.2	+360.6	.....	+16.2
Transfers:					
To emergency funds: Defense	.....	−20.0	.....	.....	.....
From military assistance: Executive	.....	.....	+57.1	.....	.....
Total	−73.2	+73.3	+1,428.7	+536.0	−31.0

Mr. SIKES. If the Congress had reduced your appropriation last year by an additional $267 million, and if the $267 million had been included in the fiscal year 1970 request now before the committee, would this have had any detrimental effect on your fiscal 1969 programs?

General RUEGG. I would say "Yes," it would not have given us the capability of handling the program as we handled it.

Mr. SIKES. I saw some headshaking in another echelon in back of you. I would like to have the other side of the story.

General Pitts?

General PITTS. In hindsight, yes; but at the time we put that budget together we could not foresee the reduction in the munitions program support out there for the 52's and for Southeast Asia in general.

Now looking back on it from hindsight we could have done it; yes sir.

Mr. SIKES. In other words, if this committee can tell you what is going to happen at the Paris peace talks we might make some other changes.

General PITTS. Yes, sir; that is a very good statement.

(Discussion off the record.)

EFFECT OF UNOBLIGATED FUNDS ON NEW OBLIGATIONAL AUTHORITY

Mr. SIKES. When the Air Force presented the request for "Other procurement" for fiscal year 1968, you estimated that at the end of fiscal year 1968, $435,603,000 would be unobligated. The justifications presented in support of the fiscal 1970 budget show that the actual 1968 unobligated balance at the end of the year was $679,533,000. If we had known 2 years ago that this larger sum would have remained unobligated at the end of the fiscal year, could we have reduced the new obligating authority by about $250 million without detriment to your program?

General PITTS. No, sir. Again this is hindsight, Mr. Sikes, and what is playing here is the rapid escalation of activity in Southeast Asia that built up these large unobligated balances. So again without hindsight, no, sir; we could not have. I might draw the point right there, sir, that the difference in estimated versus actual from 1967 to 1968 has started dropping down as we are catching up now with that impact of the increased activity.

Mr. SIKES. Was a significant part of the money which remained unobligated at the end of fiscal 1968 committed?

General PITTS. I would like to correct it for the record, but basically it derives from large supplementals that were taken in fiscal years 1966 and 1967 and have carried forward. We got those supplementals late in the year.

Mr. SIKES. When the question is raised as to the unobligated balance the usual response is that the funds which are not obligated are nevertheless committed. This committee has that problem every time we go to the floor.

Would you define what the Air Force refers to as a commitment?

General PITTS. Yes, sir. A commitment is an administrative reservation of funds which permits a contracting officer, to obligate a specified amount of money without further reference to the account-

ing control. In other words, that is a reservation of funds pending a future obligation by a contracting officer.

Mr. SIKES. Is there any binding obligation on the part of the Government in a commitment?

General PITTS. No, sir. The contracting officer has not signed a contract yet. This just reserves those funds for the point in time when he signs the contract which obligates funds. At that time we incur what we call an obligation when he actually signs the contract.

DEFINITIONS: COMMITMENT, OBLIGATION, AND EXPENDITURE

Mr. SIKES. This is a matter which very frequently is discussed publicly and not all of those discussing it fully understand the various implications. I would like for you to define for the record in very careful and precise terms the differences between commitment, obligation, and expenditures as they pertain to Air Force financial management.

General PITTS. Yes, sir.

(The information follows:)

A commitment is an administrative reservation of funds which permits the contracting officer to enter into a contractual arrangement without further reference to the accounting control.

An obligation is an order placed, contract awarded or similar transaction requiring the future payment of money.

An expenditure is a disbursement or payment from the U.S. Treasury by cash or check to liquidate a valid obligation.

The background behind commitment accounting stems from section 3679 of the Revised Statutes, as amended (1951) (31 U.S.C. 685), which reads in part as follows:

"SEC. 3679. (a) No officer or employee of the United States shall make or authorize an expenditure from or create or authorize an obligation under any appropriation or fund in excess of the amount available therein; nor shall any such officer or employee involve the Government in any contract or other obligation, for the payment of money for any purpose, in advance of appropriation made for such purpose, unless such contract or obligation is authorized by law."

(g) Any appropriation which is apportioned or reapportioned pursuant to this section may be divided and subdivided administratively within the limits of such apportionments or reapportionments. The officer having administrative control of any such appropriation available to the legislative branch, the judiciary, or the District of Columbia, and the head of each agency, subject to the approval of the Director of the Bureau of the Budget, shall prescribe, by regulation, a system of administrative control (not inconsistent with any accounting procedures prescribed by or pursuant to law) which shall be designed to (A) restrict obligations or expenditures against each appropriation to the amount of apportionments or reapportionments made for each such appropriation, and (B) enable such officer or agency head to fix responsibility for the creation of any obligation or the making of any expenditure in excess of an apportionment or reapportionment. In order to have a simplified system for the administrative subdivision of appropriation or funds, each agency shall work toward the objective of financing each operating unit, at the highest practical level, from not more than one administrative subdivision for each appropriation or fund affecting such unit."

The regulations required by paragraph (g) above were established by DOD Directive 7200.1, dated August 18, 1955, which reads in part as follows:

"IX OBLIGATIONS AND EXPENDITURES

"No officer or employee of the Department of Defense shall authorize or create any obligation or make any expenditure, except as provided by Section 3679 of the Revised Statutes as amended, (a) in excess of an apportionment or reapportionment, or (b) in excess of the amount divided or subdivided administratively in accordance with the provisions of this directive. It shall be the responsibility of the head of each installation or other organizational unit of the Department of Defense who receives allotments or suballotments, or who authorizes open allotments to assure that obligations or expenditures will not be in excess of amounts specified in each such allotment, sub-allotment or open allotment."

Commitments are formally posted to the accounting records in order to assure that obligations and expenditures will not exceed the funds available to the Air Force.

Mr. SIKES. When funds are committed, what action by what level of authority is required for them to be decommitted?

General RUEGG. Let me answer that. Out in the field commands, all they do to decommit funds is that the Comptroller sends a note to the buying agency, saying we are withdrawing the funds and they are decommitted.

General PITTS. You just withdraw the obligation authority—I thought you said deobligate; decommit, I am sorry, I misunderstood you.

Mr. SIKES. Decommit. I am going to get to deobligate.

General PITTS. You withdraw the commitment authority which is the reservation of funds and those funds are freed up again. They are no longer reserved.

Mr. SIKES. Check your answer when this comes to you to be doubly sure it is crystal clear.

General PITTS. Yes, sir.

Mr. SIKES. When funds are obligated what action at what level is required for them to be deobligated?

General PITTS. That, as I said before, is where you have to cancel the contract, to deobligate the funds.

Mr. SIKES. What level of authority is involved in cancellation of a contract on a deobligation?

General PITTS. The contracting authority.

Whatever level the contracting authority is, that is the level of deobligation.

Mr. SIKES. How accurate have been your estimates of expenditures through the years? For instance, for the past 5 years for which we have actual figures, it would be helpful if you would provide for the record the original expenditure estimate for each fiscal year and the actual expenditures made during that year. Then provide a statement giving your summation of the accuracy of your estimates.

General PITTS. Yes, sir.

(The information follows:)

EXPENDITURES—ESTIMATED VERSUS ACTUAL

[In millions of dollars]

	Fiscal year				
	1964	1965	1966	1967	1968
Estimated net expenditures	977.0	965.0	885.0	1,256.0	2,130.0
Actual net expenditures	964.8	665.5	1,027.0	1,975.9	2,941.3
Overestimated amount	−12.2	−299.5			
Underestimated amount			+142.0	+719.9	+811.3
Changes in net availability between the 1st and 3d year of each program	−73.2	+73.3	+1,428.7	+536.0	−31.0
Explanation of net availability adjustments:					
Congressional adjustments to Air Force NOA requests	−73.2	−22.9	−5.4		−47.2
Air Force supplementals			+1,016.4	+536.0	
Air Force portion of OSD supplementals		+116.2	+360.6		+16.2
Transfers:					
To emergency funds, defense		−20.0			
From military assistance, executive			+57.1		
Total	−73.2	+73.3	+1,428.7	+536.0	−31.0

In fiscal year 1965, prior to the Southeast Asia conflict, we felt that we were at a level off in expenditures and projected on that basis. This proved to be an erroneous assumption.

In fiscal years 1966, 1967, and 1968 receipt of supplementals after the projections caused us to be on the low side. We feel that we are now back on track and the estimate for fiscal year 1969 will be close.

LIMITATION ON EXPENDITURE AVAILABILITY

Mr. SIKES. What would be the effect of a limitation on "Other procurement, Air Force," making funds appropriated to this account available for expenditure for not to exceed a period of 5 years instead of until expended?

General PITTS. Basically it would limit our flexibility to reuse those prior program year funds, sir. I do not think we would object to it. It would just take some flexibility away from us.

Mr. SIKES. Would a limitation for 4 years tighten your procedures a little more and make them a little more difficult to live with?

General PITTS. Yes, sir.

Mr. SIKES. Would it be a serious matter?

General PITTS. Yes, sir.

Mr. PRITCHETT. Some of our production programs take 3 years to complete and by the time you get the money expended we would be running into problems.

Mr. SIKES. For the record, what percentage of dollars under this appropriation are expended in 3 years?

General PITTS. About 93 percent.

1970 EXPENDITURES BY FISCAL YEAR OF FUND SOURCE

Mr. SIKES. Place a tabulation in the record at this point showing the source of your estimated expenditure of $2,275,600,000 in fiscal year 1970 by fiscal years and by your four budget activities.

(The information follows:)

Limitation on availability of funds

	Millions
Munitions and associated equipment	$1,405.2
Vehicular equipment	75.9
Electronics and telecommunications equipment	372.1
Other base maintenance and support equipment	422.4
Total	2,275.6
Program year:	
1961	.2
1962	.5
1963	1.5
1964	10.0
1965	35.0
1966	60.0
1967	85.0
1968	175.0
1969	1,204.0
1970	754.4
Gross expenditure	2,325.6
Less collections	—50.0
Net expenditures	2,275.6

STATUS OF PROGRAM

Mr. Sikes. Also, for the record, update the "Status of program" tabulation found on page 451 of last year's hearing.

(The information follows:)

A.—STATUS AS OF APR. 30, 1969

[In millions of dollars]

Program year	Program	Availability	Budget authorization	Commitments	Obligations	Expenditures	Percent of unexpended balance to availability
1969	2,722.1	2,722.1	2,694.2	2,334.2	1,944.6	652.6	76.0
1968	2,508.3	2,508.3	2,508.3	2,461.4	2,386.8	2,068.5	18.1
1967	2,579.2	2,579.2	2,579.2	2,549.1	2,523.1	2,335.1	9.5
1966	2,300.7	2,300.7	2,300.7	2,295.3	2,291.2	2,179.1	5.3
1965	981.9	981.9	981.9	978.7	977.5	911.8	7.1
1964	929.7	929.7	929.7	928.6	927.9	912.2	1.9
1963	963.0	963.0	963.0	962.8	962.7	959.8	.3
1962	1,224.1	1,224.1	1,224.1	1,223.5	1,223.2	1,222.1	.2
1961	1,015.5	1,015.5	1,015.5	1,015.4	1,015.4	1,014.8	.1
1960	1,056.6	1,056.6	1,056.6	1,056.6	1,056.6	1,056.5	.....
Total	16,281.1	16,281.1	16,253.2	15,805.6	15,309.0	13,297.5	18.3

B. EXPENDITURES/HISTORICAL EXPERIENCE FACTORS

[Cumulative percentages as of the end of each year in the active life of each annual program]

Program	1st year	2d year	3d year	4th year	5th year	6th year	7th year	8th year	9th year
1960	14.8	64.3	90.2	97.3	99.0	99.7	99.8	99.9	99.9
1961	13.9	68.7	90.9	97.2	99.0	99.5	99.8	99.9	
1962	14.4	76.1	93.3	98.0	99.1	99.8	99.8		
1963	25.8	74.8	94.1	97.7	98.9	99.2			
1964	27.6	67.5	86.4	93.7	96.8				
1965	15.3	58.3	81.4	89.1					
1966	18.6	67.8	90.4						
1967	21.9	81.1							
1968	25.0								
Cumulative	20.0	70.0	89.0	95.0	99.0	100.0			
Annual	20.0	50.0	19.0	6.0	4.0	1.0			

C. NET MONTHLY EXPENDITURES DURING FISCAL YEAR 1969

	Millions		*Millions*
July 1968	$231.3	December 1968	$157.5
August 1968	173.5	January 1969	192.8
September 1968	144.0	February 1969	343.8
October 1968	195.1	March 1969	256.4
November 1968	230.1	April 1969	230.0

TOTAL AVAILABLE FOR EXPENDITURE, 1970

Mr. SIKES. What will be the total amount available for expenditure in this appropriation at the end of fiscal year 1969. Do you have that immediately available?

General PITTS. Yes, sir. At the end of fiscal 1969 $2,570.5 million, sir.

Mr. SIKES. This amount, added to the budget request, would give you what total amount available for expenditure in fiscal year 1970, assuming the sum requested is to be appropriated.

General RUEGG. We will provide it for the record.

General PITTS. Roughly about $4.5 billion, sir.

(The information follows:)

Assuming the new obligational authority request of $1,938,300,000 is approved, the total available for expenditure in fiscal year 1970 will be $4,508,776,000.

Mr. SIKES. How accurate have you been in estimating unexpended balances through the years? For instance, for the past 5 years give the original estimate presented in the budget for a given fiscal year and then the actual figures, that would be fiscal year 1963 through 1968, and then a summation of your accuracy.

General PITTS. Yes, sir.

(The information follows:)

ACCURACY OF UNEXPENDED BALANCE ESTIMATES (END OF EACH RESPECTIVE FISCAL YEAR)

[In millions of dollars]

	1964	1965	1966	1967	1968
Estimated unexpended balance	1,361.9	741.7	916.8	2,156.3	3,107.9
Actual unexpended balance	960.2	1,170.0	2,413.3	3,096.1	2,605.5
Overestimated amount		+428.3	+1,496.5	+939.8	
Underestimated amount	−401.7				−502.4
Changes in net availability between the first and third year of each program	−73.2	+73.3	+1,428.7	+536.0	−31.0
Explanation of net availability adjustments:					
Congressional adjustments to Air Force NOA requests	−73.2	−22.9	−5.4		−47.2
Air Force supplementals			+1,016.4	+536.0	
Air Force portion of OSD supplementals		+116.2	+360.6		+16.2
Transfers:					
To Emergency funds, Defense		−20.0			
From Military assistance, Executive			+57.1		
Total	−73.2	+73.3	+1,428.7	+536.0	−31.0

Expenditures prior to fiscal year 1964 had been occurring at a very slow pace and we projected accordingly. At the time of the preparation of the fiscal year 1965 estimate, it was noted that fiscal year 1964 expenditures during the first 6 months were surging and we projected fiscal year 1965 expenditures on the basis that the trend has definitely turned upward. It turned out to be a poor assumption as it was only a 1-year increase; that is, 1964.

In fiscal years 1966 and 1967 receipt of supplementals after the projections was the primary reason for us to underestimate our unexpended balance.

In fiscal year 1968 the delivery and payment of the increased munitions programs occurred sooner than we had estimated and we therefore overestimated our unexpended balance. We feel that we are now back on track and the estimate for fiscal year 1969 will be close.

REQUESTED ITEMS DELETED IN BUDGET FORMULATION

Mr. SIKES. What was the amount requested by the Air Force from the Department of Defense for fiscal year 1970 for this appropriation?

General PITTS. The Air Force requested some $3,730 million.

Mr. SIKES. Provide for the record a listing of the major items which were deleted.

General RUEGG. We will provide that for the record.

(The information follows:)

MAJOR ITEMS DELETED BY DOD

[In millions of dollars]

	AF request	OSD reduction	Secretary of Defense allowance	Adjustment	Revised fiscal year 1970 budget
Munitions and associated equipment	2,370.9	−760.5	1,610.4	−316.1	1,294.3
Rockets	144.1	−40.0	104.1	−8.0	96.1
Cartridges	150.4	−40.6	109.8	−33.1	76.7
Bombs	1,540.0	−517.7	1,022.3	−235.7	786.6
Atomic ordnance	6.8	−.2	6.6	.....	6.6
Targets	11.6	−2.7	8.9	.....	8.9
Other items	401.5	−135.9	265.6	−39.3	226.3
Spares and repair parts	4.5	−.4	4.1	.....	4.1
Modification	2.0	−1.0	1.0	.....	1.0
1st destination transportation	110.0	−22.0	88.0	.....	88.0
Vehicular equipment	92.1	−13.0	79.1	−5.0	74.1
Passenger-carrying vehicles	6.1	−.7	5.4	.....	5.4
Cargo and utility vehicles	15.1	−1.7	13.4	.....	13.4
Special-purpose vehicles	14.9	−4.6	10.3	.....	10.3
Firefighting equipment	9.5	−.9	8.6	.....	8.6
Materials-handling equipment	20.4	−2.8	17.6	−3.6	14.0
Base maintenance equipment	13.4	−2.3	11.1	.....	11.1
Spares and repair parts	7.5	.....	7.5	.....	7.5
Modifications	2.2	.....	2.2	+.9	1.3
1st destination transportation	3.0	.....	3.0	−.5	2.5
Electronics and telecommunications	750.9	284.4	466.5	+22.0	488.5
Crypto equipment	41.5	−18.8	22.7	.....	22.7
404–L traffic control and landing	45.0	−20.2	24.8	−10.0	14.8
407–L tactical air control	93.9	−22.0	71.9	.....	71.9
416–L CONUS A.C. & W	8.1	−1.7	6.4	.....	6.4
433–L weather observation and forecast	3.5	−2.3	1.2	.....	1.2
440–L Over-the-horizon radar	9.2	−3.0	6.2	.....	6.2
441–C Sentinel foam	46.0	−46.0	.....	.....	.....
487–M Special-purpose communications	7.2	−7.2	.....	.....	.....
492–L USSTRICOMM	5.7	−3.4	2.3	.....	2.3
494–L Emergency rocket communications	4.1	−2.2	1.9	.....	1.9
496–L Spacetract	8.5	.....	8.5	.....	8.5
Integrated tactical air control system	12.4	−8.2	4.2	.....	4.2
Range and space communications	31.0	−.5	30.5	+32.0	62.5
Special communications, electronics program	36.1	−17.9	18.2	.....	18.2
Defense Communications Planning Group	71.4	.....	71.4	.....	71.4
Intelligence data-handling system	2.2	.6	1.6	.....	1.6
Tactical security support equipment	13.0	.....	13.0	.....	13.0
Air Force communications	24.7	−8.4	16.3	.....	16.3
Defense Communications System communications	57.1	−29.2	27.9	.....	27.9
Defense special security communication system	5.6	+1.1	6.7	.....	6.7
National Military Command system	6.3	−3.8	2.5	.....	2.5
Organization and base	55.1	−26.8	28.3	.....	28.3
Spares and repair parts	75.2	−19.1	56.1	.....	56.1
First destination transportation	3.0	.....	3.0	.....	3.0
Industrial facilities	3.7	.....	3.7	.....	3.7
Modifications	81.4	−44.2	37.2	.....	37.2
Other base maintenance and support equipment	516.0	−88.6	427.4	+26.0	453.4
Test equipment	17.3	.....	17.3	.....	17.3
Foreign Technology Division	2.7	−.5	2.2	.....	2.2
Air Force Technical Application Center	4.2	−.7	3.6	.....	3.6
Personal safety and rescue equipment	23.6	−7.1	16.5	.....	16.5
Organization and base support	449.2	−81.0	368.2	+26.0	394.2
Spares and repair parts	7.9	+.7	8.6	.....	8.6
Modifications	1.0	.....	1.0	.....	1.0
1st destination transportation	10.0	.....	10.0	.....	10.0
Total direct program	3,729.9	−1,146.5	2,583.4	−273.1	2,310.3

Mr. SIKES. What major items were deleted in the April budget amendment and what major increases were made? Do you have that at your fingertips?

General RUEGG. In the April budget amendment we reduced the munitions program in support of Southeast Asia based on consumption through June of 1970 and then we provided only for a minimum production sustaining rate from then on through the last 6 months. That was the main change.

Mr. SIKES. If there are other changes, furnish them for the record.

General PITTS. There are some pluses and minuses that net out to $273.1 million.

(The information follows:)

Major items added/deleted in budget amendment

	Millions
Reduction of munitions program support of Southeast Asia operations based on consumption and to provide only for minimum production sustaining rates from July 1, 1970, through December 31, 1970. This action reduced the fiscal year 1970 munitions program by	—$316.1
In the vehicular program there was a miscellaneous adjustment of $3,600,000 in the materials handling equipment area. $900,000 in the modification area and $500,000 in first destination transportation for a total change of	—5.0
In the electronics and telecommunications equipment area there was an increase of $32,000,000 in program 949 which was partially offset by a $10,000,000 decrease for the procurement of TPN–19 radars, which resulted in a total change of	+22.0
In the other base maintenance and support equipment area the classified project was increased by	+26.0
Overall net change to the fiscal year 1970 direct Air Force January budget	—273.1

ACCURACY OF 1969 ESTIMATES

Mr. SIKES. There is only 1 month remaining in fiscal 1969. How valid, according to your latest estimates, are the expenditure and obligation estimates for fiscal 1969 and the estimated balances as presented in the revised budget?

General PITTS. Mr. Pritchett informs me we are running right on target at this time, sir.

Mr. SIKES. You have anticipated the recoupment of $131.7 million from sources other than new obligational authority in fiscal 1969. How accurate is this estimate proving to be?

General PITTS. We are currently estimating those recoupments to be $329.2 million. The increase of $197.5 million or anticipated increase of $197.5 million is expected to materialize from a variety of management actions; $34 million which pertains to adjustments in the fiscal 1968 program to keep expenditures during fiscal 1969 within the Revenue and Expenditure Control Act of 1968. Some $163.5 million anticipated increased recoupments from prior year obligational authorities resulting from lower unit costs, deferral of items encountering developments and production problems, decreases in previously stated requirements, and so forth.

ITEMS FOR FREE WORLD FORCES IN VIETNAM

Mr. SIKES. General Ruegg, your statement indicates that of the fiscal year 1970 program, $1.3 billion is in support of Air Force activities in Southeast Asia. What part of the $1.3 billion is for munitions and equipment to be given to Vietnamese and other free world forces and what part is for utilization by the U.S. Air Force in Southeast Asia?

General RUEGG. In the 1970 budget the support of Southeast Asia, $92.9 million is for the Republic of Vietnam and $21.5 million is for the other free world forces. This leaves a balance of $1,268,700,000 for the support of U.S. forces.

Mr. SIKES. I would like to have a list of the items made available to other free world forces.

General RUEGG. We will furnish that for the record.

(The information follows:)

ITEMS FURNISHED FREE WORLD FORCES

[Dollar amounts in millions]

P-1 line No.	Item	Other free world forces	
		Quantity	Cost
	Rockets and launchers	———	($3.1)
1	2.75 in. rocket motor, MK-4	———	.9
2	2.75 in. rocket motor, MK-40	———	.9
4	2.75 in. rocket head, WP	———	.6
5	2.75 in. rocket head, frag	———	.5
11	Launcher LAU-3A	———	.1
12	Launcher LAU-59A	———	.1
	Cartridges (thousands of rounds)		(.2)
22	20 mm. training	40	(1)
23	20 mm. combat	———	.1
31	Items less than $500,000 each	———	.1
	Bombs	———	(12.9)
32	Dispenser and bomb CBU-25	———	3.4
42	Anti-Pam 750 lb. BLU-1/27	———	.1
43	Anti-Pam BLU-23/32	———	.6
46	Bomb, demolition, 750 lb. M117	———	.3
47	Bomb, 500 lb. MK-82	———	5.6
48	Bomb, 250 lb. MK-81	———	2.2
49	Cluster frag., M1A4	———	.7
67	Items less than $500,000 each	———	(1)
	Atomic ordnance		(1)
72	Items less than $500,000 each		(1)
	Other items		(3.2)
83	Flare para MK-45	18,000	1.2
85	Revolver, caliber .38 4 in. barrel		
89	Fuze, nose M904	45,607	.7
90	Fuze, tail M905	45,607	.8
91	Fuze, electric FMU-7/B (set)	4,056	.1
100	Arming wire w/accessories		.1
101	Delay element M-9 (all types)	133,701	.1
121	Items less than $500,000 each		.2
	Total, munitions and associated equipment		19.4
	Cargo and utility		(.1)
146	Items less than $500,000 each		.1
	Total, vehicular equipment		.1
	Special communications electronics		(1.4)
245	Free world forces		1.4
	Spares and repair parts		(.2)
298	Spares and repair parts		.2
	Total, communications electronics		1.6
	Organization and base support		
	Maintenance and repair shop		(.1)
347	Items less than $500,000 each		.1
	Electrical equipment		(.3)
371	Items less than $500,000 each		.3
	Total, O/base maintenance and support equipment		.4
	Total, other procurement		21.5

1 Under $50,000.

IMPROVEMENT AND MODERNIZATION OF VIETNAMESE FORCES

Mr. SIKES. At this point, review the major items programed to be given to the Vietnamese and other forces from funds requested for fiscal year 1970 and indicate if the items are included in phase I or phase II of the improvement and modernization plans.

General RUEGG. We will furnish that, sir.

(The information follows:)

PHASE I AND II IMPROVEMENT AND MODERNIZATION PLAN

[In tenths of millions of dollars]

Budget activity and exhibit P-1 line No.	Amount included for support of free world forces	
	Total	Phase I
Munitions and associated equipment:		
1	3.1	2.2
2	1.3	.4
4	.8	.2
5	1.7	1.2
11	.3	.2
12	.3	.2
23	14.3	14.2
31	.1	
32	8.8	5.4
42	2.0	1.9
43	5.7	5.1
46	4.7	4.4
47	23.1	17.5
48	11.6	9.4
49	1.4	.7
83	8.2	7.0
85	(1)	(1)
89	3.4	2.7
90	4.1	3.3
91	1.1	1.0
100	.3	.2
101	.5	.4
121	.4	.2
Subtotal	97.2	77.8
Vehicular equipment:		
129	(1)	(1)
131	.1	.1
134	.1	.1
135	.2	.2
136	.2	.2
140	.1	.1
146	.3	.2
Vehicular equipment—Continued		
149	(1)	(1)
159	.3	.3
170	.1	.1
171	(1)	(1)
174	(1)	(1)
176	(1)	(1)
184	(1)	(1)
187	(1)	(1)
188	(1)	(1)
192	(1)	(1)
Subtotal	1.4	1.3
Electronics and telecommunications equipment:		
245	7.1	5.7
298	.2	
Subtotal	7.3	5.7
Other base maintenance and support equipment:		
323	1.6	1.6
336	.9	.9
346	.5	.5
347	.6	.5
349	.7	.7
371	4.0	3.7
390	.2	.2
Subtotal	8.5	8.1
Total	114.4	92.9

1 Under $50,000.

Note: Funds for phase II improvement and modernization plan are not included in this request.

MUNITIONS PRODUCTION RATES BUDGETED FOR

Mr. SIKES. On page 3 of your statement you indicate that munitions production would be reduced to a minimum sustaining rate, ——— at the end of June of 1970 under the request for fiscal year 1970. If it is indicated that the war in Southeast Asia, and our participation therein, will continue after July 1, 1970 what additional funds do you estimate will be required and at what point in time will they be required?

General RUEGG. If the activity stays at the current level, we are going to have to commit funds in December of this year or very shortly thereafter. The amount, General Riemondy.

General RIEMONDY. $370 million.

General RUEGG. $370 million will have to be committed to hold up that rate.

Mr. SIKES. The timing you indicate would mean that there would not be a sufficient opportunity at the next session of Congress for a Southeast Asia supplemental similar to those we have had in the past several years to be enacted prior to the time you would need these funds; is that correct?

General RUEGG. Yes, sir.

General PITTS. You are absolutely right. This would be prior to the time there would be an opportunity to present a supplement request.

Mr. SIKES. Do you expect to handle this through reprograming? Would you have ample flexibility in the reprograming?

General RUEGG. We are going to have to reprogram until we get the request to Congress. We will have to come back over here for funds, in my opinion. We cannot handle that through reprograming.

General PITTS. Mr. Pritchett confirms that. He is the budget authority in this area and he says we do not have that kind of money.

Mr. PRITCHETT. We would borrow from other programs and then come in for a supplemental request.

VALUE OF BOMBING RAIDS BY B–52 AIRCRAFT

Mr. SIKES. A great quantity of munitions is utilized in the B–52 raids over South Vietnam. Air Force officials, both civilian and military, have always assured the committee that these were extremely valuable efforts. At this point in the record, discuss the cost of the B–52 raids over South Vietnam, including operation and maintenance, as well as munitions costs, and I would like your statement to show how effective they have been in numbers of the enemy killed, enemy installations and equipments destroyed, and the effectiveness of the spoiling operation, et cetera. Then I would like to know how accurate you believe your information is.

Obviously I would like a detailed statement for the record but would you like to comment briefly at this point?

General RUEGG. I think the best authority that we can go to is General Abrams, who said that to him the B–52's were worth several mobile divisions. I do not think there is any detailed expansion needed. The commander who is responsible for the SEA operations thinks they are worth several divisions.

Mr. SIKES. You can expand for the record.

(The information follows:)

COST AND EFFECTIVENESS OF B–52 RAIDS

The judgment and recommendations of the field commanders responsible for accomplishing our objectives in Southeast Asia, who have worked closely with the B–52 program in the field and have assessed results achieved, continue to be the prime source for determining the effectiveness of B–52 raids. This is due to the type and location of the B–52 targets which have made accurate assessments of bomb damage extremely difficult. However, the following partial results from 56 targets struck during a 6-day period in May present some indication of the effectiveness of the B–52 operations.

Field commanders in South Vietnam unanimously agree that B–52's make a major contribution to the achievement of U.S. objectives in Southeast Asia and are an important factor in preventing the enemy from pressing his offensive plans. The employment of B–52's in mass have demonstrated effective striking power in driving the enemy from attack positions and blunting his thrusts toward key cities, military installations, and population centers. Prisoner of war reports have revealed that the B–52 is the most feared weapon on the battlefield and that B–52 raids have significantly disrupted enemy operations throughout South Vietnam. B–52's accomplish these tasks with no enemy caused losses to the B–52 forces. Achieving these results by any other means would cost many lives of U.S., SVN, and free world forces.

A breakout of operating, maintenance, and munitions costs for B–52's operating in SEA is as follows:

[In millions of dollars]

Appropriation	Fiscal year 1968	Fiscal year 1969
Operation and maintenance	166.0	325.7
Other procurement, munitions	330.2	486.0
Aircraft procurement, spares used	51.9	[1] 21.3
Military personnel	33.3	59.9
Total	581.4	893.4

[1] Effective in fiscal year 1969 aircraft spares with a unit cost of $1,000 or less were transferred from "Aircraft procurement" to the "Operation and maintenance" appropriation.

Mr. SIKES. Again briefly at this point and in more detail for the record, if we stopped the bombing of South Vietnam with the B–52's, is there any substantiating evidence of significance that this would have a real impact on the course of the war?

General RUEGG. Can I furnish that for the record? I would like to get a statement in the record.

(The information follows:)

The evidence that the cessation of the B–52 bombing missions would have a real impact on the course of the war is contained in the evaluations of the B–52 missions made by the field commanders in Vietnam who have stated that these missions provide the equivalent firepower of several ground divisions. These missions have minimized the ability of the enemy to mass forces for major offensives, have impeded the enemy's movement of men and supplies, and have attacked areas inaccessible to ground troops in all weather conditions. Intelligence reports and prisoner-of-war interrogations indicate that the B–52 sorties have disrupted enemy communications, destroyed caches of supplies, caused enemy desertion, disrupted attack plans, and killed significant numbers of the enemy. In addition to these accomplishments any evaluation of B–52 missions must consider the number of lives which would be expended if ground forces were used to accomplish this mission. As recently as June 22, 1969, both Comusmacv and Cinepac have reiterated their conviction that the B–52 missions make a significant contribution to the conduct of the SEA war. A cessation of these missions would, therefore, have a significant impact on the casualty rate and the course of the war.

General BOYLAN. Mr. Sikes, all measures of value in that environment are at best less than precise. The nature of the terrain; the ability of the forces to disperse before, during, or after a strike; et cetera. A good example of the net worth of the total airstrike, with a big majority being B–52's, occurred at Khe Sanh. The data that has been made available to us includes such things as 5,000 secondary explosions, 1,900 fires resulting from B–52 strikes. Some 1,200 structures which range from identifiable pillboxes to gun emplacements, 100 bunkers, 350 gun positions, almost 300 trucks. These were specifically

reported as a result of B–52 actions. In total, surrounding Khe Sanh, our information, again a best estimate, is something like 10,000 North Vietnamese and Vietcong were killed from airstrikes.

Mr. SIKES. You realize that this is important that this answer be complete with illustrations, and that the best possible authority be cited in support of your statement, because this is a controversial area.

REIMBURSEMENT PROGRAM

Will you tell us something about the reimbursement program for which you anticipate obligations totaling $20 million for fiscal year 1970.

Mr. PRITCHETT. Mr. Sikes, that is an estimate of the orders we will get from the foreign sales and MAP.

Mr. SIKES. Extend that for the record.

(The information follows:)

The anticipated reimbursement program of $20 million is an estimate of the total customers orders to be received during fiscal year 1970 which will require new procurement in lieu of being filled from our inventory.

EMERGENCY FUND TRANSFERS

Mr. SIKES. Now, under "Emergency fund transfers," the justifications indicate that in fiscal 1969, $28 million was transferred from this appropriation into the emergency fund. A reprograming document, No. 69–83, which was dated February 24 of this year transferred $50 million from this appropriation to the emergency fund. Is this in addition to the $28 million?

General PITTS. Yes, sir.

Mr. SIKES. The $28 and $50 million items are included in your recoupment program.

General PITTS. The $28 million figure was not included, in the recoupment program, sir. The $50 million was.

Mr. SIKES. Are these amounts in excess to your needs in this appropriation?

Mr. PRITCHETT. Sir, the $28 million that was transferred was for a specific item—for the TPN–19. It was determined that the two prototype models properly items of development and the money was therefore transferred to the R.D.T. & E. account to develop them. The $50 million was excess to our requirements.

WAR RESERVE STOCKS

Mr. SIKES. How much of the money requested for fiscal 1970 is for the purpose of building up war reserve stocks?

General RUEGG. A very small amount.

Mr. SIKES. What is the status of the war reserve stocks as compared with the stated requirements?

General RUEGG. I will let General Riemondy speak to that.

General RIEMONDY. It calls for about ———. At the present time our total worldwide inventory of all our munitions is in the order of about ——— tons. We are deliberately withholding building up this WRM in anticipation of utilizing much of the inventory which is in transit to build up this WRM.

General Ruegg indicated there is a small amount in the 1970 budget. The re-do of the 1970 budget eliminated all of the WRM so there is none in the current April version of our budget.

Mr. SIKES. Before I begin the line items in the program "Other procurement," are there questions on the general statement?

Mr. LIPSCOMB. I have no questions.

Mr. MINSHALL. I have no questions at this time, Mr. Chairman.

MUNITIONS AND ASSOCIATED EQUIPMENT

Mr. SIKES. Under "Munitions and associated equipment," the estimated obligations of $1.3 billion for fiscal 1970 as compared with $1.7 billion in fiscal 1969, and $1.5 billion in fiscal year 1968—what does this decrease reflect? In other words, is this based on decreased activity of the Air Force in war or is it a decision to go to minimum sustaining rate in munitions in July 1970 or both.

General RUEGG. A substantial amount of it was due to the fact that we would only keep our production, our current production, up through June of 1970. We could only sustain that combat rate to June 1970 and would go to a minimum sustaining rate in the last 6 months of 1970.

2.75-INCH ROCKET

Mr. SIKES. Under "Rockets and launchers," line items 1 through 6 in the P–1 exhibit are concerned with the 2.75 rocket. Three items of the rocket motors and three for rocket heads. Why is the Air Force procuring both Mark 4 and Mark 40 rocket motors?

General RUEGG. The Mark 40 is for slow-speed aircraft. The Mark 4 is for a high-speed Century series aircraft and it requires a slightly different motor.

Mr. SIKES. For the record, tell us the difference between these motors in performance and cost.

General RUEGG. We will furnish that for the record, sir.

(The information follows:)

The difference between the MK–4 and MK–40 motor is the design of the propulsion nozzle. The MK–40 nozzles are required for slow-speed aircraft and are cut at an angle to provide a spin to the rocket for stabilized flight immediately after launch when the forward velocity would otherwise be insufficient to achieve effective fin stabilization. This problem is not encountered on the faster aircraft. In this latter case spin is undesirable because it sometimes causes fins to break off which then are ingested into the jet engine causing severe damage, even loss of the aircraft. Therefore both type rocket motors are required. The cost of the MK–40 is $29.05 and the MK–4 $29.20.

Mr. SIKES. The 2.75 rocket is an item which has been heavily expended in Southeast Asia. How does the consumption rate in fiscal 1969 compare with the estimate of the consumption rate made last year?

General RUEGG. I think our consumption was slightly under the production and therefore we have cut back in 1970 by ——— a month. We are currently consuming about 175,000 a month in both training and Southeast Asia and we are cutting back slightly.

Mr. SIKES. What is the relationship between the consumption of these rockets with the production of them in fiscal 1969?

General RUEGG. We consumed about $1.7 million and we received from production about ——— million, so this is why we have cut back in 1970 in our requests.

Mr. DAVIS. Could we get a reconciliation of the figure of $1.7 billion and the figure of $1.833 billion that appears on the front sheet of our shopping list.

General RUEGG. I am sorry, sir, I didn't hear the question.

Mr. DAVIS. May we have a reconciliation of the figure which the chairman gave us of $1.7 billion and the $1.833 billion which appears on the front page of the shopping list that we have before us.

General RUEGG. General Riemondy, could you respond to that?

General RIEMONDY. Is that the P–1?

Mr. DAVIS. Yes.

General RIEMONDY. I think we better do it for the record.

General RUEGG. Can we furnish that for the record? We can't identify the $1.7 billion even though we probably furnished that to you.

Mr. DAVIS. I believe that was the figure the chairman used as being your 1969 obligations under the total program of munitions and associated equipment.

Mr. PRITCHETT. One is an obligation figure and the other is a program figure. The $1.7 billion is the obligations for 1969; $1.833 billion is the programed amount.

Mr. DAVIS. Thank you, Mr. Chairman.

Mr. SIKES. The P–1 document does not include any unit cost information for 2.75 rocket motors and heads. What are the estimated fiscal year 1970 costs of this item and how do they compare with costs in previous buys?

Provide that for the record.

(The information follows:)

COST OF 2.75 INCH ROCKET MOTOR HEADS

Unit costs and their comparison with prior years are as follows:

P–1 Number	Item	Unit cost fiscal year 1970	Unit cost fiscal year 1969	Unit cost fiscal year 1968
1	2.75-inch rocket motor MK–4	29.20	(1)	(1)
2	2.75-inch rocket motor MK–40	29.05	(1)	(1)
3	2.75-inch rocket motor	(1)	36.46	27.99
4	2.75-inch rocket head WP	19.82	19.00	18.16
5	2.75-inch rocket head fragment	16.50	15.70	17.94
6	2.75-inch inert head	2.13	2.08	2.09

[1] In fiscal year 1968–69, P–1 the MK–4 and MK–40 motors were combined on 1 line as opposed to the fiscal year 1970 P–1, where they are each broken out as a separate line item.

Mr. SIKES. From how many sources are we buying 2.75 rockets?

Mr. PRITCHETT. We will provide that for the record, sir. There are three sources.

Mr. SIKES. They are competitive buys?

Mr. PRITCHETT. Yes, sir; they are.

(The information follows:)

PRODUCTION SOURCES OF 2.75 ROCKETS

The Air Force procures its 2.75 inch rockets by MIPR from the Army. The Army has three metal parts producers: Marquardt, Ogden, Utah; Muncie Gear,

Muncie, Ind., and Farmers Tool Supply, Denver, Colo. The rockets are loaded and packed (LAP) at two plants: Baldwin Electronics, Camden, Ark. (commercial plant) and the Naval Facility, McAllister, Okla. (Government plant).

Mr. SIKES. You are requesting funds to procure a great many more rocket motors in fiscal year 1970 than rocket heads. Does this indicate a retrofit of the motors?

General RUEGG. No, sir; it is just a balance, heads with rockets and motors with rockets.

Mr. SIKES. How did the inventories of the two get out of balance?

General RUEGG. To meet the requirements—and I would like to correct this for the record, but we had orders for various types of heads over in Southeast Asia for different missions and different types of motors and we bought extra heads so we would have flexibility of putting on different heads for different missions and now we are trying to balance them up.

NUMBER OF ROCKETS FOR TRAINING

Mr. SIKES. You are requesting $600,000 for 281,280 inert heads for 2.75 rockets. Why would you need this large number of inert heads?

General RUEGG. These are for our practice-training requirements.

Mr. SIKES. Isn't 281,000 a very large number for training?

General RIEMONDY. Actually, Mr. Chairman, last year we expended 308,000, so we are reducing the training requirement a little bit.

Mr. LIPSCOMB. Still, why do you use so many?

General RUEGG. It takes practice to hit a target with these rockets. They are in close support of ground troops and we put great stress on all of the crews being trained to the highest degree before they go over there so that they will have the required accuracy.

Mr. LIPSCOMB. How many rockets does a crew expend in their training?

General BOYLAN. Mr. Lipscomb, may we submit the syllabus for combat crew training for the record to show the number of sorties and the number of rockets per sortie required for combat qualification? May we submit that for the record, please?

Mr. SIKES. What we would like to know is why this large number of rockets must be expended in the training process. The committee is not quarreling with that fact. The committee recognizes the essentiality of accuracy in delivery of these rockets and the committee wants you to have all of these items that you need. We are puzzled by the large number.

General BOYLAN. I understand, Mr. Sikes. You also appreciate that in a relatively short period of time there are many things that our fighter pilots have to be qualified for. The very nature of the training load and the length of time available tends to force us to compress all of these aspects of training and rockets that have been reviewed over the years. We will submit for the record the precise number.

(The information follows:)

2.75 ROCKET CREW TRAINING

The 2.75 rocket event is one of the most difficult in which to qualify for weapon delivery certification for aircrew combat readiness. The small warhead on the rocket dictates a lower circular error average than for many other munitions—90 feet or less for all 2.75 rockets fired on one sortie. Accuracy

with these rockets is paramount because of their frequent use in Southeast Asia in close air support and ground attack missions with proximity to friendly forces. It is difficult to achieve qualification accuracy with these rockets because of the restrictive flight parameters necessary for safe rocket release and the possibilities of rocket malfunction. Consequently, crews require as many as 12 missions in some training courses before qualification in the rocket event is achieved.

The number of rockets that crews expend during training depends upon the type of instruction required and the aircraft which the crews will be flying following graduation. The number of rockets range from 16 per crew in an F–104 instructor's upgrading course to 246 rockets per crew in an F–4 operational course. The high number of rockets are required in the case of the F–4 because of this aircraft's close air support and ground attack role in Southeast Asia.

VIPER-DART ROCKET

Mr. SIKES. You are requesting $800,000 for 250 Viper-Dart Robin rockets at a unit cost of $3,000 each. This appears to be a new item in the inventory. Would you describe it and tell us what the requirement is?

General RUEGG. The Viper-Dart rocket is designed to collect weather data at high altitudes. It is a new item which will allow us to get up to 300,000 feet as opposed to the present capability of the rockets we are using to 200,000 feet, and the payload is a MYLAR balloon one meter in diameter, which is tracked by precision radar to provide wind and density information between the altitudes of 200,000 and 300,000 feet.

Mr. SIKES. What is the requirement for weather data at 200,000 to 300,000 feet?

General RUEGG. We would like to submit that for the record. Maybe General McNickle in the R. & D. program can furnish that for you.

General BOYLAN. A generalized answer: The Air Force, through its air weather service, supports weather requirements ranging from our space program, NASA, our own ballistic missiles program, test programs on both the east and west coast, as well as more commonly regarded weather phenomena at lower altitude. These high altitude rockets are in direct ——

NEED FOR WEATHER DATA ABOVE 200,000 FEET

Mr. SIKES. There isn't much use of the atmosphere above 200,000 feet. Who is interested in the requirement?

General BOYLAN. We are in our missile and space program. NASA is in its missile and space program. The degree to which winds and other phenomena at that altitude directly influence commonly regarded surface phenomena, I will have to submit for the record, but there is a direct relationship.

Mr. SIKES. Tell me what kind of climatic conditions do you have at 250,000 to 300,000 feet? Do you have winds?

General BOYLAN. Yes, sir. It is pretty sparse, Mr. Sikes, but it is there.

General RUEGG. The answer is we don't have a great deal of information and we need it, but I would like to submit for the record our total requirement in this area.

(The information follows:)

REQUIREMENT FOR WEATHER DATA AT 200,000 TO 300,000 FEET

The Air Force has an ever expanding need for knowledge of the environmental conditions above 200,000 feet. These needs are for three primary functions: to determine design criteria for new systems which operate in or through these altitudes, to assist the decision to launch planned operations through this regime, and to provide an information base for analysis of events that occur in these altitudes.

The first group primarily involves average and "worst case" information on temperature, wind, wind shear, density and pressure. The information is translated into design criteria for systems which must function, during some part of their life, above 200,000 feet. Systems having used such data include Titan, MOL, Minuteman, and many reentry vehicles. Examples of areas of concern include wind gust loading on missiles, density effects on the heating rate applied to reentry vehicles, and density and wind effects on reentry vehicle accuracies.

The second group requires rocketsonde launches to determine if existing conditions permit planned operations. Requirements have been identified for support at the National Ranges by the Air Force, Army, Navy, ARPA and NASA for wind, temperature, pressure and density information to over 300,000 feet. Programs needing support include Apollo/Saturn, Atlas/Centaur launches and others. Areas of concern include existing wind shear and gust loading on boosters, heating on nose fairings and exposed surfaces, guidance and propulsion performance during boost, and density and wind effects on manned lifting reentry operations. An example of the criticality of this information is that NASA programs Saturn engine burn time on the observations made by Air Force rocketsondes. Apollo reentry parameters are adjusted based upon other rocketsonde flights.

The last functional area is the analysis of events in this altitude regime. Post flight analysis of reentry systems performance, nuclear effects and sampling analyses, and studies of the dispersion of residue from high energy fuel and propulsion sources are areas of interest. Programs requiring support include the advanced ballistic reentry systems (ABRES) program, Minuteman, Polaris, and Poseidon for necessary analysis of heat shield effectiveness, plasma and aerodynamic effects, and booster performance; range safety studies and future booster programs using high energy fuels requiring environmental contamination analyses.

Mr. SIKES. Will you describe the requirement for LAU–59A launchers? You are asking for ———. What are these?

General RUEGG. This is the launcher that holds the 2.75-inch rocket on low speed aircraft. The seven-tube reusable launcher we buy on the basis that it can be used five times before it is damaged beyond repair in Southeast Asia, and 20 times in the CONUS because the requirement is less stringent. This requirement of ——— is related to our planned expenditures based on the previous history of use.

CARTRIDGES

Mr. SIKES. Under "Cartridges," one of the items deleted from the January budget in the April revision was 180 million rounds of 7.62 M–13 Link cartridges for which $23.4 million has been proposed. What effect will this deletion of this item have?

General RUEGG. This won't have any adverse effect because our expenditures during 1968 were considerably below what we projected. What we have in inventory, plus what we have due in, will carry us through 1970.

Mr. SIKES. The total amount requested for cartridges for fiscal 1970 is $76.7 million as compared with $110.1 million in 1969, and $136.1 million in fiscal year 1968. Is this decrease based entirely on reduced production rates after July 1970?

General RUEGG. What line item was that, Mr. Sikes?

Mr. SIKES. That is the total.

General RIEMONDY. Only part of the decrease is due to reduced production rates starting in July 1970. The other major factor in the decrease is the deletion of the 7.62 millimeter M–13 link cartridge from the fiscal year 1970 budget.

Mr. SIKES. Why does the Air Force need $1.9 million for .38 caliber ammunition?

General RUEGG. That is our standard sidearm for all of our aircrewmen and it is to meet that requirement. It is for training and operational requirements.

Mr. SIKES. You no longer use the .45 ammo?

General RUEGG. No, sir, the .38 is the standard sidearm.

Mr. SIKES. When did that become effective?

General RUEGG. Several years ago, but may I furnish that for the record, sir?

Mr. SIKES. All right.

(The information follows:)

The .38 caliber revolver was adopted as the standard Air Force sidearm in 1964.

20 MILLIMETER AMMUNITION

Mr. SIKES. Why did the unit cost of 20 millimeter ammunition increase from $1.40 to $1.60?

General RUEGG. Primarily on the basis of reduced buy. When the volume is less, the price inevitably goes up.

Mr. SIKES. That seems to be a rather sharp jump just because of a difference in volume to be bought.

General RIEMONDY. The buy ——

Mr. SIKES. As a matter of fact, the buy is up in this ammunition.

General RIEMONDY. The buy is up from fiscal year 1969. The decrease is between the January and April fiscal year 1970 budget request. Most of the fiscal year 1970 buy will be bought in the first 6 months of the year and then when we run into this sustaining rate for the last 6 months we expect a markup in price because of considerably reduced quantities. That amounts to about a 15-percent markup for the last 6 months.

Mr. SIKES. The justification shows 20.5 million rounds in fiscal 1969 against 29.5 million in fiscal 1970 and yet the cost goes up. The unit cost goes up.

You better research that and see what you come up with.

(The information follows:)

A true unit cost for a complete round of 20 millimeter combat ammunition is $2.11 as reflected in our fiscal year 1968 and fiscal year 1969 program costs.

The January fiscal year 1970 budget request recommended a procurement of 40.2 million rounds at $55.5 million which equated to a unit cost of $1.38 per round. The difference in the $2.11 and $1.38 cost is due to application of a metal parts "float" which was procured from a prior budget year.

The April fiscal year 1970 budget request recommends procurement of 29.5 million rounds at $45.8 million which equates to a unit cost of $1.55 per round. The unit cost increase from the two budget requests (January versus April) is due to restriction of the quantity of the metal parts "float" which can be applied while still maintaining a minimum sustaining production base of 2 million rounds per month during the last 6 months.

If the cost of the metal parts "float" were applied to the fiscal year 1970 budget, a complete round cost would be $2.11, the same as in fiscal year 1968 and fiscal year 1969.

The variance in the unit costs (less "float") as discussed above and as reflected in the exhibit P–1, that is, the difference of 2 cents in the January pricing and 5 cents in the April repricing is explained as follows: Unit costs of all line items listed in the exhibit P–1 are expressed in thousands of dollars. Consequently, the unit cost of $1.38 per round was rounded in the January P–1 at the rate of $1.40 per round (or $14,000 per thousand rounds). In the April repricing the unit cost of $1.55 per round was rounded in the April P–1 to $1.60 per round (or $16,000 per thousand rounds). In both cases (January and April) the total cost of the buy reflected in each P–1 is computed on the actual unit cost as opposed to the rounded unit cost shown in the P–1.

Mr. SIKES. Why is there an increase in this ammunition when most other types of ammunition are decreasing?

General RUEGG. Again, the 20 millimeter?

Mr. SIKES. Yes.

General RIEMONDY. It is principally the change in the mission of using more 20 millimeter in Southeast Asia rather than going up North. We are concentrating more of our attack down there and, as a consequence, using up more of this ammunition, especially in the gunship.

BOMBS

Mr. SIKES. With regard to bombs, your request has been sharply reduced from $1,152 million in 1969 to $786 million in 1970. To what extent is this decrease due to the continued restriction on bombing of North Vietnam?

General RIEMONDY. Actually, the decrease is not due to the bombing restriction up in North Vietnam. Actually the decrease, again, is going to our minimum sustaining rate for the last 6 months.

Mr. SIKES. The January budget for bombs for fiscal year 1970 was $1,022.3 million. The April revision is $235.7 less or $786.6 million. What are the major items reduced and what is the effect of these reductions of your combat capabilities?

CBU–52

Are there any new items included under "bombs" for the first time in fiscal 1970?

General RUEGG. There is in the CBU–52.

Mr. SIKES. What is that?

General RUEGG. A SUU 30 Dispenser with antimateriel bomblets. Some 220 antimateriel bomblets are carried in the dispenser.

Mr. SIKES. What are its characteristics?

General RIEMONDY. Actually, it is a dispenser that is filled with little spherical balls about 3.3 inches in diameter.

Mr. SIKES. Something about the size of a baseball or tennis ball?

General RIEMONDY. Just a little bit bigger than a tennis ball.

Mr. SIKES. Explodes on contact?

General RIEMONDY. Yes. About 2.2 pounds worth of——

Mr. SIKES. You drop how many of them in a container?

General RIEMONDY. 220 of them in one container.

Mr. SIKES. That isn't new, is it?

General RIEMONDY. This particular one is, yes. We have had some in the past about the size of a——

Mr. SIKES. Are they antipersonnel?

General RIEMONDY. These are principally antimateriel.

Mr. SIKES. What is the position of our war reserve stocks of bombs as compared with our objectives?

General RUEGG. As of March 31 our worldwide inventory was ——— tons. Of that amount, some ——— ton were either on hand or en route to Southeast Asia. The balance of the ——— tons is applied to our WRM objective of some ——— ton.

CBU–38

Mr. SIKES. One of the few bombs of which you are requesting more in fiscal 1970 than in 1969 is the CBU–38 dispenser and bomb. You are requesting $1.9 million in fiscal 1969 as against $9.1 million for fiscal 1970. Why is this item increasing?

General RUEGG. This item was production limited in 1969 and the production is now geared up to produce this many more and they are required over there. The CBU–38 consists of a SUU–13 dispenser loaded with 40 each of the BLU–49 ringtail bomblets which have the capability of penetrating heavy jugle canopy and there was a requirement for more than we could produce last year.

Mr. SIKES. Has the unit cost of bombs increased in the last year?

General RUEGG. In general the unit cost of bombs has decreased. The iron bombs, approximately a 10-percent decrease, and our CBU's, 20 percent. We attribute this to competitive procurement wherever we have a developed ordnance.

BOMB GUIDANCE KITS

Mr. SIKES. For the record please describe items 54, 55, and 56 in the P–1 which are all bomb guidance kits.

(The information follows:)

P–1 line No. 54. The item is a laser guidance kit which can be used to modify the MK–82 (500 pounds), M–117 (750 pounds), MK–84 (2,000 pounds) and M–118 (3,000 pounds) bombs into guided glide bombs. The bombs home on laser illuminated targets such as ships, bridges, tunnels, etc.

P–1 line No. 55 is an infrared guidance kit (KMU–359/B) ———.

P–1 line No. 56 is an electro-optical guidance kit (KMU–353/B) ———.

Mr. SIKES. What procurement procedures are involved in purchasing bomb guidance kits? In other words, are they competitive?

General RUEGG. Not to date.

Mr. SIKES. How do you procure them?

General RUEGG. We procure them sole source through the company that developed them.

Mr. SIKES. How long will this continue?

General RUEGG. Until we get a standard developed item with the bugs worked out of it and the requirements firmed up in the specification.

Mr. SIKES. What is the development status? We note that you are procuring them for utilization. Is this premature?

General RIEMONDY. We are at the point of actually evaluating them in combat, Mr. Chairman, and the results to date have been most encouraging. We also have a procurement package and soon in all probability some of the 1970 procurement will be done competitive. We are getting very, very good results.

Mr. SIKES. You are not buying any Walleye glide bombs in 1970 nor did you in fiscal 1969. Why is this?

General RUEGG. Primarily because we have an inventory built up and the bombing restriction in the north eliminates most of the lucrative targets that we use those on.

BOMB PROCUREMENT RELATED TO B-52 SORTIES

Mr. SIKES. What part of your bomb procurement program is associated with B-52 sorties in Southeast Asia?

General RUEGG. Could we furnish that for the record? It is a very substantial amount.

Mr. SIKES. All right.

(The information follows:)

B-52 sorties January through June 1970 at a rate of 1,600 per month will cost approximately $216 million or 27 percent of the total bomb program of $786.6 million.

CBU-14

Mr. LIPSCOMB. General, there is an amendment on your P-1 exhibit which is CBU-14. It shows fiscal year 1969 at 16,000, at $1.4 million and an estimated fiscal 1970 of ——— and it appears to be $21 million. It is right after line 67.

General RIEMONDY. Procurement of ——— at a cost of $21 million.

General RUEGG. This is 16,000 the year before at $1.4 million. That is your question.

Mr. LIPSCOMB. Yes. It seems like a significant jump.

General RIEMONDY. Let me research that and I will provide it for the record.

General PITTS. I think they have missed the decimal point there.

General RIEMONDY. I believe it could be a misplaced decimal point.

General PITTS. If we take the unit cost, which is ——— that is indicated.

Mr. LIPSCOMB. It would be better to check it out and provide the information for the record.

General RUEGG. We had some assets carried over that were in the 1969 production. We will have to furnish that for the record, Mr. Lipscomb, to give you an accurate story on it.

Mr. LIPSCOMB. Also check the addition in the total column.

General RIEMONDY. Actually, it is 21 million, but I will have to find out what happened there.

Mr. LIPSCOMB. Perhaps we can recommend a savings there.

General RUEGG. We will look into it and if we haven't added it right, we will certainly do that.

Mr. SIKES. Can you report back to us this afternoon on that?

General RUEGG. Yes, sir.

(The information follows:)

During fiscal year 1969 the only cost in obtaining the CBU-14 was the load and packing which cost $1.4 million. This was accomplished by using BLU-3 bomblets from previous CBU-2 and ADU-253 programs and dispensers previously designated for CBU-22's and CBU-25's. Fiscal year 1970 procurement will require new dispensers, bomblets as well as the load and pack cost, at a cost of $21 million.

ATOMIC ORDNANCE—SERVICE STAR

Mr. SIKES. Under atomic ordnance, will you describe the item "Service Star"? This is item 68 projected to cost $1.7 million.

General RUEGG. Service Star is the test program we use to test the reliability of the ICBM re-entry system. It is a laboratory type of testing, accomplished on random samples taken from re-entry vehicles which have been exposed to operational environments and the funds requested under this project are for the pipeline spares, the destructive test spares, and the follow-on operational test packages.

TARGETS

TDU-9/B

Mr. SIKES. Under targets, your TDU-9/B target was programed for fiscal year 1969 and funds were appropriated for this item in 1969. In the budget review in April, the program in 1969 was canceled and the 1970 request remained. Describe this item and tell us how essential it is in view of the fact that it was expendable in 1969.

General RUEGG. We had some problems.

Mr. SIKES. What is this item?

General RUEGG. It is a target for air-to-air gunnery at low altitudes and we had some problems getting the readout system and the target to be compatible.

Mr. SIKES. Why should it be such a costly item?

General RUEGG. It is quite sophisticated. It is supposed to show how close the ordnance fired at the target comes to it to give us a scoring rate and there was a technical problem in making the whole system compatible. It is compatible now, so we want to go ahead with the 1970 buy.

Mr. SIKES. Are you sure that you are ready to go ahead with it? Will it have to be postponed in 1970 as well as in 1969?

General RUEGG. We think it is ready to go ahead. We have a new scoring system sensor which has been proven successful, and we have had first-article acceptance tests and we think we are ready to go.

Mr. LIPSCOMB. This brings up a question I have been concerned with all through these hearings. What does your identification code mean on your Exhibit P-1, column 3, where it says "A"? What does that mean for the Air Force?

Mr. PRITCHETT. "A" means in production approved for service use, or, in other words, out of the development phase. "B" means in development.

General PITTS. That is a production article.

Mr. LIPSCOMB. Do you have a different definition than the other services?

Mr. PRITCHETT. No, sir, I don't think so.

Mr. LIPSCOMB. What does "Identification B" means to the Air Force?

Mr. PRITCHETT. "B" would mean in development. This is a standard OSD code.

Mr. LIPSCOMB. Does an "A" item to the Air Force mean that it is in production and approved for service?

Mr. PRITCHETT. Yes, sir.

Mr. LIPSCOMB. Well, how does an item like TDU-9/B get an "A" identification if you have had trouble with it and you don't even know whether it is ready?

General RIEMONDY. With all good intentions, we thought the R. & D. bugs were worked out or would be worked out during 1969. All indications at that point in time indicated it was ready to go. And, as we went along we found we had problems, compatibility problems in the various components in the target. As a consequence then, we knocked it out. We have all the confidence in the world that in 1970 this one will be ready for production.

Mr. SIKES. You cannot actually say that. You are hoping that is going to be the case and this could be misleading, this terminology.

General RIEMONDY. It is just a point of time, Mr. Chairman. We are saying that during the 1970 buy period this particular item can be produced and should be procured out of the munitions program.

Mr. LIPSCOMB. But your identification code is not meaningful to us when the identification A or B does not tell us if it is ready or approved. You seem to have an entirely different interpretation than the other services.

General RIEMONDY. If our interpretation is wrong, we will change it, but I think our interpretation is right. I don't know just what the Army is doing in this case.

Mr. LIPSCOMB. Can you tell me of any item on the Air Force list that isn't "A"?

General RUEGG. It wouldn't be in this appropriation. These items are our war consumables. Anything we have in here is developed and ready for production.

General RIEMONDY. Otherwise it would appear in the R. & D. area. This is a procurement program after development.

Mr. LIPSCOMB. We went along with this item last year, I believe. As you indicate now, you found it was not ready for procurement but was still in development with problems that had to be worked on.

General RUEGG. It did have. It is a needed article. We have to use our best judgment in deciding at the time we put our program together that the technical bugs are ironed out. An evaluation was made and it was determined due to our first-article inspection that it did work and the decision was made to buy it for the inventory.

Mr. LIPSCOMB. Where is this item now? Have contracts been let? Have you had bids?

General RIEMONDY. The test is being completed on it at the present time. The R. & D. phase is approximately completed at the present time.

Mr. LIPSCOMB. Is there still R. & D. money being put into it?

General RIEMONDY. I believe the windup of the R. & D. program takes place this year.

Mr. LIPSCOMB. Then does it go out on bid?

General RIEMONDY. Yes, sir.

Mr. LIPSCOMB. Competitive bid?

General RIEMONDY. I will have to supply that for the record. I am of the opinion it will probably be procured from the folks who are developing it. At least the first ones.

(The information requested follows:)

The initial buy of 80 targets was a sole source procurement from the developer, Sperry Rand Corp. That contract called for procurement data to be furnished by the contractor at the option of the Air Force for a price of $37,530.56. If the current tests continue to be successful, this option will be exercised and the fiscal year 1970 buy will be by competitive bid.

NEED FOR COMMON TERMINOLOGY IN JUSTIFICATION DETAIL

Mr. LIPSCOMB. In the operation of our committee work here it would be well if the Air Force and the Army and Navy got together on their identification codes; otherwise it makes it hard to work with. We are interested in knowing where an item is in its development.

I have been looking at your procurement program and it appears that you have nothing that isn't ready to go; approved for service.

General RUEGG. That is right, in this "all other procurement" area.

General BOYLAN. That should be the basic criterion.

Mr. LIPSCOMB. Take a look at the Navy program and see how they identify them. It makes it much easier to work on the items and to get an idea of what is going on.

General RUEGG. Is this the Navy "Other procurement" appropriations?

Mr. LIPSCOMB. I am talking about their procurement program, the same as yours which we are discussing.

General RIEMONDY. Well, Mr. Lipscomb, by definition of the Fiscal Code, the only things that ought to be in the "Other procurement" appropriations are those things which are ready to be procured. None of these dollars should be spent on R. & D.; none of them. So if the item isn't ready to go during the budget year that we want to buy it, it shouldn't appear in this account at all. By basic definition these ought to all be "A."

General RUEGG. Mr. Lipscomb, I appreciate your suggestion of seeing how the Navy does it. If they have a better way, we will use it. We will examine it, and if appropriate, use it.

Mr. LIPSCOMB. We would refer to item "B" in the Navy and they would tell us this is scheduled for approval for introduction into the service during the fiscal year, say in July or September, and it would give us some clue as to where they stood on the program. This seems helpful to us.

General RUEGG. I think when you go over the R. & D. program with General McNickle you will get the information on the R. & D. items as to when they will be ready for production. They will present the development items.

General PITTS. Perhaps a subcode in this P–1 document that indicates that it has been developed, or has been in development and is going to go into production in the forthcoming fiscal year might be what you are driving at, Mr. Lipscomb.

Mr. LIPSCOMB. Something to give us a good clue of how it is going.

General PITTS. We will check with the Navy and if they have a better way we will adopt it.

Mr. SIKES. The Navy has apparently followed a practice that is more precise than that which the Air Force has followed.

General RUEGG. What they are doing, may be, is to combine their development and their production budget, I presume.

Mr. SIKES. I think possibly the difference is that in documents like this from both the Army and the Navy, at the point in time at which the document is prepared, if the item has not completed R.D.T. & E. and has not been type-classified, it is inserted as a B item.

You are seemingly operating on the basis if you hope to get an article through R. & D. some time during the year you put it in, whether it is finished R. & D. at this point in time or not.

General PITTS. Do they indicate in their treatment of the subject that they expect to go into production with a subprogram?

Mr. SIKES. When questions are asked on the individual items they are in the B list.

General RUEGG. Everything I am talking about here should be ready for production in the 1970 time period.

Mr. LIPSCOMB. We don't always come to the same conclusions.

General RUEGG. There are some judgment areas in here as to how far along an item is. It depends on our need for it and how urgent it is as to how far we would try to expedite the production.

Mr. LIPSCOMB. Thank you, Mr. Chairman.

General RUEGG. We will take a look at it.

(Additional information follows:)

Procurement identification codes are applied to each individual line item of equipment listed in the exhibit P-1 "Procurement program" according to instructions[1] of the Department of Defense. These instructions prescribe that each such line item will be appropriately coded (either "A" or "B") according to the status of the item at the time the exhibit (P-1) is prepared as follows:

Code "A" will be applied to line items of material which have been approved for service use. For the Air Force the term "approved for service use" means that the item has been classified as standard or alternate standard.

Code "B" will be applied to line items of material that have not been approved for service use as defined under code "A."

The exhibit P-1 supporting the "Other Procurement," Air Force appropriation budget estimate for fiscal year 1970 was prepared in January 1969 and amended in April 1969. At that time all items were classified either as standard or alternate standard equipment and for those that had not been produced prior to fiscal year 1970 it was determined that they would be ready for production in the fiscal year 1970 time period. Accordingly, identification code "A" is reflected in column (3) of the exhibit P-1 for each of these items.

FLARE PARACHUTES

Mr. SIKES. Under other items you are requesting $33.1 million for 501,600 flare parachutes in item 83. What is your inventory of this item? What has been the consumption rate in fiscal year 1969? What has been the production in fiscal 1969? What is the estimated consumption in fiscal 1970 and the estimated production in fiscal 1970? Has the unit cost of the item increased or decreased?

(The information follows:)

The inventory of parachute flares as of April 30, was 332,100. Fiscal year 1969 consumption through April has averaged almost 56,000 per month, of which about 11,000 was for training and the remainder for combat. Production during the same period averaged 22,200 per month. Consumption in fiscal year 1970 is projected to increase by approximately ——— per month. Production for January through June of 1970 is projected at ——— per month and ——— per month (MSR) July through December 1970.

The unit cost of the flare has increased as the more reliable MK-45 flare was developed. The current price of MK-45 flare is $45. A much more efficient flare, ——— the LDU-2, is in development and should be ready for limited production in ———. It will cost about ———.

[1] DOD manual 7110-1-M "Manual for Preparation of Budget Estimates," Budget execution programs and apportionment requests, and related support material (p. IV-I-6).

M–16 RIFLES

Mr. SIKES. Under item 84 you are requesting $7.5 million for 65,000 M–16 rifles. Are these rifles for U.S. forces or for South Vietnamese or other free world forces?

General RUEGG. These are for the Air Force. We adopted this as a standard Air Force weapon back in 1962 for our security police and base defense and these are for Air Force use.

Mr. SIKES. What is the Air Force requirement and what is the Air Force inventory? Provide that for the record.

(The information follows:)

Total Air Force requirement for M–16 rifles is 467,407. The Air Force M–16 rifle inventory consists of 126,927 on hand. Additionally we have 100,914 due in from prior year procurements and 20,712 on loan to the Army.

Mr. SIKES. 65,000 of these rifles were funded in fiscal 1968. Have they been delivered?

General RUEGG. Over the past 2 years the allocation has been made by the Joint Chiefs as to where they are most needed. We have not yet received the 1968 buy.

General RIEMONDY. The fiscal year 1968 buy is scheduled to be delivered from December 1969 through April 1970.

Mr. SIKES. The price in 1968 for 65,000 M–16 rifles was $6.2 million. Your 1970 request for the same number is $7.5 million. That is a very substantial increase

General RUEGG. The price did go up from some $96 to $115 a rifle.

Mr. SIKES. Is this from a different manufacturer?

General RUEGG. Colt was our main supplier. The increased cost was due to some engineering changes that were made and the production acceleration cost; we did have to have a higher rate of production because the Army and ARVN and a lot of other forces including the Korean forces wanted them; we did increase production. We increased quality control. We raised our specification standards and we also converted to a level A, overseas package which was included in the cost and that is the reason for the increase in cost.

Mr. SIKES. Are these rifles being procured through the Army or directly by the Air Force?

General RIEMONDY. Through the Army, sir.

CALIBER .38 REVOLVERS

Mr. SIKES. Item 85 is for 1,021, .38-caliber revolvers. Considerable numbers of these have been procured over the last 2 fiscal years; 25,000-plus in 1969 and 20,000-plus in 1968. What is the total Air Force requirement for .38 caliber revolvers?

General RIEMONDY. I will have to supply that.

Mr. SIKES. Why is this small buy being purchased of something over a thousand?

General RIEMONDY. These are principally replacements for the ones that are authorized in the field.

General RUEGG. We will furnish that for the record if we may, sir.

(The information follows:)

The Air Force requirement for .38 caliber revolvers is 107,272. The fiscal year 1970 buy is for anticipated replacements.

Mr. SIKES. Who is the supplier?

General RIEMONDY. Principally Smith & Wesson.

Mr. SIKES. Is this a competition between Smith & Wesson and Colt and possibly other manufacturers?

General RIEMONDY. Yes, it is competitive.

Mr. SIKES. What is the anticipated cost of this weapon per unit.

General RUEGG. $50.30.

Mr. SIKES. I would like for the record information on previous procurements, who the suppliers have been and whether the buys have been competitive.

(The information follows:)

Previous procurements have been made from both Colt Industries and Smith & Wesson, Inc., on a competitive basis. Procurements for the last 3 fiscal years were as follows:

Fiscal year	Unit cost	Quantity	Producer
1967	$49.57	11,000	Smith & Wesson.
1968	48.02	20,827	Do.
1969	50.30	25,850	Do.

Mr. SIKES. For a small buy of this type, do you check with the other services to see if they have surplus items which would be available?

General RUEGG. We always do.

General RIEMONDY. We check with the Army on this to try to match up our procurements and try to get the best buy.

PROXIMITY FUSE FMU-56

Mr. SIKES. On what bombs is item 86, the FMU-56 proximity fuse utilized?

General RUEGG. It is a high altitude proximity fuse used with a 750-pound cluster bomb, the CBU-24's, and CBU-49's. The fuse provides a burst height from 250 feet up to 3,000 feet.

Mr. SIKES. You are requesting a large buy of this item. Most of the bomb requests have been substantially lowered. Is the request for the fuse tied to a production of a certain number of bombs or is there a deficiency in fuses?

General RIEMONDY. They are tied to our bomb production.

Mr. SIKES. Why is the request up when the number of bombs is down?

Provide the answer for the record.

(The information follows:)

BOMB FUZES

The desired procurement is one FMU-56 proximity fuze for each CBU-24, CBU-49 or CBU-52 cluster bomb. The requested procurement of this fuze is approximately 5,200 less than the total production of these CBU's. The less desirable FMU-26A/B time delay fuze will be used with these additional 5,200 CBU's.

FUSES RELATED TO BOMBS

Mr. SIKES. Item 87 requests $16.2 million for ——— FMU-72 long delay fuses. This is an item which was substantially increased in the

April budget revisions. This item had originally been scheduled at $7.2 million for ——— fuses. Why is there a large increase in this fuse?

General RIEMONDY. This is a newer fuse to replace some of the others that we have. It replaces principally the FMU-35. This is the reason for this increase in this one.

Mr. SIKES. I would like a listing prepared showing on which bombs the various fuses in items 86 through 93 will be utilized.

(The information follows:)

USE OF BOMB FUSES

P-1 line No. 86. FMU-56 proximity: Used in CBU-24, CBU-49, CBU-52.

P-1 line No. 87. FMU-72 long delay: Used in MK 82, MK 84, M117 general purpose bombs.

P-1 line No. 88. FMU-72 retarded: Used in MK 82 and M117 retarded versions.

P-1 line No. 89. M904 nose: Used in M64, M65, M44, M117, M118, M121, MK 81, MK 82, MK 84 general purpose bombs.

P-1 line No. 90. M905, tail: Used in M117, M118, M121, MK 81, MK 82, MK 84 general purpose bombs.

P-1 line No. 91. FMU-7 (set): Used in BLU-10, BLU-23, BLU-32, BLU-1, BLU-27 fire bombs.

P-1 line No. 92. FMU-26 multipurpose: Used in MK 81, MK 82, MK 84, M117, M118 general purpose bombs and the CBU-24 and CBU-49.

P-1 line No. 93. ———.

TACTICAL SECURITY SUPPORT EQUIPMENT

Mr. SIKES. What major items are included in item 94, tactical security support equipment, for which you are requesting $1.9 million?

General RUEGG. Those items are for base defense personnel to defend our bases over there. They include grenade launchers, battlefield illumination systems, popup mines. All equipment to insure base security.

Mr. SIKES. Item 108 target marking flare, LUU-1B, the quantity for procurement in fiscal 1969 was changed but the cost, $1.7 million, was not changed. What has happened to the price of this item?

General RUEGG. We had a reduction in unit cost which did make it possible to buy the additional quantity and our current consumption for this item did indicate the necessity of increasing the quantity rather than reducing the buy. Our requirement did go up.

SPARES AND REPAIR PARTS FOR MUNITIONS

Mr. SIKES. You are requesting about the same amount, $4.1 million for spares and repair parts for munitions and associated equipment that you secured in recent years. Is this estimate based on stated requirements for fiscal year 1970 or do you know historically that you will need approximately $4 million for this purpose for items which have not yet been identified?

General RUEGG. Generally it is based on our past experience. Out of that $4.1, $2.7 million is programed for replenishment spares for the reusable rocket launchers, items such as the intervalometers, rocket tubes, end caps. $1.1 million is for nuclear ordnance training device spares and the balance is for spares, for miscellaneous items such as rifles, hand guns, flare dispensers, and other equipment.

Mr. SIKES. Provide a listing of the major items included in the $4.1 million.

(The information follows:)

MUNITIONS SPARES

Major items included in the $4.1 million are: replenishment spares for the reusable rocket launchers (LAU-32 and LAU-59) i.e., intervalometers, rocket tubes and end caps; nuclear ordnance training device spares i.e., batteries, cables cylinders, dispenser ejectors, modules, programers and decoys; miscellaneous items i.e., repair parts for M-16 rifle, .38 caliber revolvers and SUU-25/A flare dispensers.

FIRST DESTINATION TRANSPORTATION

Mr. SIKES. Under first destination transportation, the program for munitions and associated equipment was reduced from $1.6 million in the January budget to $1.3 million in the April budget. The estimate for first destination transportation remains unchanged at $88 million. What is the basis of the request for $88 million under these circumstances?

In other words, shouldn't this item be reduced proportionately with the reduction in procurement dollars?

Mr. PRITCHETT. Mr. Sikes, the first destination transportation in this budget is to pay for deliveries in the budget year. The deliveries are not going to taper off until after June of 1970.

Mr. SIKES. Should there not be a reduction in this item proportionate to the reduction in procurement dollars?

Mr. PRITCHETT. No, sir; because this item supports deliveries of earlier programs as well as a 6 months' delivery from the 1970 program.

Mr. SIKES. Before we begin questions on vehicular equipment, are there questions on munitions and associated equipment?

The committee will recess until 2 o'clock.

AFTERNOON SESSION

Mr. SIKES. The committee will come to order.

CBU-14 BOMB

General, you were going to assemble some additional information on one of the questions asked this morning. Are you prepared for that?

General RUEGG. Yes, sir. The fiscal year 1969 dollars program for the CBU-14 covered only the load and pack operation. We used components from bombs, namely, CBU-2 and CBU-46 which we had on hand. The 1970 program is the first time we have bought all the hardware and the load and pack services with it. So the number is right, $21 million, to get that number of the CBU-14.

Mr. SIKES. Are there questions?

Mr. LIPSCOMB. Yes. I don't quite understand. What did you do with the ——— at $1.4 million.

General RUEGG. That covered only the roughly $80 apiece to load and pack the hardware, which we had from previous programs. We used the components of the CBU-3's, and CBU-2's which are not satisfactory because of fuzing difficulties. We use the bomblets from those CBU-2's and we used the CBU-14 container for the CB-46.

they were very, very satisfactory and we need more. Fiscal year 1970 is the first time we fully programed for the CBU–14.

Mr. LIPSCOMB. What is the unit cost, then?

General RUEGG. About ——— per bomb in the 1970 buy.

Nearly ———.

General RIEMONDY. We had the components from other bombs and other CBU's and the price in fiscal year 1969 was just the cost of packaging the CBU, whereas in fiscal year 1970 we have to buy the metal parts, the bomblets, the dispensers and then package the whole thing together. So fiscal year 1969 was just a partial cost of the total operation.

Mr. LIPSCOMB. What do you estimate your procurement will be for fiscal 1971? Do you have any projection?

General RIEMONDY. Not at the moment. This all depends on what we are going to do after June 30 of next year. ———. Depending upon what happens, I really don't know what that requirement is right at the moment.

Mr. LIPSCOMB. Are the ——— in your inventory right now?

General RIEMONDY. They are in the process of being packaged right at the moment.

Mr. FLOOD. ———.

General RIEMONDY. For budgetary purposes in this budget as far as the munitions are concerned we are providing only sufficient dollars to carry our operations through June 30 of next year.

Mr. FLOOD. ———.

General RIEMONDY. June 30 of next year.

Mr. FLOOD. ———.

General RIEMONDY. This is a budgetary decision, going from the Johnson to the Nixon budget.

PASSENGER MOTOR VEHICLES

Mr. SIKES. The language which you are requesting in the bill before us authorizes the purchase of not to exceed 1,520 passenger motor vehicles. According to the P–1, this includes 531 light sedans, 394 9-passenger station wagons, 418 12–36 passenger buses, 54 37–45 passenger buses, 72 truck ambulances, and 51 other items not listed at a total cost of $5.4 million. I would like to have for the record updated inventory schedules similar to those on page 471 of last year's hearing.

General RUEGG. Yes, sir.

(The information follows:)

INVENTORY OF PASSENGER CARRYING MOTOR VEHICLES INDICATING NUMBER TO BE REPLACED (BY TYPE)

	Inventory, June 30, 1968	Estimated Inventory	
		June 30, 1969	June 30, 1970
Sedan, heavy	11	11	0
Sedan, medium	17	17	27
Sedan, light	6,730	6,279	6,232
Station wagon	3,267	3,294	3,309
Buses	3,510	4,010	3,919
Ambulance, 2-litter	733	796	693
Ambulance, 4-litter 4 by 4	1,004	1,087	946
Bus-ambulance convertible	106	121	127
Total inventory	15,378	15,615	15,253

VEHICLE REPLACEMENT SCHEDULE

	Replaced, June 30, 1968	To be replaced	
		June 30, 1969	June 30, 1970
Sedan, heavy	0	0	0
Sedan, medium	6	11	0
Sedan, light	885	635	531
Station, wagon	418	361	394
Buses	638	430	472
Ambulance, 2-litter	82	71	49
Ambulance, 4-litter 4 by 4	127	6	72
Bus-ambulance convertible	4	6	2
Total replacements	2,160	1,520	1,520

Mr. SIKES. Will you tell the committee what is included in line item 130, items less than $500,000 each?

General RIEMONDY. Yes, sir.

There are two items in that particular item. One is a quantity of 49 each ambulances, capable of carrying two litters, for a total cost of $276,000, plus a bus ambulance, a convertible kind of arrangement, two of those at a cost of $45,000.

Mr. SIKES. You programed the same number last year as this year, 1,520 passenger-carrying vehicles for fiscal 1969, according to the P–1. The mix of different kinds of vehicles was different. Is it simply coincidental that the number, 1,520, is the same, or is this the number which you have arrived at as the proper annual replacement?

General RIEMONDY. I think in this case it is just coincident.

AGE AND MILEAGE CRITERIA FOR REPLACEMENT

Mr. SIKES. Would you tell us about the extension of the age and mileage criteria which was instituted in fiscal year 1968 for the replacement of passenger motor vehicles.

General RIEMONDY. We are continuing to apply the same criteria that we used in 1968. The current OSD guidance on this is that you can replace vehicles after they have become a certain age, or after you have accumulated a certain number of miles, or after the repair costs exceed a certain dollar sum. What we have been doing for the last 3 years, instead of applying a single criteria, we are not replacing our vehicles until they have reached both age and mileage limits.

Mr. SIKES. What are the age and mileage criteria?

General RIEMONDY. Generally speaking—they vary with the different kinds of vehicles—it is 6 years or 72,000 miles on sedans.

Mr. SIKES. Does this apply to all passenger vehicles or just the sedans?

General RIEMONDY. Just the sedans. It is different for buses.

Mr. SIKES. You mean there are different age and mileage criteria for different types of vehicles.

General RIEMONDY. Yes, sir.

Mr. SIKES. Will you give us the breakdown showing what those are?

General RIEMONDY. I will provide those for the record, if I may.

(The information requested follows:)

COMMERCIAL VEHICLE REPLACEMENT CRITERIA[1]

Type of vehicle	Age limit	Mileage limit
Ambulances	8	60,000
Sedans	6	72,000
Station wagons	6	72,000
Bus, school type, 12 to 36 passengers	8	84,000
Bus, school type, 36 to 45 passengers	10	150,000
Bus, integral	12	300,000
Truck, pickup, ½-ton 4 x 2	6	72,000
Truck, multistop	7	84,000
Truck, cargo, 2½-ton	8	84,000
Truck, dump, 5-ton	10	150,000

[1] Extracted from Air Force technical order 36A-1-70, May 24, 1967

Motor Vehicles

PURCHASE OF BUSES

Mr. Sikes. What is the total requirement for the 12–36 passenger buses? How many are in inventory and what is the replacement criteria?

(The information follows:)

Passenger Buses

The 3,303 12–36 passenger buses are required to equip Air Force units and 968 are required to replace those worn-out between June 30, 1968, and June 30, 1970. This is a gross requirement of 4,271. The June 30, 1968, inventory was 2,916, with 937 due in from procurement. Gross assets, then, are 3,853. Subtracting gross assets from gross requirements leaves a net requirement of 418 to be funded in fiscal year 1970.

This type of bus is eligible for replacement when it is 8 years old or has been driven 84,000 miles or when approximately $4,000 has been spent on repairs. Due to funding limitations in fiscal year 1968, fiscal year 1969, and fiscal year 1970, replacements were programed only for those vehicles reaching two of the three criteria, rather than one.

Mr. Sikes. What has been the cost picture on the purchase of passenger motor vehicles? How much per year are they going up?

General Riemondy. As far as sedans and station wagons are concerned, there is not an appreciable increase. They have stayed about the same, between $1,500 and $1,900. In the case of buses we have experienced about an 18-percent increase over the last 3 years.

Mr. Flood. Do you still carry that sign on the right hand side of the dashboard, this is a Government vehicle, and so on and so on?

General Riemondy. It is still being carried.

Mr. Sikes. You are requesting the same total number of passenger vehicles this year as last year, but you are requesting more of the more expensive types. Is that the reason the request is up $400,000?

General Riemondy. Yes, sir, it is the mix.

Mr. Sikes. To what extent is economic inflation the cause of the cost increase?

General Riemondy. It is not appreciable at all as far as the sedans are concerned. The competitive price keeps them pretty well about the same level as far as the Government is paying for these.

RECALL FOR MANUFACTURER DEFECTS

Mr. FLOOD. How many of your trucks or any other vehicles under your jurisdiction were recalled by the manufacturer for the following seven reasons. Don't tell me you escaped.

General RIEMONDY. It has not come to our attention yet.

Mr. FLOOD. This was a big story. 7,000 1-ton trucks, 14,000 of this vehicle, all recalled by the manufacturers for any one of a half a dozen different defects. You have none recalled.

General RUEGG. Let me look into that. I do not believe we have. I think probably the reason is that it was easier to examine them than to send them back. We were using them and we had the capability on the base motor pool to examine them to see if they were defective. Let me look that up and furnish it for the record.

Mr. FLOOD. You mean you did it on the base?

General RUEGG. If we needed them on the base, we didn't send them back unless there was a serious change.

(Additional information follows:)

VEHICLE RECALL

In the past 4 years the Air Force has participated in five manufacturer's defect recall programs involving approximately 3,800 vehicles. In each instance the manufacturer provided necessary parts for remedying the defect. Labor was performed either by the Air Force or by local dealers, whichever method was determined to be most economical for the Air Force. The Air Force will recommend to the Army and General Services Administration contracting agencies who procure all commercial vehicles that future contracts contain provisions for labor cost reimbursement when manufacturer defects are corrected by service maintenance activities.

VEHICLES FOR FREE WORLD FORCES IN VIETNAM

Mr. SIKES. For the record, show how many passenger carrying vehicles in this program are for the South Vietnamese and other free world forces in Southeast Asia. Provide a breakdown including a complete listing of the total items and vehicular equipment which you plan to procure for the South Vietnamese and other free world forces.

(The information follows:)

FREE WORLD FORCE VEHICLES

The following is a listing of all vehicular equipment programed in fiscal year 1970 for support of Republic of Vietnam Air Force (RVNAF) and other free world forces:

FISCAL YEAR 1970 PROGRAM

[Dollars in millions]

Type of vehicle	Ex. P-1 line No.	For RVNAF		For other free world forces		Total	
		Quantity	Cost	Quantity	Cost	Quantity	Cost
Passenger-carrying vehicles			(1)				(1)
Truck, ambulance, M725	129	5	(1)			5	(1)
Cargo and utility vehicles			0.9		0.1		1.0
Truck, P/U, ¼T, 4×2	131	44	.1			44	.1
Truck, cargo, 1¼T, 4×4, M715	134	8	.1			8	.1
Truck, cargo, 2½T, 6×6, M35	135	25	.2			25	.2
Truck, jeep, ¼T, 4×4, M151	136	61	.2			61	.2
Truck, tractor, 5T, 6×6, M52	140	7	.1			7	.1
Items less than $500,000 each	146		.2		.1		.3
Special-purpose vehicles			.3				.3
Truck, tank, fuel, 5,000 gallons, R-5	149	1	(1)			1	(1)
Items less than $500,000 each	159		.3				.3
Materials-handling equipment			.1				.1
Truck, F/L, 4,000#, GED-PT	170	9	.1			9	.1
Truck, F/L, 6,000#, GED-PT	171	5	(1)			5	(1)
Rruck, F/L, 15,000#, GED-PT	174	2	(1)			2	(1)
Tractor, Whse., 4,000#, DBP	176	16	(1)			16	(1)
Base-maintenance equipment			(1)				(1)
Crane, truck-mounted, 20T	184	1	(1)			1	(1)
Distributor, water, 1,500 gallons	187	1	(1)			1	(1)
Grader, motorized, size 3	188	1	(1)			1	(1)
Items less than $500,000 each	192		(1)				(1)
Total, vehicular equipment			1.3		.1		1.4

[1] Dollars under $50,000.

INVENTORY OF SEDANS

Mr. SIKES. What is the total Air Force inventory of light sedans and the total authorized number of light sedans?

(The information follows:)

Sedans

Total gross inventory as of June 30, 1968, was	6,730
Less wear-outs that will be disposed of by June 30, 1970	−1,706
Plus the due in from fiscal year 1969 procurement	+635
Net inventory	5,659
Authorizations to Air Force units planned through June 30, 1970	6,190
Planned fiscal year 1970 procurement to meet authorizations	531

Mr. SIKES. Have you made any serious attempts to find ways of reducing this fleet of vehicles without adverse effect on your military capabilities?

General RUEGG. All vehicles, Mr. Chairman?

Mr. SIKES. Yes.

General RIEMONDY. I can answer that. We have a real active program. Our vehicle manager along with personnel from our headquarters go out to our principal operators in the field and make on-the-spot grassroots reviews of the authorizations we have laid down for these units and the actual utilization of the vehicles. Where we find that the authorization is out of line, or the utilization does not come

up to what our previous standards indicate, we have reduced these authorizations on a base-by-base and command-by-command basis. This is a real grassroot analysis.

Mr. SIKES. Have there been any appreciable reductions in the total number in the service?

General RIEMONDY. Yes, there has been, sir, and I will provide the exact figure for the record.

(The information follows:)

REDUCTION OF VEHICLES

The Air Force vehicle inventory was reduced from 146,396 in 1958 to 123,056 by 1964. The massive Southeast Asia buildup resulted in an inventory of only 137,767 as of June 30, 1968, 8,629 less than in 1958.

CARGO AND UTILITY VEHICLES

Mr. SIKES. On cargo and utility vehicles, you are requesting $2.6 million for 1,779 half-ton pickup trucks. Can the total requirements for this type of vehicle be reduced or have you made effort to reduce it?

General RIEMONDY. We made similar efforts in this particular area, and again we have carefully examined the replacement criteria to try to keep the ones we have in being longer with the same kind of grassroot analysis.

Mr. SIKES. Are all of the pickups which are requested for your own use?

General RIEMONDY. No, there are some that are for the free world forces.

Mr. SIKES. Break that down.

(The information follows:)

FWF PICKUP TRUCKS

Of the 1,799 pickup trucks in the fiscal year 1970 program, 44 are intended for the South Vietnames Air Force modernization program.

Mr. SIKES. I would like a listing of items under cargo and utility vehicles which are to be procured for other than U.S. use.

(The information follows:)

VEHICLES FOR FREE WORLD FORCES

A small number of cargo and utility vehicles are being procured for the South Vietnamese Air Force modernization program. They are listed below:

P. 1, line No.—	Item	Quantity	Total cost (millions)
131	Truck, pickup, ½ tons	44	$0.1
134	Truck, cargo, 1¼ ton, M715	8	.1
135	Truck, cargo, 2½ ton, M35	25	.2
136	Truck, Jeep, ¼ ton, M151	61	.2
140	Truck, tractor, 5 ton, M52	7	.1

ONE AND ONE-HALF TON TRUCKS

Mr. SIKES. You are requesting $1.1 million for 442 1½-ton stake and platform trucks. Information which has been supplied indicates that you have gross assets of 7,528 of these trucks and gross requirements

of 7,970, hence your request for 442 trucks. What would be the effect of denying this request? It would appear that when only 442 trucks are involved that it would be possible for you to operate with the lower number.

General RIEMONDY. Sir, in this particular area, during this program period we expect that we will wear out about 1,289. Really this is a net figure against our total assets and against our total authorization. In essence, we would be short some 442 vehicles under some real time and tried criteria which we think are pretty tight.

Mr. SIKES. I would like you to show for the record how the Air Force computes the requirement of 7,970 for this vehicle.

(The information follows:)

1½-TON TRUCKS

Air Force units as of June 30, 1970, will be authorized 6,681 1½-ton stake and platform trucks. Our individual vehicle maintenance records indicate that between June 30, 1968, and June 30, 1970, 1,289 of our current assets will wear out and require replacement. These two figures make up the gross requirement of 7,970. From this gross requirement is subtracted the on-hand inventory and the trucks not yet delivered from earlier procurement. The resulting net requirement figure is covered in this fiscal year 1970 budget.

Mr. SIKES. What vehicles are included in line item 146, items less than $500,000 each, for which you are requesting $3.9 million in fiscal 1970?

General RIEMONDY. I can provide a detailed listing for the record.

(The information follows:)

The following is a list of vehicles that are included in line item 146:

Item	Quantity	Cost (millions)
Truck, pickup, ¼ ton, 4x4	72	$0.176
Truck, carryall, ½ ton, 4x2	229	.420
Truck, cargo, 2½ ton, 4x2	33	.129
Truck, tractor, 5 ton, 4x2	73	.340
Truck, Jeep, commercial	58	.116
Truck, dump, M-51	4	.051
Truck, dump, 2½ ton, 4x2	74	.363
Trailer, tilt, 5 ton	39	.076
Truck chassis, 29,500 GVW	19	.135
Truck, wrecker, 5 ton, commercial	30	.476
Truck, wrecker, 5 ton, 6x6	1	.022
Truck, shop van, M-109	56	.488
Semitrailer, van, cargo, 12 ton	28	.064
Semitrailer, 20 ton, 40 ft	87	.385
Semitrailer, low bed, 60 ton	33	.350
Semitrailer, low bed, 25 ton	86	.363
Total		3.954

Mr. SIKES. This is the largest sum of any of the line items under "Cargo and utility vehicles." Are all of them for replacement or is there an increase in inventory on some?

General RIEMONDY. It is all replacement.

SPECIAL PURPOSE VEHICLES

Mr. SIKES. Under special purpose vehicles, you are requesting $10.3 million for the procurement of special purpose vehicles, an increase of approximately $3 million over the sum provided for fiscal 1969. Do you have any new requirements in fiscal 1970 which cause an increase?

TANK TRUCKS

General RIEMONDY. There are no newly developed items of equipment involved, but there is a significant requirement for R–5 aircraft refueling trucks in fiscal year 1970. This item was not procured in fiscal year 1969.

Mr. WHITTEN. We are noting that you are requesting an augmentation of the inventory of the 5,000 gallon tank truck, the R–5. You now show a gross requirement of 3,827 trucks, including an augmentation of 50 trucks. What is the basis for this augmentation?

General RIEMONDY. The 50 additional R–5's that we intend to order in 1970 are intended to go into a combat replacement pool. At present we carry no spare R–5's. We feel that in order to be in a position to satisfy contingencies and combat losses we have to establish a small pool of war reserve vehicles.

Mr. FLOOD. I just drove down from Wilkesbarre, Pa., and about 30 miles south of Indiantown Gap I saw a convoy going north. I do not know whether they were Guard or Reserve, probably Guard. They had a silhouette on two tank trucks that I never saw. Do we have a new silhouette for the tanks?

General RUEGG. Was it Army?

Mr. FLOOD. Yes, Army.

General RUEGG. I don't know, sir.

AIRCRAFT TOW TRACTORS

Mr. WHITTEN. Are the aircraft tow tractors listed in line items 151 and 152 all for replacement only?

General RIEMONDY. Yes, it is principally for wearout.

Mr. WHITTEN. You are requesting 20 of the MB–2 aircraft tow tractors at a unit cost of $33,000 apiece. None of these items were procured in fiscal years 1968 or 1969.

Describe this item. What aircraft is it used with? Is it a new item?

General RIEMONDY. The MB–2 is not a new item. It has been in use for quite a few years for towing our aircraft which weigh in excess of 250,000 pounds. It is a specially designed tractor to move these heavy aircraft. All of the 70 requirement is for replacement. We did not buy any in 1969 because no replacements were required. But we did buy a bunch in 1968.

FIREFIGHTING EQUIPMENT

Mr. WHITTEN. Turning now to firefighting equipment, your request has increased from $3 million in 1968 to $6.4 million in 1969, and now you are requesting $8.6 million for 1970. Why this upward trend in the cost of procurement of firefighting equipment?

General RIEMONDY. This is principally tied to buying greater capacity firefighting trucks, pretty much in conjunction with the introduction of the C–5 aircraft.

Mr. WHITTEN. To what extent is your requirement for 26 P–2 crash trucks tied to the C–5A program?

General RIEMONDY. All of it is tied to it, sir.

Mr. WHITTEN. You mentioned the C–5 in your statement in discussing the P–2 firetruck.

With the advent of the 747 and other large passenger carrying aircraft, will the civilian airports be required to purchase new, larger firefighting vehicles similar in capacity to your P–2 truck? If so, are there other vehicles on the market which could fill the role of the P–2, so that you might have some competition and hopefully reduced costs in this area?

General RIEMONDY. Yes, sir, there are other similar kinds of trucks on the market today. For example, we know of one manufactured by the Yankee Walters people in New York, and folks in the Los Angeles Airport bought some in 1967. They are not exactly identical to ours, but they are almost the same capacity. At that time they paid about $6,000 more than we were paying for the P–2. So there is competition in this particular area and we intend to compete wherever we can to satisfy our requirements.

Mr. WHITTEN. We investigated a similar matter some years ago, and we found a particular item where a variation existed, and where on the face you might have competition, but as a matter of fact, you tied it down by your specification. Will this be explored in this instance?

General RIEMONDY. Yes, we will.

Mr. FLOOD. I showed up on Okinawa one day and went out to the parking area, and all the trucks were Japanese. Is that still going on? All of them. Did you ever hear of that?

General RIEMONDY. We have not bought any Japanese trucks since the Korean war. They are probably Army, but the Air Force has not procured any.

Mr. FLOOD. These were Army.

General PITTS. Mr. Flood, I returned from Taiwan about a year and a half ago and at our large base there, all of the firefighting equipment used by the U.S. Air Force was American made.

Mr. FLOOD. They were not squawking about the quality of the truck. It was a rugged truck but they were all Japanese trucks.

Mr. WHITTEN. What is your criteria for the replacement of firefighting equipment? I would not think such equipment ever receives high mileage. Civilian firefighting companies often keep major pieces of equipment for decades.

General RIEMONDY. The Air Force criteria on this is the cost to repair related to the age of the vehicle. For example, if a firetruck costs $100,000 and it is only 1 year old, we will permit repairs up to a little better than $50,000. However, in the 12th year of its life the amount of one-timer repair we would probably allow on the vehicle is on the order of $10,000 to $12,000.

PURCHASE OF FOREIGN MADE TRUCKS

Mr. FLOOD. Let me ask you this: Does the Air Force or the Department of Defense prohibit the purchase by any outfit, of any trucks or hardware that is foreign made, at any overseas bases? You are in Spain; if the Spaniards make any trucks, can you buy Spanish trucks for your bases in Spain?

General RIEMONDY. Generally we would not because of gold-flow problems. We try to buy back home.

Mr. FLOOD. You try to?

General RIEMONDY. Yes.

Mr. FLOOD. Can you, if you want to?

General RIEMONDY. I do not think we can without special permission from DOD.

Mr. FLOOD. I think the record ought to show that. Somebody should check that to see whether you can or cannot.

General RUEGG. Let us furnish that for the record.

Mr. FLOOD. If it is DOD, put it in, will you?

General RIEMONDY. Yes.

(The information follows:)

PERMISSION TO BUY FIREFIGHTING TRUCKS IN SPAIN

DOD's gold flow program instituted several years ago prohibits most significant procurement expenditures overseas except under emergency conditions. The Secretary of the Air Force can approve such emergency procurement. Firetrucks, however, are centrally procured in the United States and are of standard design. No overseas commander to our knowledge has requested permission to buy foreign firetrucks and the Air Force would not be inclined to approve any such request.

Mr. SIKES. You have a request for 139 replacements for the P–4, 1,500 gallon capacity foam and water firetruck. Under what criteria must the 139 trucks be so that they can be replaced?

General RIEMONDY. In this case it is again under the same criteria I just mentioned. It is a combination of the amount of one time repair costs in relationship to how old the vehicle is. We have a regular scale worked out, as I indicated. If the vehicle cost $100,000, the one-time repair at the end of one year would be on the order of $50,000.

In the 12th year it would be on the order of $10,000 to $12,000 on a $100,000 acquisition cost.

Mr. SIKES. How many firetrucks are replacement items in the 139 buy?

General RIEMONDY. All except the P–2's we are procuring to satisfy the C–5 requirement.

ELECTRONICS AND TELECOMMUNICATIONS EQUIPMENT

FREE WORLD FORCES SUPPORT

Mr. SIKES. Under "Electronics and telecommunications equipment," how much of the $488.5 million you are requesting for electronics and telecommunications equipment is for support of South Vietnamese and other free world forces?

General RUEGG. $7.3 million.

Mr. SIKES. Provide a breakdown.

(The information follows:)

BREAKDOWN OF ELECTRONICS AND TELECOMMUNICATIONS EQUIPMENT FOR SUPPORT OF SOUTH VIETNAM

(In millions of dollars)

P-1 line No.	RVNAF	Other free world forces	Total
245	5.7	1.4	7.1
298		.2	.2
Total	5.7	1.6	7.3

Mr. SIKES. Also give us the figures on the total program and on support for other forces for the past 2 fiscal years.

(The information follows:)

ELECTRONICS AND TELECOMMUNICATIONS IN SUPPORT OF OTHER FORCES

[Dollars in millions]

	1968	1969
Total—Electronics and telecommunications	346.2	378.6
P-1 line number:		
245	.7	2.2
298		.2
Total—Free world forces	.7	2.4
Republic of Vietnam Air Force		−.1
Other free world forces	.7	2.3

TRAFFIC CONTROL AND LANDING EQUIPMENT

Mr. SIKES. There is shown a very large increase in this item. What are the major reasons for an increase of about $50 million?

General GOULD. Sir, there are several items here which represent that item. For example, under traffic control and landing equipment there is an increase of $11.8 million. This is related to procurements of FPN–47's. This is approach control and landing equipment. We found, for example, that while we try to use FAA types of equipments in our inventory, there are still many places in the world where we have to supply Air Force equipment to actually perform traffic control and landing.

There are increases there, some of which are related to Southeast Asia.

Mr. FLOOD. Is that equipment mobile?

General GOULD. Yes, sir; most of it is, although there is some which is not. The FPN–47, for example, is a fixed type radar approach control equipment which is replacing in most instances mobile type equipment at larger size bases. It happens to be a fixed type of equipment.

Mr. FLOOD. Can it be knocked down and reset up across the river?

General GOULD. The FPN–47 is fairly fixed. It can be knocked down but it is an elaborate process to do that.

MATERIALS HANDLING EQUIPMENT

Mr. SIKES. You are requesting $14 million for materials handling equipment, an increase above the $11.7 million requested last year. What is the reason for the increase?

FIFTY-FIVE THOUSAND-POUND AIRCRAFT LOADER

General RIEMONDY. Actually the great majority of the increase is tied to the 55,000-pound loader.

Mr. SIKES. Have the prices of these equipments increased significantly?

General RIEMONDY. No; they have been remaining about the same level.

Mr. SIKES. You are requesting $3 million for the procurement of 30, 55,000-pound aircraft loaders. Is this the loader which is to be used with the C–5A?

Will it have any other purpose?

General RIEMONDY. It can be used to load and unload cargo airlift such as the C–141 which will be carrying sizable loads, too. This loader is also used to satisfy an Army requirement to load into aircraft in one package loads up to 50,000 pounds for air drop.

Mr. SIKES. When the C–5 program was presented to the committee last week, and the same has been true down through the years, we have been told of the remarkable features of the aircraft in which the landing gear system can "kneel" to allow vehicles to be loaded and unloaded on ramps. This easy loadability was a sales feature for the C–5. If that is the case, why do you need these loaders at $100,000 each?

General RUEGG. This kneeling capability was also built into the C–5 to enable us to offload on truckbed heights any time we have to land and offload something where special vehicles were not available. For palletized cargo at a base where we have the 55–K loader, we can offload in about 30 minutes. If we have to use forklifts, normal trucks, flatbeds, it takes much longer.

Mr. SIKES. How much longer does it take to load without the use of the special equipment?

General RUEGG. Without the use of the 55–K loaders, if we had to unload the plane pallet by pallet, it would probably take 2 or 3 hours.

Mr. FLOOD. Are the pallets themselves expendable when dropped?

General RUEGG. No. The cargo pallets are not expendable. We try to recover them but we do not get them all.

Mr. SIKES. P–1 does not indicate any procurement of this loader in the past 2 fiscal years. Is this a new item being funded for the first time?

MODIFICATION IN LIEU OF NEW DEVELOPMENT

General RIEMONDY. Last year we had some dollars in the program to buy the 55–K loader. What we have done is taken the 40–K loader and have modified it up to this greater capacity. We ran into some problems as far as getting an acceptable product, so we did not buy them in 1969. The first buy of a production quantity will be in 1970. We modified five 40–K loaders which have been undergoing extensive tests since March of this year. We ran into a few problems on the hydraulic system. We think we have that corrected.

We ought to be in a position in 1970 to buy the 55–K loader.

Mr. SIKES. Are the five being bought with R.D.T. & E. money?

General RIEMONDY. No. The last five 40–K loaders on an earlier contract were modified to 55–K loaders, using the procurement funds already available.

Mr. SIKES. Is this going to count against your total requirement?

General RIEMONDY. No, this is not the total requirement. If we buy the entire C–5 program we will be needing up to the about 102 of these.

Mr. SIKES. What is the cost of the development of the loader?

General RIEMONDY. I will have to provide that, sir. I don't have that.

(The information follows:)

DEVELOPMENT COST OF 55-K LOADERS

The 55-K loader was not developed from scratch but was a modification of the 40-K loader already in production. The cost of modifying five test units and compiling the necessary technical and engineering data was $634,742. With the new technical data now available, future procurement of 55-K loaders can be competitive in nature.

Mr. SIKES. Was there competition on this contract?

General RIEMONDY. There will be competition on the production quantity. I think we went sole source on the development on this for the modification of the five of them.

Mr. SIKES. There has been some slippage in the C-5 production schedule. Would it not be possible to slip procurement of the loaders until next year?

General RIEMONDY. We have reduced our total requirement in 1970 in accordance with the delivery schedule of the aircraft.

Mr. FLOOD. Do you buy vehicles off the shelf or do you put specs in for anything?

General RIEMONDY. All passenger-carrying sedan-type vehicles are bought by the Defense Supply Agency or General Services Administration for us and they are generally commercial types.

Mr. FLOOD. Buses?

General RIEMONDY. Buses also.

LOADING METHODS FOR C-5 AIRCRAFT

Mr. SIKES. The committee has been shown examples of Army trucks loaded with equipment driving onto the C-5A for transportation. At the conclusion of the flight in some other part of the world, the same truck is shown as driving away from the aircraft still with its load of weapons or equipment. It would certainly appear to the committee that is faster than loading and unloading with the C-5A loader.

General RIEMONDY. This is correct.

General RUEGG. When we are moving roll-on roll-off equipment, it is certainly quicker to roll it on and have the drivers go upstairs to the troop compartment and then get in their vehicles as they are taxiing up to the ramp at their destination and drive off to unload it. In the normal operational use of the C-5, however, most loads will not consist of 4-by-4 trucks or self-propelled vehicles. We could certainly unload the C-5 in a hurry under those conditions.

Mr. SIKES. Are you saying that most of the materials being carried will have to be package-loaded rather than loaded on trucks?

General RUEGG. I would say the majority of the loads on the C-5 would be loaded on pallets.

Mr. SIKES. Will you have to locate these loaders all around the world to unload the C-5 aircraft?

General RUEGG. We will have them at all of the main bases wherever we propose to use the C-5 to any extensive degree.

General RIEMONDY. That is correct.

We have the route structure so we will be laying in these 55-K loaders at the various points where we will offload and onload this particular aircraft.

NUMBER AND LOCATIONS FOR 55,000-POUND LOADER

Mr. SIKES. I am not sure I understand the total requirement.

Did you say it was 112 or what was the number?

General RIEMONDY. 102, sir, if we go to 120 in the aircraft in the C–5. We also use them to support the C–141.

Mr. SIKES. What would be the number required if you buy 60 or 80 or 100 of the C–5's rather than 120?

General RIEMONDY. Let me provide that for the record, sir.

(The information follows:)

NUMBER OF 55–K LOADERS REQUIRED IF LESS THAN 120 C–5'S ARE PURCHASED

C–5 aircraft purchased:	*55–K loaders required*
120	102
100	85
80	68
60	51

If no C–5 aircraft at all were procured, the Air Force still would have a substantial requirement for this 55–K aircraft-loading truck to handle the Army's 50,000-pound drop load as well as to load and unload palletized cargo for C–141 and other large cargo aircraft in a more expeditious and economical manner.

Mr. SIKES. Are there other items included in the $14 million for "Materials handling equipment" for support of the C–5 aircraft?

General RIEMONDY. No, sir.

Mr. SIKES. What is the basis for the total requirement of 102 of the 55,000-pound loaders? Have you designated the airbase at which numbers of these would go?

General RIEMONDY. Yes, we have, sir, and I can provide that list.

(The information follows:)

BASIS FOR TOTAL REQUIREMENT OF 102 55,000-POUND LOADERS

Requirements for the 55–K loader were developed on the basis of projected cargo-handling workloads at Air Force bases to be supported by C–141 and C–5 aircraft. The planned distribution is listed below:

Tan Son Nhut, RVN	1
Cam Rahn Bay, RVN	3
Da Nang, RVN	3
Bien Hoa, RVN	3
Don Muang, Thailand	2
Travis AFB, Calif	4
Norton AFB, Calif	3
Dover AFB, Md	5
Charleston AFB, S.C	3
McGuire AFB, N.Y	3
Rhein Main, Germany	5
Athens, Greece	1
Yokota, Japan	6
Kadena, Okinawa	5
Incirlik, Turkey	2
Clark Air Base, Philippines	5
McChord AFB, Wash	1
Hill AFB, Utah	5
Kelly AFB, Tex	7
Tinker AFB, Okla	7
Wright-Patterson AFB, Ohio	6
Hickam AFB, Hawaii	7
Kimpo, Korea	3

Howard Field, C.Z.	1
Elmendorf AFB, Alaska	2
Anderson AFB, Guam	2
Goose Air Base, Labrador	1
Thule, Greenland	1
Wheelus, Libya	1
Torrejon, Spain	2
Mildenhall, England	1
Lages, Azores	1

Mr. SIKES. Over what period of time do you expect to acquire 102 of these?

General RIEMONDY. Through fiscal year 1972 with deliveries completed in 1973.

MECHANIZED SYSTEMS IN LOGISTICS COMMAND

Mr. SIKES. Explain the Air Force Logistics Command mechanized systems, for which you are requesting $1,400,000. This is item 178.

General RIEMONDY. I believe you will recall that we have closed out all our Air Force Logistics Command depots except five. The dollars we are asking for in this particular budget are to augment our materials handling equipment within our warehouses, and also some of our lift equipment in our shops; modernizing conveyor systems and things of this nature within our total depot complex.

Mr. SIKES. Is this a one-time cost?

General RIEMONDY. Actually, this is a sort of recurring cost year in and year out to update and replace the existing equipment.

Mr. FLOOD. What did the Air Force do with the bridging? Do you have an engineering corps that I never saw? An Air Force with a bridging unit?

General RIEMONDY. This bridging unit is actually a link between the materials handling equipment in our terminals and the aircraft itself, to bridge that gap so it provides a rolling surface to load into the aircraft.

Mr. FLOOD. I was wondering when the Army came up with Jupiter, you fellows came up with Thor. I was wondering if we were going to get an engineering corps.

Mr. SIKES. The next line item, 179, "base mechanized systems." What is included in this item?

General RIEMONDY. These are the conveyor systems for handling our materials throughout the bases all over the world. This is an annual expenditure where we update and replace conveyor systems.

Mr. SIKES. In item 180, "Air terminal mechanized systems," you are requesting $1.1 million. What items are included here?

General RIEMONDY. This is to provide mechanized loading equipment, baggage conveyors, and conveyor roller systems at our three principal major terminals that we have within the Air Force.

ELIMINATION OF REQUEST FOR 220 DOLLY TRAILERS

Mr. SIKES. I do not mind your dolly trailer. But here you scratch 220 dolly craft. Who changed his mind on 220? What happened?

General RIEMONDY. We revised our requirements after taking a hard look again in our grass roots analysis of what people need to do the job.

Mr. SIKES. That is 220 out of how many?

General RIEMONDY. That is the total buy in this particular case for the fiscal year.

Mr. FLOOD. You decided you needed a dolly trailer, R-T, and you wanted 220. So you didn't take a very hard look. Not only do you scratch it, but you scratch the whole procurement. How do you explain that?

General RIEMONDY. Again through our grass roots analysis.

Mr. FLOOD. This is the kind of thing that some of these people get up on the floor and laugh at us about. We are members of the Appropriations Committee. Somebody is going to say, will the gentleman from Florida yield, and he will say yes, and then some guy is going to say, how do you explain that, Mr. Sikes? What is he going to say, you changed your mind?

General RIEMONDY. Very simple in this particular case. As you recall we went from the Johnson budget to the Nixon budget and we had to reduce the overall budget. During that budgetary exercise we established priorities as to what do you keep on buying and what do you eliminate. This, unfortunately, fell by the wayside.

Mr. FLOOD. So this was done by the budget people?

General RIEMONDY. It was done as the result of a budget exercise participated in by my own people.

Mr. FLOOD. The Nixon budget director doesn't like dollies?

Mr. ANDREWS. The Air Force gave dolly a very low priority.

General RIEMONDY. Yes.

Mr. SIKES. Back to item 180, what is the requirement for these items?

General RIEMONDY. I have a detailed list of all of the items that make up item 180, and I will put it in the record.

(The information follows:)

LIST OF ITEMS COMPRISING AIR TERMINAL MECHANIZED SYSTEMS

Activity and location	Project description	Cost
Passenger terminals:		
Rhein Main, Germany	Baggage conveyor system	$50,000
Yokota, Japan	do	150,000
McChord AFB, Wash	do	130,000
Freight terminals:		
Travis AFB, Calif	Hi-line dock and levelers	140,000
Danang, Republic of Vietnam	do	140,000
McChord AFB, Wash	do	60,000
Kadena, Okinawa	Hi-line docks	90,000
Hickam AFB, Hawaii	do	10,000
TanSonNhut, Republic of Vietnam	do	20,000
Cam Ranh Bay, Republic of Vietnam	do	35,000
Don Muang, Thailand	Hi-line docks and conveyors	110,000
Andersen AFB, Guam	Hi-line docks	10,000
Charleston AFB, S.C	do	55,000
Kelly AFB, Tex	Dock levelers	20,000
Naha, Okinawa	Conveyor systems	80,000
Total		1,100,000

Mr. SIKES. Are they going to replace existing equipment or is this new equipment?

General RUEGG. Item 180?

Mr. SIKES. Yes.

General RIEMONDY. This is new equipment.

Mr. FLOOD. They rewrote the title to that show, instead of "Hello, Dolly," it was "Goodbye, Dolly." They changed their minds on the title.

Mr. SIKES. Are there questions?

INVENTORY VALUE, EQUIPMENT, AND SPARES FUNDED FROM OTHER PROCUREMENT, AIR FORCE APPROPRIATIONS

Mr. FLOOD. Several years ago this committee made a frontal attack and discovered a shocking set of figures and circumstances having to do with the inventory and the dollar value of such inventory across the board of defense generally. Today, we are talking to you about procurement program, other procurement, Air Force, vehicular equipment. Do you have such a round fat figure of spare and repair parts and dollars total someplace? Your inventory in dollars of this procurement item?

General RIEMONDY. I can provide the total inventory of all our vehicular equipment by type, and very frankly, by location. We know where every piece of our equipment is.

Mr. SIKES. You have here "Procurement program, fiscal year 1970 budget estimates," "Other procurement appropriation, Air Force," dollars in millions.

I would like you to supply for the record your total inventory value in dollars for this procurement program, not just the vehicles alone, but break it down into munitions and associated equipment, you have vehicles of various types and kinds and then vehicular equipment. You have four or five items. Suppose you give us a round fat figure for the total dollar value of your inventory as of June 30, the end of the fiscal year by those three or four sections?

General RUEGG. We will do that, sir.

(The information follows:)

OTHER PROCUREMENT, AIR FORCE

[Value of inventory as of June 30, 1968, in thousands of dollars]

Budget activity	Equipment	Spares	Total
Munitions and associated equipment			1,411,383
Munitions			(1,174,400)
Other	149,428	87,555	(236,983)
Vehicular equipment	1,034,936	27,986	1,062,922
Electronics and telecommunications equipment	2,073,321	250,720	2,324,041
Other base maintenance and support equipment	750,996	72,092	823,088
Total			5,621,434
Munitions			(1,174,400)
Equipment and spares	4,008,681	438,353	(4,447,034)

55,000-POUND AIRCRAFT LOADER

Mr. LIPSCOMB. General, what did you say the Army requirement was for this 55,000-pound capacity loader?

ARMY REQUIREMENT

General RIEMONDY. The Army has placed a requirement on the Air Force to drop a 50,000-pound load. They will package certain material in a 50,000-pound load. In order to handle that 50,000-pound load, we need a 55,000-pound loader. It will do the job.

Mr. LIPSCOMB. What is the maximum Army requirement now for a drop?

General RIEMONDY. That is their latest requirement.

Mr. LIPSCOMB. What are you capable of dropping for the Army now?

General RIEMONDY. We can drop 50,000 from our C–141's, and we had a package of 34,000 which we were dropping from our C–130's. They now upped this requirement to a 50,000-pound drop which both the C–141 and C–5 will be able to handle. We will be using the 55–K loader to also load the C–141's.

Mr. SIKES. What is the maximum drop of the C–141?

General RIEMONDY. It will be this 50,000 pounds.

Mr. LIPSCOMB. Have you any idea what they include in a 50,000-pound drop?

General RIEMONDY. Not offhand.

Mr. LIPSCOMB. Is there presently a capability that will permit a 55,000-pound drop with a parachute?

General RIEMONDY. Yes.

Mr. LIPSCOMB. When did they test this out?

General RIEMONDY. I can provide you the details of the test program. There is one that has been accomplished. There is another one in being to satisfy this requirement.

Mr. FLOOD. If the gentleman will yield, do I understand you to say in reply to Mr. Sikes the maximum potential for a drop is 50,000 and you are going to go to maximum on every hint you drop, with no leeway or margin for error?

General RIEMONDY. The drop we are trying to handle with the 55,000-pound loader is a 50,000-pound requirement that the Army has imposed upon us.

Mr. FLOOD. I know, but what is your margin for error? What would be your absolute mathematical potential to drop; 50,000 you are not going to do, are you?

General RUEGG. We have asked the Army what is the heaviest load they have a requirement to drop, one unit, and they have identified it as 50,000 pounds. We have that capability in the C–5. We have the capability, with the 55–K loader, to handle it and put it on either the C–5 or the C–141.

Mr. FLOOD. But that is not the absolute maximum of that crate?

General RUEGG. No. If we went much higher we would need something larger than the 55,000-pound loader because 50,000 pounds is all it would handle safely, with a reasonable margin for error. We see no requirement to go above that. When you have a 55–K loader, you can move anything you want to move on the C–5.

Mr. ANDREWS. What does this loader cost?

General RIEMONDY. We are estimating $100,000. The 40–K loader cost about $80,000.

Mr. ANDREWS. I saw a picture here and it does not look like a $100,000 loader to me. What makes it expensive?

General RUEGG. We do not have the price yet because we are still testing. We estimate it will be $100,000.

MAXIMUM TONNAGE SUCCESSFULLY DROPPED TO DATE

Mr. SIKES. What is the maximum tonnage which has been successfully dropped thus far?

Mr. LIPSCOMB. Efficiently.

General RUEGG. May I furnish that for the record? I do not know.

Mr. SIKES. Can you give us a ballpark figure? We have not come close to 50,000 yet, have we?

General RUEGG. I think we have. As I recall it was over 40,000.

General RIEMONDY. We are currently testing the drop of 50,000 pounds. At the present time we are handling this load with a big old crane that we have. We are dropping them out of C–141's.

Mr. LIPSCOMB. At what altitude?

General RIEMONDY. I will have to give you all the test data. I do not have it all at my fingertips.

General BOYLAN. It would be on the order of 2,000 or 2,500 feet.

Mr. LIPSCOMB. With the C–5A at 2,000 feet altitude for a 50,000 pound drop, is that what we are talking about?

General BOYLAN. Yes, sir.

General RUEGG. We have that capability.

General BOYLAN. As one package.

Mr. FLOOD. You show me a picture of a truck, cargo slant loading-unloading, something that looks like it was done by Rube Goldberg. What is 40–K?

General RIEMONDY. 40,000 pounds.

Mr. WHITTEN. Mr. Chairman, I always wondered when you are dealing with this kind of thing, when you put a round figure of putting $100,000 cost, if you are smart to put the cost that high. I was wondering before you have a target to shoot at, whether you should give them an estimate to which they could build up the cost.

In some of your surveys that come up with a quarter of a million dollars, you can be sure they will come up to that.

General RIEMONDY. We scaled up the 40,000 pound loader which cost us $80,000 a copy. We think the $100,000 is a good estimate.

NEED FOR LOADERS OTHER THAN FOR AIR-DROP LOADS

Mr. LIPSCOMB. If the Army had not placed a requirement on the Air Force for a 50,000-pound drop, would you still need the loaders?

General RUEGG. The answer is yes, because to efficiently and more rapidly load the C–5 we need something a little larger than 40–K loaders. We would go ahead and spend the money for the 55–K loader at any rate. We do have that requirement that the Army says they need and so we are furnishing it.

Mr. LIPSCOMB. Can you give the number of pallets the 55–K will handle over the 40–K?

General RIEMONDY. Yes. The 40–K loaders handle five pallets and the 55–K will handle 6.

Mr. ANDREWS. How much does the 40 cost?

General RIEMONDY. $81,000.

Mr. SIKES. Do you have any of those?

General RIEMONDY. Yes, sir.

Mr. SIKES. How many?

General RIEMONDY. We currently have 90 as of June 1968, and we have 30 more due in, so that will be 120, plus 17 that we will buy in fiscal year 1969. We will have 137 of these.

Mr. SIKES. Do you require both the 137 of the smaller vehicle and 102 of the 55,000 capacity loader?

General RIEMONDY. By 1974 we will, Mr. Chairman.

TOTAL OF EQUIPMENT BEING DEVELOPED AND/OR PROCURED BECAUSE OF C–5 AIRCRAFT PROGRAM

Mr. LIPSCOMB. In answer to a previous question pertaining to special purpose vehicles you said that program included some C–5A material handling equipment. What were you referring to there—special purpose vehicle?

General RIEMONDY. I think really that was a misstatement. We have a P–2 firetruck in the firefighting equipment, and the only other piece of equipment in this total program is the 55–K loader.

Mr. LIPSCOMB. I think you did answer the question, though, it was for the C–5A.

General RIEMONDY. Yes.

There is nothing in the material handling equipment per se. Some people refer to a loader as a piece of materials handling equipment and sometimes that is correct.

Mr. LIPSCOMB. Would you place in the record at one point all of the additional equipment necessary to support the C–5A, such as these loaders?

General RIEMONDY. In the "Aircraft procurement" appropriation we identified all that was being procured in that area. If you recall, during that testimony I said there were some items in the "Other procurement" area. There are two items in the "Other procurement" area; namely, the P–2 firetruck and the 55–K loader and that is all.

Mr. LIPSCOMB. I am speaking of the total program. What are we looking at, the total program for the C–5A?

General RUEGG. You want all the special handling equipment for the C–5?

Mr. LIPSCOMB. Yes. What we are going into here, over and above the aircraft itself.

Are there any other funds, to your knowledge, being expended in R.D.T. & E. for the C–5A program for new equipment, other than the loader?

General RIEMONDY. Not that would be procured out of the "Other procurement" appropriation. There is some going into peculiar equipment which we would buy out of the "Aircraft procurement" appropriation.

Mr. LIPSCOMB. I am speaking of the total program as contemplated on completion, not just that in fiscal year 1970.

General RIEMONDY. I think the total R.D.T. & E. package was presented during our discussion of the C–5.

General PITTS. To get it absolutely clear, you would like to have those items listed that are not involved in the aircraft by itself.

Mr. LIPSCOMB. That is right.

General PITTS. Because the "Aircraft procurement" account carries some equipment that would be bought with the aircraft.

Mr. LIPSCOMB. I would like to see what the C–5A program entails, not only for the aircraft, but for the ground-handling equipment and any other costs that are included.

General RUEGG. Even though we are buying the 55–K for the C–5 requirement, it will also be used for the C–141 and any other cargo airplane that comes along.

What you want are the equipments specifically for the C–5——

Mr. LIPSCOMB. General, you have the 40,000-pound loader for the C–141's, haven't you?

General RUEGG. Yes.

Mr. LIPSCOMB. Aren't you buying 55,000-pound loaders for the C–5?

General RIEMONDY. Not only because the 55,000-pound loader is required to handle that 50,000-pound Army requirement which can be dropped from the C–141. Even if we did not buy any C–5's, as long as the requirement remains to drop a 50,000-pound load for the Army, we will then require a 55–K loader. The C–141 can drop that 50,000-pound load.

Mr. LIPSCOMB. If the Army by any chance should revise its requirement and stick by a 40,000-pound drop, could you do without the 55,000-pound loader?

General RUEGG. We could do without it. We probably would want a certain number, though, for rapid turn-around of the C–5.

Mr. LIPSCOMB. So it is for the C–5A program.

General RUEGG. Essentially, I think; yes.

Mr. LIPSCOMB. It would appear you are trying to put the burden on just the Army requirement. Anyway, see what you can do in the way of showing us the whole cost.

General RUEGG. We will list that equipment that is related to the C–5. It won't be used on the C–5 only, but it will be bought because of the C–5 program.

(The information follows:)

HANDLING EQUIPMENT NECESSARY TO SUPPORT THE C–5A

Most items of equipment in the "Other procurement" appropriation are either for common use or compatible with several weapon systems. The following two items are being requested for use in general support of cargo aircraft. They were designed to handle greater loads for larger aircraft, but not specifically for the C–5A. However, a large quantity will be used in connection with the C–5A program:

	In millions
Truck, fire/rescue, P–2—total requirement of 36 at $115,000 estimated cost per unit	$4.1
Truck, aircraft loading, 55K—total requirement of 102 at $100,000 estimated cost per unit	10.2
Total	14.3

Our presently estimated total cost of development and investment required for the 120 aircraft C–5A program through fiscal year 1974 is as follows:

	In millions
Development	$1,003.2
Investment:	
Weapon system procurement	3,346.0
Aircraft support	792.7
Support vehicles and other ground equipment	16.9
Construction	23.4
Total, development and investment	5,182.2

In addition, it is estimated that operating costs of $596.9 million through fiscal year 1974 will be incurred for military and civilian pay, POL, depot and base maintenance including spares procured from the stock fund.

Development: Includes all R.D.T. & E. funds for the aircraft and its related equipment.

Investment: Includes procurement cost of the aircraft, peculiar support equipment, training items, technical data, modifications, common ground-support equipment, component improvement, initial spares, replenishment spares, support vehicles, and military construction.

C–5 AIRCRAFT LOADING TECHNIQUES

Mr. LIPSCOMB. Did I hear testimony here in the past week or so about the kneeling of this aircraft, and didn't I see a picture of trucks driving in one side and driving out the other side, which was to show you can do the loading and unloading, simultaneously, in 30 minutes?

General RUEGG. Yes, sir.

Mr. MAHON. Can't you see those trucks whizzing through right now?

Mr. LIPSCOMB. Yes.

General BOYLAN. Those are two different things. The aircraft has a capability to kneel to receive vehicles driven on it from the ground. It also has the capability to adjust its cargo floor to truckbed height to handle palletized loads. In that case you would not be driving the vehicle off. You would be rolling a pallet off the cargo floor directly onto a loader, truck, or flatbed.

That is where the kneeling comes in.

Mr. FLOOD. Do you have red and green and yellow traffic lights and air police stop signs?

General BOYLAN. It will be a mighty busy operation.

Mr. FLOOD. It sure is.

Mr. SIKES. How long does it take this big bird to squat?

General RUEGG. We will have to furnish that for the record. I don't believe we know that.

Mr. LIPSCOMB. General, will you explain the kneeling you just told about?

General BOYLAN. To receive wheeled vehicles there are ramps that are integral to the airplane so the vehicle can drive up an incline, which I believe is about 3 percent or on that order, directly from the ground up the ramp, which is part of the aircraft equipment, onto the floor of the C–5. The airplane kneels to lower the cargo floor height from 105 inches to 73 inches.

General BOYLAN. If you have loaded the C–5 with pallets, using the 55–K loader, for example, and you don't have comparable equipment at the off-load—you have flatbeds; Army flatbeds—then the aircraft can be positioned by kneeling or squatting, so that the pallet can be rolled off of the aircraft manually onto the flatbed, and carried at truckbed height. So the kneeling also comes into play with pallets and roller-conveyor-type of movement. The vehicles drive on, drive off.

Mr. FLOOD. You would have a squadron with ∞ number of trucks assigned to each plane and each squadron to do a job?

General RUEGG. This provides a capability to go into any base with normal flatbed trucks or flatbeds and unload if we have to.

Mr. SIKES. We turn to cryptographic equipment.

Mr. FLOOD. May I have just one more question?

When we knock off an island in the South Pacific—this is before the Air Force was born—the first thing we would do would be to put in an emergency strip. We would go to these fellows with bulldozers to lay out a strip. There was a lot of strafing. We took a lot of casualties. These guys were out there in 110-degree heat with no protection or anything.

We are liable to get in that spot again. Is anybody interested in armor for these fellows at all? Any kind of protection except air cover? How would you like to be sitting out there on a bulldozer all by yourself putting in an airstrip and have nothing there but a piece of what? Canvas?

General RUEGG. I think, Mr. Flood, you will have to ask the Army for that because they are building the armored vehicles to off-load the troops who are going to have to clean out the strip, and the area around the strip, until we can start operating. We don't have that information here.

Mr. FLOOD. You don't do that work anyhow, do you?

General RUEGG. We armorplate our fighter aircraft.

Mr. FLOOD. The Air Force does not do strip layouts?

General RUEGG. We have some Red Horse squadrons who do maintain the strips.

Mr. FLOOD. We took a lot of casualties on that.

General RUEGG. We have a limited capability.

CRYPTOGRAPHIC EQUIPMENT

Mr. SIKES. Under "Cryptographic equipment," there is a request for $14.8 million for procurement. Is this competitively bought?

General GOULD. Yes, sir. Large portions of the program are competitive, Mr. Sikes. As a matter of fact, the National Security Agency consolidates the requirements for all the services to maximize the buy. They actually do procure large amounts of this on competitive bid.

Mr. SIKES. For the record, I would like general discussion of the procurement program on cryptographic equipment: what is involved and what the requirements are.

(The information follows:)

GENERAL DISCUSSION OF PROGRAM FOR PROCUREMENT OF CRYPTOGRAPHIC EQUIPMENT

The method of programing crypto equipment is specified by Department of Defense Directive.[1] Nominally, there is a 4 year leadtime from the statement of a requirement for off-the-shelf crypto equipment to the delivery of equipment for installation. This includes a 2 year program/planning cycle and a 2 year funding/procurement cycle.

During the program/planning cycle, the requirements are closely reviewed at major air command level, Headquarters USAF, and DOD as to the requirement for security.

Requirements for security protection are based on the vulnerability to unfriendly intercept and analysis. This initial evaluation is supplemented during the budget review cycle by a more detailed analysis by the Air Force, NSA, and the DOD intelligence/communications security community as to the validity of the security threat and the adequacy of the programed crypto equipment to provide the required security.

[1] Department of Defense Directive 4630.1, Annex D.

Once the requirement is approved the funding/procurement cycle begins. Equipment authorized for procurement will be ordered by Military Interdepartmental Purchase Requests (MIPR) from the National Security Agency who procures COMSEC equipment for all national needs. The NSA then must engage in a procurement process involving consolidation of all military department/government agency requests for a maximized buy. Specifications and work statements are prepared, bids advertised and evaluated, and contracts are negotiated. The manufacturer then requires time to fabricate, assemble, test, and deliver the equipment. Consequently, equipment requirements authorized in the fiscal year 1970 buy program will not be delivered for a period of 18 months to 2 years from the preparation of the MIPR's. Accordingly, early definition of requirements for crypto equipment is a subject of emphasis so as to assure timely receipt and harmonization with the USAF systems program process.

Mr. SIKES. Are you purchasing this equipment for replacement or to build squadron inventory objectives or both?

General GOULD. Some of the equipment is for replacement, sir. For example, the KG–30 series of cryptographic equipment replaces an older variety of equipment, the KG–13. Other types of equipment are more in the initial category. Some of the crypto equipments that are being put into the space program are being added in some cases where cryptographic-secure capabilities have not been present before.

Mr. SIKES. For the record give us a listing of the life expectancy of some of the major items of cryptographic equipment for which you are requesting funds.

(The information follows:)

LIFE EXPECTANCY OF MAJOR ITEMS OF CRYPTOGRAPHIC EQUIPMENT

Based on our discussions with the National Security Agency, the anticipated and planned longevity of the crypto equipment requested by the Air Force is 15 years. This longevity is based generally on two basic factors:

a. Anticipated effectiveness of the cryptographic arts employed versus the known and estimated future capability of unfriendly agencies towards cryptanalytic attack.

b. Anticipated longevity of the electronic and mechanical components of the equipment as separate entities and also as part of the anticipated system technology and sophistication required.

TRAFFIC CONTROL AND LANDING SYSTEM 404–L

Mr. SIKES. Under Traffic Control and Landing Systems, there is a request of $14.8 million for 404–L Traffic Control and Landing System. This is a reduction of $10 million from the amount in the January budget. What is the basis for this reduction? How was the reduction arrived at?

General GOULD. This primarily was due to the fact that the development of the TPN–19 ground control approach radar has slipped so that the monies provided in fiscal year 1970, instead of supporting a quantitative buy, are actually only supporting long lead-time items.

Mr. SIKES. Last year you only received $3 million for this purpose. Why is it necessary to go to $14.8 million at this time?

General GOULD. That is associated with these long leadtime items for the TPN–19. It is also associated with a number of requirements for Southeast Asia. It includes replacement equipment for a number of our radar approach control systems where mobile equipment is being replaced and in some cases worn out, and we are going through

a conversion program in the UHF and VHF portion of the frequency spectrum for the purpose of frequency conservation.

Mr. SIKES. What major new items of equipment in this category are being introduced in the Air Force?

General GOULD. I am sorry, sir, I missed that.

Mr. SIKES. What major new items of equipment are being introduced under this category in the Air Force?

General GOULD. The major new item here is the TPN-19 ground control approach radar.

TACTICAL AIR CONTROL SYSTEM

Mr. SIKES. Under the Tactical Air Control System $71.9 million is requested for procurement of equipment. This is contrasted with $36 million in fiscal 1968 and $56 million in fiscal 1969. For the record provide a listing of the major items of equipment in the $71.9 million.

(The information follows:)

Listing of major items of equipment under tactical air control system

Fiscal year 1970:	*In millions*
Operations centers	$46.4
Comm complex (message centers/tape relay center/tech control facility)	3.7
Switchboard end instruments	2.0
Single side band radio	2.0
Microwave radio equipment	3.0
Power generators	4.5

Mr. SIKES. Why is this a substantial increase over the previous 2 years?

General GOULD. That is primarily associated with the fact that the items that are coming up at this particular time are high-cost items. The operational centers are the highest cost items in the system.

Mr. SIKES. What advantages does the new equipment have over that currently being used?

General GOULD. Much of the equipment that is now being used, sir, is of Korean war vintage and what we are getting is much more modernized equipment, both in the communications field and in the control field.

Mr. SIKES. What is the total estimated cost of the system?

General GOULD. The total estimated cost is around $500 million, sir.

Mr. SIKES. Provide it for the record.

(The information follows:)

TOTAL ESTIMATED COST OF TACTICAL AIR CONTROL SYSTEM

As this is a continuing program designed to push current command and control technology in an evolutionary manner, there is no "total estimated cost" per se. The currently identified investment cost of this open-ended program is $519 million.

Mr. FLOOD. Wouldn't that sophisticated hardware be obsolete now? The present generation of stuff to do that job makes your Korean war stuff obsolete?

General GOULD. We are still using quantities of that equipment.

Mr. FLOOD. That doesn't make it right. The stuff being produced today makes that stuff look like a 16-inch gun. It is obsolete.

General GOULD. In some cases, sir, this is right, and there has been a replacement program going on now for a number of years. As a matter of fact, this program we are discussing has been in three phases and there has been a constant replacement over a number of years of upgrading this equipment and that which is the most urgent has been replaced first. But there are still some portions of the equipment, such as teletypewriter machines and things of this sort which are still in use.

Mr. FLOOD. Strike out my remark about a 16-inch gun. I just remembered they are not obsolete. They are working again.

General RUEGG. The total 407–L program through fiscal year 1974 currently identified is about $519 million.

Mr. SIKES. This is a great deal of money for a system to replace equipment that has been in use since the Korean war. The question is, is it essential that it be replaced? If we had been using the same equipment with some updating since the Korean war, possibly it is still good enough to get a little more wear out of it, another year or two.

General GOULD. Mr. Sikes, for example, the types of equipment that we are replacing includes radars. As time goes on, we are able to get radars that not only have a higher reliability, but they have higher altitude performance and better capabilities all the way around.

Mr. SIKES. How soon will the equipment have to be replaced again? Ten years?

General GOULD. This type of equipment will give you about a 15-year life.

Mr. FLOOD. Well now, a very important matter. Miniaturization. There has been extraordinary development in miniaturization of this stuff.

General GOULD. That is correct.

Mr. FLOOD. Well, where are we?

General GOULD. Well, actually, modern equipment is much smaller.

Mr. FLOOD. I know that. That is why I ask.

General RUEGG. All of this 407–L equipment is designed to be mobile so we can load on an airplane and move it wherever we are fighting and this is a major change from the equipment that is being obsoleted by the 407–L equipment.

OPERATIONS CENTERS

Mr. SIKES. For the record tell us the unit price of the operations centers which are an important part of the system, for the record how many operation centers do you require? How many do you have now? How many are on order? How many are included in fiscal year 1970?

(The information follows:)

DATA ON OPERATIONS CENTERS—407–L EQUIPMENT

There is a current Air Force requirement for 37 operations centers, now on order (six tactical air control centers (TACC); six control reporting centers (CRC); 12 control reporting posts (CRP); and 13 direct air support centers (DASC). ——— will be procured in fiscal year 1970. Approximate individual production cost is: TACC, $1 million; CRC/CRP, $3 million; and, DASC, $500,000. There are no mobile tactical operations centers now in the inventory meeting the performance requirements.

PORTIONS FOR COMPETITIVE PROCUREMENT

Mr. SIKES. What part of the $71.9 million in this year's buy is planned to be obligated under fixed price competitive procurement?

General RUEGG. We will have to furnish that for the record.

General GOULD. All of the hardware is fixed price competitive, sir.

Mr. SIKES. But not all the 71.9.

General GOULD. I would have to break that out, sir.

(The information follows:)

BREAKOUT OF DOLLARS PLANNED TO BE OBLIGATED IN FISCAL YEAR 1970 BUY UNDER FIXED PRICE COMPETITIVE PROCUREMENT

The $71.9 million for fiscal year 1970 includes two contracts for engineering, integration and test support (MITRE, $2.8 million and Thompson Ramo-Woolridge (TRW), $3.1 million) as part of the $71.9 million. All other contracts are for hardware and are fixed price, competitive contracts.

BUIC III EQUIPMENT

Mr. SIKES. Under "Continental U.S. aircraft control and warning system," the statement indicates that the funds in this request are $6.4 million to complete the procurement of BUIC III equipment for the 15 approved sites. Is this all the equipment for this program?

General GOULD. Yes, sir.

WEATHER OBSERVING AND FORECASTING EQUIPMENT

Mr. SIKES. What is the justification for your request for $1.2 million for weather observation and forecasting equipment?

General GOULD. Four sets of equipment are for mobile transportable weather facilities that go along with tactical forces. It is similar to the type we were discussing under 407–L except in this case it is tailored specifically for weather purposes. Four of those run $800,000. The balance of the equipment is for hand-held observing-type kits that are used by weather personnel in a mobile situation.

Mr. SIKES. Is it a replacement of existing equipment?

General GOULD. Yes, sir; it is.

Mr. SIKES. Does that include equipment to supply new bases?

General GOULD. Primarily, sir, this is mobile contingency-type equipment.

Mr. SIKES. For the record, tell us what major items of equipment are involved and to what extent these increases are due to price increases and to what extent to differing requirements.

(The information follows:)

WEATHER OBSERVING AND FORECASTING EQUIPMENT—ITEMS INVOLVED—PRICE INCREASES IN RELATION TO DIFFERING REQUIREMENTS

The equipments to be procured in fiscal year 1970 are:

a. Four (4) mobile radio weather intercept elements consisting of weather data receiving and transmitting equipment: Teletypewriters, radio sets, facsimile equipment (weather maps) and weather satellite receivers housed in transportable shelters.

b. One hundred thirty (130) air-droppable weather observing kits with instruments to measure wind speed and direction, temperature, barometric pressure, and dew/frost point temperatures.

Both of the above equipments are being procured for the first time to meet increased/improved performance requirements.

STRIKE COMMAND CENTER

Mr. SIKES. Under "U.S. strike command system" the statement indicates that as a part of the $2.3 million you are requesting you are asking for new data display equipment for the new strike command center. Why is this necessary?

General GOULD. This is in order to get a more integrated type of display capability.

Mr. SIKES. What are you using now?

General GOULD. They use strictly manual methods, sir, and this would enable them to get a more automated type of capability.

Mr. SIKES. What part of the $2.3 million is involved in the equipment for the new strike command center?

General GOULD. $860,000 is associated with the display and the other portion is associated with the procurement of new electronic data processing equipment.

Mr. SIKES. We have a great deal of communications equipment now. Is it certain there is a requirement for an additional automated tactical message exchange system in support of field forces? I am talking about item 2 in this statement.

General GOULD. Yes, sir. This item is essential in order to have mobile transportable equipment that is compatible with our strategic communications system, the AUTODIN system, the modernized high-speed capability.

Mr. SIKES. How much of the $2.3 million is for engineering and design preparatory to a fiscal 1971 request for a third generation automatic data processing system?

Provide it for the record.

(The information follows:)

Two hundred thousand dollars will provide for system design and configuration determination of the fiscal year 1971 third generation automatic data processing system.

THIRD GENERATION DATA PROCESSING SYSTEM

Mr. SIKES. To what extent do you want to acquire a third generation system?

General GOULD. Mr. Chairman, the present equipment that is being used is an IBM 1410 computer. This is a second generation computer which means that for all practical purposes it does not have the speed and capabilities of modern-day equipment.

Mr. SIKES. You are building up to a third generation then?

General GOULD. Yes, sir, and secondly, this equipment is saturated in the ability to do a job based on a JCS survey.

Mr. FLOOD. And miniaturized?

General GOULD. The third generation is a smaller-sized computer.

Mr. FLOOD. The high schools and other academic institutions around this country have their basements full of obsolete hardware, audio-visual, IBMS that were bought under Government appropriations. Some slick salesman sold them this stuff on Monday, and they filled the basement with it, and on Tuesday morning there is a new generation. Millions and millions and millions of dollars are spent by this country on obsolete hardware which can be used in the basements of these schools. Now, where are we?

General GOULD. A great amount of this equipment, Mr. Flood, was not purchased. It was actually on lease and when it became obsolete, it belonged to the manufacturer, not the Government.

Mr. FLOOD. But you are switching from lease to sale.

General GOULD. In some instances we are and in other instances not.

Mr. FLOOD. I know, but the policy is to switch from lease to sale. Are you aware of these general conditions that exist in the academic world? You have heard about them?

General GOULD. I know the second generation equipment is obsolete and relatively easy to come by.

Mr. SIKES. What would be the total cost of the third generation automatic data processing system?

General GOULD. About $5.7 million over a 2-year period.

Mr. WHITTEN. On the subject you just mentioned, the question has been raised in this subcommittee many times with regard to computer equipment, that the Government paid out in rentals all it was worth and then suddenly they tried to sell it and it appeared the purpose was to sell it just before it became obsolete. I think studies in the Government show a lot of equipment was bought soon before it was phased out.

EMERGENCY ROCKET COMMUNICATION SYSTEM

Mr. SIKES. Turning now to the Emergency Rocket Communication System, your statement indicates that you require ——— operational training launch communication payloads for the Emergency Rocket Communication System at a cost of $1.5 million. How many payloads are you talking about? What is involved in one of these payloads and what is your requirement for them?

General GOULD. There are ——— of these communications payloads that go on the Minuteman missiles. ———.

——— of these are expended each year for training purposes and the ——— oldest packages in each case are expended and they are replaced by new packages in the inventory.

Mr. SIKES. Do you use those on the *Liberty* and on the *Pueblo*?

General GOULD. No, sir, ———.

Mr. SIKES. How successful has this communications system been according to your tests?

General GOULD. It has been shown to be quite successful. ———

SPACETRACK EQUIPMENT

Mr. SIKES. You are requesting $8.5 million for Spacetrack equipment. No funds were requested or provided for this program in fiscal years 1968 and 1969. Your statement indicates that the funds are for "improved data processing equipment and computer programing." How high a priority item is this request?

General GOULD. This is quite high, sir, in view of the fact that the space population is continually increasing and the function of the Spacetrack system is to keep track of all objects in space. There is a definite need to update the computer capabilities in order to maintain capabilities in this area.

Mr. WHITTEN. Is that just for safety of our own operations in space, or is it just information we would like to have that will have very little value?

General GOULD. No, sir; this is for ballistic missile defense purposes. It would support the Safeguard system and it would also support any satellite defense requirements.

Mr. WHITTEN. Can you give the committee an estimate of how much we have spent thus far on data processing equipment and computer programing for the Spacetrack program?

General GOULD. I would have to supply that for the record, sir.

(The information follows:)

SPACETRACK PROGRAM—AMOUNT TO DATE ON DATA PROCESSING EQUIPMENT AND COMPUTER PROGRAMING

The estimated cost of data processing equipment is $10 million and the computer programing cost is $15 million for the Spacetrack program.

The space population which totaled 48 in 1960 has grown to 1,721 as of June 5, 1969.

The first data processing facility for Spacetrack was established at L. G. Hanscom Field, Mass., in 1959. The Spacetrack mission was assigned to the Aerospace Defense Command and a data processing center using the same type Philco Computer as L. G. Hanscom Field was established at Ent Air Force Base, Colorado Springs, Colo. July 1, 1961. When NORAD moved into Cheyenne Mountain, the data processing center, now called the Integrated Space Defense Center (ISDC) was also moved into the mountain. The original Philco equipment installed at L. G. Hanscom Field was moved, installed, and is still being used in the data processing facility in Cheyenne Mountain. It provides one-half the computational capacity available for Spacetrack functions. The data processing center at Ent Air Force Base is now the alternate computational and backup facility for the Cheyenne Mountain complex.

PROGRAM 949

Mr. WHITTEN. You are requesting $58.7 million ——— in conjunction with program 949. This is an item which has increased substantially from the $26.7 million requested in the January budget. What is the reason for this increase?

General GOULD. The prime reason, sir, is the acceleration of this program. ———

Mr. WHITTEN. After you changed administrations, did you do what you call reclama? Did you go back on your own initiative and ask them to speed this up or what? Was this done at a higher level?

General GOULD. I believe, sir, that this was part and parcel of the whole review in terms of our defense posture.

Mr. WHITTEN. Did your group initiate it or did it come from elsewhere?

General GOULD. Instructions to accelerate this program came from the Department of Defense.

Mr. WHITTEN. What is the development status of program 949?

General GOULD. ———

Mr. WHITTEN. What is the total cost of ———

General GOULD. I will have to supply that for the record, sir.

(The information was provided to the committee and is classified.)

Mr. WHITTEN. How have your estimates on cost been? Have they been on target ——— or have they been exceeded considerably?

General GOULD. I would have to supply that for the record.

(The information was provided to the committee and is classified.)

RADIOS FOR FREE WORLD FORCES

Mr. WHITTEN. What kind of ground communications equipment would you provide the free world forces with the $7.1 million requested?

General GOULD. These are radio sets and navigational-aid-type equipments.

Mr. WHITTEN. This item received only $2.2 million in fiscal year 1969 and $700,000 in fiscal year 1968. Why is such a large sum required in fiscal year 1970?

General GOULD. I believe this is primarily associated with the fact that we are trying to get those forces to assume more and more of the functions in this area.

Mr. WHITTEN. You refer to "those forces." How does that fit into the increased amount of money that you are asking for?

General GOULD. I was referring to Vietnam, Thailand, and Laos.

Mr. WHITTEN. You are asking for more money for your own operation. Is that matching money?

General GOULD. No, sir.

Mr. WHITTEN. In other words, when you are asking them to increase their forces, you are asking them to do it at your cost?

General GOULD. Yes.

WESTPAC–NORTH SYSTEM

Mr. WHITTEN. Is the Westpac-North item for which you are requesting $300,000 the item referred to in your statement as an attempt to interface the Navy and Marine tactical data systems with the semi-automated Japan air defense systems? Why is this effort required at this time?

General GOULD. In order to provide an integrated air defense capability in that area, sir, this ties together in one center for control purposes the manual capability in Okinawa, the manual capability in Korea as well as the Marine and Navy and the Japanese defense system on the island of Japan.

REPLACEMENT OF OBSOLETE COMPUTERS

Mr. WHITTEN. In your statement you mention that "it has become necessary to replace the obsolete FSQ–31 computers in the SAC Automated Command and Control System." What is the total cost of replacing the FSQ–31 computers. With what computers do you plan to really replace them? Are the new computers presently developed? What advantages will you gain through the replacement?

General GOULD. This is a Department of Defense program standardizing a family of computers in the worldwide military command and control system of which this is a part. This program is now in early stages. We are just expecting an implementation directive shortly. This procurement hopefully then would be in conformance with the standardization program to be prescribed by the Department of Defense. I cannot provide any cost figure at this time, but I will try to get one for the record.

(The information follows:)

REPLACEMENT OF FSQ-31 COMPUTERS

The SACCS computer upgrading program will replace two AN/FSQ-31 and one IBM 7090 computers at HQ SAC, and one FSQ-31 computer at HQ 15AF. The two replacement computers, both of which will be installed at HQ SAC, will be selected competitively from commercially available off-the-shelf equipment. The computers will be leased in fiscal year 1970 and purchased in fiscal year 1971. The total estimated cost of this program is $16.020 million over a 3-year period. Included in that figure is $2.476 million to lease a representative segment of the final system configuration (computers and essential peripheals) for long leadtime program development. The lease will extend for 1 year. Also included in the total cost is $1.744 million for the construction of a new facility to house the replacement computers. The new computers will be capable of performing multiprograming and multiprocessing (time-sharing) fuctions resulting in a processing throughput of almost five times the capability of the existing FSQ-31 computers. This improvement in speed and capacity is essential to cope with the exponential growth of the processing requirements associated with the development and validation of the single integrated operations plan (SIOP) and to satisfy future projected interfaces with other advanced surveillance, warning, and command control systems. Further, the FSQ-31 computers were developed in the late fifties and are rapidly approaching the end of their design life.

The total cost is summarized below.

[In millions of dollars]

	Fiscal year 1970	Fiscal year 1971	Fiscal year 1972
R.D.T. & E.	0.500		
MCP	1.744		
PROC	2.000	7.400	1.900
O. & M.	.546	1.530	.400
Total	4.790	8.930	2.300

MINIMUM ESSENTIAL EMERGENCY COMMUNICATIONS NETWORK

Mr. WHITTEN. Will you explain to the committee why this compatibility was not foreseen and why you need $1 million to bring it into the Minimum Essential Emergency Communications Network?

General GOULD. These programs that are involved here include DLF in the Navy, which is a primary means of communication with the submarine fleet. The Air Force system is the low-frequency system which grew up for an entirely different purpose of emergency communication and it grew up as a SAC requirement with the missile sites and with the forward area UHF sites, which have as their purpose to communicate with the B-52 bombers. They were entirely different requirements. Because the Secretary of Defense desired to have an integrated emergency capability wherein the SAC capability might be used in connection with the emergency requirements of the Navy, he directed that these programs be made compatible.

CREEK RIB, SEEK DATA, AND QRC

Mr. DAVIS. General, there are three other projects under "Electronics special communications" here. Would you identify them for me? Creek Rib, for which there is $1.6 million requested, and then Seek Data, and QRC, for which there are no additional funds requested. What are those?

General GOULD. Creek Rib is an intelligence-type project. ———. Generally speaking, that is the Creek Rib-type of equipment.

The QRC stands for quick reaction capability. This was in the electromagnetic warfare area and was a program wherein there was funding to take care of quick changes to react to the tactical situation. As you say, there was no money requested for that one.

Mr. DAVIS. This is because the program has been fully implemented?

General GOULD. Primarily, sir. I think we have caught up to some degree in that particular area.

Seek Data is a project for providing an automation capability at Headquarters 7th Air Force to increase our efficiency in the management of airlift and strike forces.

Mr. DAVIS. The fact that there are no funds in either of these latter two programs would indicate that the equipment and the spare parts necessary are already available to you from prior year funding?

General GOULD. I believe they are carried under spares in another place, sir. There is another section here that covers spares for all these systems.

EQUIPMENT FOR DEFENSE COMMUNICATIONS PLANNING

Mr. WHITTEN. Under "Defense communications planning" you are requesting $71.4 million compared with $43.3 million in 1969 and $5.8 million in 1968. Will you list for the committee the major items of equipment to be procured with this money and indicate the development status of each of the pieces of equipment which you plan to procure? Give us the highlights and extend it in the record.

General RUEGG. Of the dollars requested in 1970, some $53 million is required for the procurement of a variety of types of sensors ———; $15 million is associated with the procurement of deployable ——— transmitted from the sensors and get it back to a control center. The remaining $3.3 million is required for the various system improvements in this area.

(Additional information follows:)

All development of the component parts of the sensors has been and is being accomplished by Sandia Corp., the Navy, and the Army. Preproduction models are scheduled to be delivered to the appropriate production agencies ———.

ESTIMATED TRUCK KILLS

Mr. LIPSCOMB. Are you able to say what the Air Force estimates its truck kill is either per week or per month?

General RUEGG. No, I can't. I would like to supply what I can for the record of this. We do have substantial truck kills out of it but it's a little hard to pin down because our bomb damage assessment is never accurate. ———.

(The information on truck kills was provided to the committee and is classified.)

Mr. LIPSCOMB. During the hearings with the Army through an inadvertence they had inserted in their original statement that there were ——— truck kills per week. In questioning, they said this was an error in their statement; that it would be an Air Force operation and therefore the Air Force could testify better to it. They did estimate ——— trucks per week.

General RUEGG. Some weeks we get a lot of them but let me furnish that for the record if I may.

SHIPMENT OF TRUCKS TO NORTH VIETNAM

Mr. LIPSCOMB. Would you also insert in the record at this point the data you have on the number of trucks being shipped to North Vietnam from Eastern European countries, including the Soviet Union, and the type and quantities?

General PITTS. That would be an intelligence estimate, sir. We will have to do some research in both these areas. I understand what you are getting at. The truck kills derive from a variety of different sources. ———.

We have reconnaissance flights that go out and find trucks and kill them ——— there is a substantial number and I think we have some data that we would have to collect and it would have to be a guestimate, as the general pointed out, because of inaccuracy in bomb damage assessment. That is, when you go out and drop ordnance, assess what you have done with that ordnance. So, if we could, we will research this and provide it for the record.

(The information on truck imports was provided to the committee and is classified.)

General RUEGG. I have some statistics here on recent Air Force results. In the week of 7 to 13 May, which is the last record we have, we had some ——— movements reported ———. We had some, about ——— trucks reported visually in that same week and out of that we have generated some ——— sorties. This consisted of some ——— percent of these sorties against traffic control points or ——— percent against truck storage or parks and storage areas, and ——— percent against individual trucks sighted or some type of action where we identified trucks in groups.

The sorties. We had ——— trucks destroyed in the daytime and ——— at night, which would be a total of about ——— trucks destroyed that week. That is 7 to 13 May.

Another ——— trucks damaged. About ——— secondary fires that were observed after the attack and just under ——— secondary explosions that were reported. This is 1 week's operations. So, generally, that is about ——— trucks destroyed. The secondary explosions and secondary fires are a very good indication that you have hit an ammunition truck or trucks that had something on them worthwhile. We do keep a running account of all this.

That compares with the previous week's operations and it is about the same as the average through the month of April.

Mr. LIPSCOMB. Do you know any reason why, if through the Intelligence Office you obtained the quantity and kinds of trucks and the place of origin, that that should be classified information?

General RUEGG. We will have to look into that. I don't know whether it is or not.

General PITTS. I don't know.

General RUEGG. We will put whatever classification that is necessary on it.

Mr. LIPSCOMB. For the benefit of the person reading the record I would like to ask the person who does the classification for security to use good judgment.

General RUEGG. I understand. The only thing would be the information coming from sensitive sources.

Mr. LIPSCOMB. He doesn't even have to classify my remarks off the record.

General PITTS. Your point is well taken, Mr. Lipscomb.

Mr. ANDREWS. General, I didn't put the figures down, but is that destruction rate about half of what you spotted?

General RUEGG. No, generally it is much less than what we have spotted. ———.

For instance, out of ——— reports there day and night during the week of 7 to 13, and about the same number of visual sightings, we generated about ——— sorties. Now, a lot of these ——— reports and the visual sightings were probably duplicate reports, but generally a good deal of discretion and judgment is used ———.

By and large, no, we don't attack every report, but we do try to concentrate on the most lucrative ones.

Mr. ANDREWS. What type of attack do you use?

General RUEGG. Twenty-millimeter, fire bombs, any type of ordnance most suitable for the particular situation.

General PITTS. Those ——— we spoke of this morning, ———, are good truck killers.

AIR FORCE COMMUNICATIONS SYSTEM

Mr. WHITTEN. You are requesting another increase in the field of Air Force communications. The 1970 request was $16.3 million. You received $12.3 million last year and $9.7 million the year before for support of the Air Force Communications System.

What would the effect of denial of this $16.3 million have on the communications system now in-being?

General GOULD. Sir, that $16.3 million includes four major items: $4.5 million relates to unprogramed changes in the system. We operate a worldwide system with many, many terminals ond locations, and changes take place in the system, the type of service required, small changes in the configuration of stations and many unprogramed types of items come up. It would greatly reduce the whole flexibility of the Air Force and its operation if these funds weren't available.

DESIRE FOR NEW EQUIPMENT

Mr. WHITTEN. I think you folks have made rather good witnesses on the problems you are trained to deal with.

I go back a long way. In World War II; the military was afraid we were going broke and as I recall, they said every war was fought with obsolete equipment or at best obsolescent equipment; that the latest was always on the drawing board.

We are here with a war on. Much of what you read doesn't read like we can handle what we have. Messages going astray, the human equation, and we want everything new before we learn how to use the old.

Now, this whole list of things here, you want the latest model before you can operate the present models.

That is rather plain talk, but I am trying to lay a predicate. It is always true here. You want the last thing and the latest thing.

It looks like you have a lot of stuff here for somebody who might have any interest in this type of stuff. What is your reply to that?

Mr. FLOOD. Plus the additional phrase, Mr. Whitten, that if it works, it is obsolete.

Mr. WHITTEN. It will take 3 years for them to learn to operate this new stuff if you could snap your fingers and get it.

The biggest trouble we have now is teaching the Vietnamese to use the old stuff we have got.

General GOULD. This item we were just discussing—for example, if you had a station lost due to enemy action or severe damage——

Mr. WHITTEN. Like the *Pueblo*. Bring that in. How would that fit in?

General GOULD. With regard to ships at sea, this item wouldn't particularly fit them.

Mr. WHITTEN. What if somebody put them on land?

General GOULD. Then if they were damaged, for example, by enemy action, we would have to put them back into service. That would be an unprogramed kind of activity, or an act of nature could cause an unprogramed thing.

USE OF OBSOLETE EQUIPMENT

Mr. WHITTEN. Is it a part of the military program to trade in the old model, before you start operating it real good, for a new one and then spend all your time trying to learn to use it, and when you get into a war use the old equipment anyway because that is the one you have the bugs out of?

General GOULD. I don't think that defines our communications posture at all. As a matter of fact, we are trying to change, in our aircraft fleet, for example, UHF equipment, so we can get more conservative use of the frequency spectrum and it will take between 10 and 15 years to make that conversion, which is not a very rapid change.

Mr. FLOOD. Did you ever hear of BOMARC?

General GOULD. Yes, sir.

Mr. FLOOD. Quite a story.

REPLACEMENT OF PROVEN EQUIPMENT

Mr. WHITTEN. It has been suggested most of the problems are not in the equipment, but in the operation of the equipment.

Isn't that something we can forego at a time when we are having meetings in Paris and when it is generally understood this Government better do something to get out of this war? Isn't this something we better wait on for a little bit?

General GOULD. For example, sir, another one of these items relates to the worldwide air-ground communications system. These are aeronautical stations that communicate with our aircraft, wherever they move around the world.

Now, this equipment within these stations is probably 15 years old.

Mr. WHITTEN. The question is, does it work? Do your people understand it? If the Vietnamese can't understand something they have had 15 years to learn, how do you think they can learn this?

General GOULD. It doesn't work as well as it should to work with modern aircraft and weapons systems.

General RUEGG. I think in answer to your question, Mr. Whitten, the equipment we are buying we will keep in our own service. We will make our older equipment available for the South Vietnamese to operate for themselves.

Mr. WHITTEN. If you are going to fight a war, what you have is all right, but if you are going to live and grow and be up to date, you say we have to buy this.

Now, hadn't we better think about fighting a war right now? You have said what we have would be all right for the Vietnamese when we turn the war over to them. If we are going to fight a war, hadn't we better keep what is all right to fight a war?

General BOYLAN. Mr. Whitten, you are making a general point. Let me turn that point into specifics as it bears on the total Air Force.

We went into the Vietnamese affairs with an Air National Guard fighter force which today is no more modernized than it was in 1964. The large measure of our modernization effort has been largely put aside because of the war. It is true that our active fighter force has received a number of F–4's, but we are still fighting with the F–100 in Vietnam. We are still fighting with the F–105, and the Air National Guard is still using or still flying F–84's. That is a specific example of the point you are raising. We are deferring modernization of the total Air Force plant in a general sense.

There are one or two items in here that are required just to maintain the status quo and that is what General Gould has been attempting to say to you.

Mr. WHITTEN. Well, I am asking the questions to get the answers. If I don't ask the questions, you won't answer them. This is on the minds of a lot of people who see the budget growing and growing.

You have measured yourself first and I have a second right to measure. I draw a conclusion that there is some talk of bringing the war to a close so if you are going to get this stuff you better get it before the war closes down. You better get it this year because next year if we have some form of peace you won't be able to get it. You have that angle to consider.

General BOYLAN. Mr. Whitten, we are acutely aware of the attitude in the Nation about the expense of military preparedness. We are also critically concerned about the modernization of our total force.

ELIMINATION OF COMPROMISING EMANATIONS

Mr. WHITTEN. I started off by saying for the problem we have had you have all made mighty good witnesses and I repeat that.

You are requesting $1 million for the elimination of compromising emanations, the same amount as was provided last year. Give the committee a description of this program and tell us what progress has been made in the elimination of compromising emanations.

General PASCHALL. Any electrical equipment, as it operates, emanates certain radiations. These can be intercepted and information derived from them. Over the years we have made steady progress, at about the same level of funding you see here before you today, in eliminating emanations through what is known as low-level modifications.

DEFENSE COMMUNICATIONS SYSTEM COMMUNICATIONS

Mr. WHITTEN. Under the Defense Communications System Communications you are asking for three new items, line items 266, 268, and 269. Would you describe these items to the committee?

EQUIPMENT FOR PHASE II SATELLITE PROGRAM

General PASCHALL. Tech control expansion, which is item 267, makes modification to existing facilities. The technical control facility is the heart of any communications system. This makes modification and expands these to primarily introduce the new phase II satellite program of the defense communications system.

Item 268, the satellite communications terminal equipment, modifies the existing initial defense communications satellite earth stations so as to make them operate with the new phase II satellite program of the defense communications system.

Item 269, which is DCS entry stations, adds equipment at selected defense communications stations operated by the Air Force, again primarily for the purpose of meeting contingency requirements, and in one case for the defense communications satellite.

AUTOVON AND AUTODIN

Mr. WHITTEN. Items 264 and 265 indicate that further procurement of autovon and autodin equipment. Hasn't this equipment for the most part been procured?

General PASCHALL. There are two overseas autovon switches yet to be installed. The Air Force, of course, is responsible for all overseas autovon installations for the Defense Communications Agency. These two switches are funded under this item.

There are additionally funds associated with updating the subscriber listing and changing the switch program accordingly, continuing engineering for the integration as we go through the various cutovers designed to make this autovon work overseas. It also provides certain traffic analysis units that are required to assess the system as it operates so as to enable DCA to manage the system itself.

The autodin buys out additional equipment, part of a continuing thing, part of which will be mobile equipment capable of operating with other defense communications systems. There are some logistics support items, some miscellaneous installation material, and some various support and ancillary-type equipment that will provide the logistic support associated with the subscriber terminal equipment primarily.

Mr. WHITTEN. You might detail that for the record.

(The information follows:)

PROCUREMENT OF AUTOVON AND AUTODIN

Since most major on-line devices were procured during the period of fiscal years 1965–69, the fiscal year 1970 funds primarily support the logistical provisioning and installation of digital subscriber terminal equipment (DSTE) presently being delivered. Changing requirements have necessitated small additional purchases of ancillary devices such as modems and crypto ancillary units (CAU's). The DSTE requires certain off-line equipments for the preparation of punchcards and punched tapes, page copy duplication, and counting and printing on

punched data cards. This is accomplished presently by means of outmoded Government-owned teletypewriters and leased data equipments. None of these equipments utilize the American Standard Code for Information Interchange (ASCII) approved by the President as a U.S. standard code after July 1, 1969. The DSTE previously procured does use the ASCII code. In addition to the above items, the Air Force requires transportable autodin terminals for contingency and restoral purposes. The DSTE is to be mounted in semitrailer vans and equipped with off-line support equipment, environmental control, and power units for this purpose.

Item	*Dollars in millions*
Logistic support—initial spare parts	$2.4
Logistic support—special tools, test equipment	.5
Contract changes	1.3
Equipment configuration management	.1
Miscellaneous installation material	1.0
Ancillary devices (modems, et cetera)	.6
Off-line support equipment	1.0
Van mounting DSTE's	1.2
Total—fiscal year 1970	8.1

Mr. WHITTEN. If there are no further questions, we will adjourn until 10 o'clock in the morning.

TUESDAY, JUNE 3, 1969.

FUNDS FOR SPECIAL SECURITY COMMUNICATIONS SYSTEMS

Mr. MAHON. General Ruegg, what is your requirement for funds in 1970 for Criticom and for Spintcom?

General RUEGG. I will ask General Gould to speak to this, he is the expert in this area.

General GOULD. First, if I could explain what these two networks are. They both serve intelligence purposes.

The Criticom network is ——— under the general operational control of the National Security Agency. It is an outdated type of network and the funds that are in this program are for purposes of giving this some modernization until we can provide a much more modern system.

The sister system that goes with this is the intelligence network that is used for actually disseminating intelligence information and this comes under the DIA operational control.

The Department of Defense has a plan for the future which will integrate these two networks into one, into a very modern electronic network. However, the funds that are requested at this time are to provide minimum modification to these two networks until a modern data network consolidating them can be brought into being.

Mr. MAHON. Will the operation of the DIA be improved? Improvements are in order.

General GOULD. Yes, sir. This will provide a much more modern type of communication capability. They are largely using the old slow-speed manual teletype capabilities in both the collection and dissemination of intelligence data today.

Mr. MAHON. Have funds been previously provided for major improvements to these intelligence communications systems?

General GOULD. There have been funds provided in the past that relate to the development of electronic switches which will be used in a more modern network. However, there are only three of these switches under procurement at the present time and considerably more will be required to make the total network.

Mr. MAHON. You already have the systems. Why do you need to make further investment?

General GOULD. The two systems we have, sir, are both antiquated-type systems in terms of modern communications technology. There is a new type system under development but we will not have this implemented for quite a number of years.

Mr. MAHON. The new type system under development will make obsolete the system you propose to buy now?

General GOULD. Yes, sir; it will eventually replace them.

Mr. MAHON. Is the 1970 funding for upgrading and modernization of the system or for replacement of existing equipment with like equipment or for an expansion of the system? Just what is it?

General GOULD. It is primarily for replacing obsolete or obsolescent equipment with newer types of equipment to provide an improved capability.

Mr. DAVIS. Mr. Chairman, I am still not clear as to the difference physically and by mission of these two systems, Criticom and Spintcom.

General GOULD. One system, Criticom, is associated with a network that serves the purposes of intelligence collection. We have facilities at various places around the world which monitor communications, as well as various types of electronic emission. ———.

The other network, Spintcom, is a special intelligence network that is used primarily by DIA for purposes of disseminating to the various military users intelligence that has been already processed.

Mr. DAVIS. Thank you.

Mr. MAHON. Are you duplicating NSA in this effort?

General GOULD. No, sir; NSA exercises operational control over the Criticom networks.

REPLACEMENT OF TELETYPE SYSTEM

Mr. MAHON. You are requesting $2.5 million for support of the national military command system. $400,000 was provided in 1969 and $100,000 in 1968. Why do you have such a large request for 1970?

General GOULD. There are two things involved here, sir. One involved, the replacement of the EMAT teletype system. This is emergency message automatic transmission system.

Mr. MAHON. Amplify it for the record.

(The information follows:)

First, to replace the existing JCS emergency message automatic transmission system (EMATS) with an improved system for expediting the processing, transmission, and receipt of secure emergency action messages and to increase the

survivability, reliability, and flexibility of the improved system, the estimated initial cost is $2.250 million for the following items:

[In thousands of dollars]

Item	Each	Total
17 keyboard/visual display/memory	30	510
17 printers	15	255
17 key generators	6	102
10 airborne terminals	15	150
Engineering		175
3 displays	10	30
Autovon industrial fund (for connecting system to DCS Autovon)		718
Overseas conference bridge		300
Conus conference bridge		10
Total		2,250

An additional item is programed at $275,000 for an integrated warning display system to be installed in the command centers of the NMCS. It will consist of the following items:

	Dollars in thousands
Decoder equipment	125
Power supply	75
Display panels	60
Interconnecting hardware	15
Total	275
Total for both requirements	2,525

These requirements are submitted in accordance with guidance from DCA which requested the U.S. Air Force to program the above funds for fiscal year 1970 in program element 32016F (NMCS—wide support, Air Force). Detailed system plans are being developed by DCA.

Mr. MAHON. How does the "Emergency Message Automatic Transmission System" for which you are requesting $2.5 million differ from other existing emergency communications systems? Amplify for the record.

(The information provided the committee is classified.)

FUTURE YEAR COST TO IMPROVE TELETYPE SYSTEM

Mr. MAHON. Is the $2.5 million the total sum required for improvement of the emergency message automatic transmission system or will additional funds be required in future years?

General GOULD. Additional funds will be required.

Mr. MAHON. Give an estimate of that for the record, will you?

General GOULD. Yes, sir.

(The information follows:)

Estimate of funds to be required in future years

The $2.5 million already programed is based on an estimate by DCA of funds needed for initial procurement of basic equipment. This does not include follow-on O. & M. support for the new system, additional R. & D. funds and additional procurement of redundant or backup equipment. These would have to be provided in succeeding fiscal years' programs. An exact estimate would depend upon which system alternative is finally selected as the EMATS replacement.

We understand one of the alternatives would require an additional $45,000 for R. & D. and $6,634,000 for procurement plus approximately $3,500,000 each year for O. & M. support. The O. & M. cost each year would be primarily for payment of DCS charges for Autovon/Autodin circuits.

COST OF ORGANIZATION AND BASE EQUIPMENT

Mr. MAHON. With respect to organization and base equipment, the request for organization and base equipment is another area where we find increases. The appropriation last year was $16.6 million and this year $28.3 million is being requested. Explain the increase in item 285, training equipment, in which $800,000 was programed in fiscal year 1969 and $6.2 million is requested for fiscal year 1970. Does this make sense? Who can speak in this field?

General GOULD. Mr. Chairman, a great deal of this training equipment is associated with the electronic warfare field wherein we simulate various types of enemy radar and other electromagnetic radiating equipment and these training devices are used to train pilots and other crew members in the field of electronic warfare. These kinds of simulators are quite expensive.

Mr. MAHON. Will you amplify that for the record?

General GOULD. Yes, sir.

(The information follows:)

Another form of training equipment that is included here is an equipment that simulates the enemy air offensive operation and is required to maintain the effectiveness of the air defense system. Neither of these systems had progressed far enough to be procured in fiscal year 1969.

CLOSED CIRCUIT TELEVISION

Mr. MAHON. In item 286 you are requesting $1.2 million for closed circuit television, the same amount as was programed in the current fiscal year. For what functions are these closed circuit television systems requested?

General GOULD. They are associated with weather dissemination, operational support in command centers, surveillance purposes where you need, for example, to supplement police-type action, and they are likewise used in training. In each case they are employed where they enable us to do the job more efficiently, usually with less people.

Mr. MAHON. Is this really necessary at a time when people are complaining about tax dollars and expense of the military? Is this somewhat like frosting on the cake?

General GOULD. This type of item could be except for one thing, Mr. Chairman. We apply strict cost effectiveness to these types of systems. We don't normally put in a TV system unless it is pretty clear that we can save people and actually operate more efficiently by so doing.

Mr. MAHON. What is your requirement for utilization of closed-circuit television for weather briefing to Air Force bases?

(The information follows:)

UTILIZATION OF CLOSED-CIRCUIT TELEVISION FOR WEATHER BRIEFING

Planning and execution of operational flying missions requires commanders, planners, operational officers, and aircrews to be advised of expected en route weather conditions by a certified weather forecaster. Closed-circuit television between the base weather office, command posts, flight operations officers, and alert stations, et cetera, is required to allow one forecaster to present the weather sequence briefing at all necessary locations simultaneously. It reduces the number of forecasters required, particularly on bases with composite missions; that is, SAC, ADC, MAC, Air-Sea Rescue, et ceteria.

PROCUREMENT OF SURVIVAL RADIOS

Mr. MAHON. Discuss item 291, "Aircrew survival radio equipment." What kind of radios are involved here? What is the unit cost? What is your total requirement for these radios and how many are in the inventory or under order? Supply that for the record.

(The information follows:)

NUMBER ON ORDER AND IN INVENTORY

There are 3,148 radio beacons at an estimated unit cost of $81 for a total of $255,000. These are small, lightweight, battery-operated radio beacon transmitters which continually emit a signal so that rescue aircraft can locate downed aircraft and crews. The total requirement for this item at present is 17,465. We have 6,046 in use; 4,399 on order; and require a balance of 7,020, of which we are requesting 3,148 in this budget. This leaves a shortage of 3,872 which will be programed in subsequent years together with attrition quantities.

There are 3,505 aircrew survival radio sets at an estimated cost of $612 for a total of $2,145,000. These are small lightweight, battery-operated radio transmitter and receivers. Cost estimate is based on four-channel equipment capability required in SEA due to the number of rescues that may be attempted simultaneously, congestion on normal rescue channel frequencies and jamming or interception efforts by the enemy. The total requirement for this particular radio at present is 25,150 to fill existing shortages; 6,425 are on hand; 14,125 are on order; 3,505 are requested in this budget, leaving a shortage of 1,095 plus attrition to be programed in subsequent years. In addition, we have 11,078 obsolete radios that must be replaced. The replacement item type has not been decided.

NONCOMPETITIVE PROCUREMENT OF RADIOS

Mr. MAHON. Are these items procured competitively?

General RUEGG. Yes, sir; we plan on doing that this year.

Mr. MAHON. Is the AN/URC-64 radio bought under competition or will it be?

Colonel RUSSELL. At the present time it is being bought from Magnavox. After it is developed, we hope to go competitive on this item.

Mr. MAHON. When will that be?

Colonel RUSSELL. I can't give you that information.

General RUEGG. We hope to have it competitive this year. We are reviewing our requirements now to see if the model we have and the Navy model can meet requirements so we can compete it.

Mr. MAHON. How long have you been proceeding with this without competition?

General RUEGG. From the time we started developing this to meet that requirement for Southeast Asia. We have never had a completely satisfactory survival radio. We have always had problems with it.

Mr. MAHON. How many months have been involved in this? Will you supply that for the record?

General RUEGG. Yes, sir.

(The information follows:)

COMPETITIVE PROCUREMENT OF AN/URC-64 RADIO

After full competition, the development contract was placed May 10, 1966. We have placed two follow-on production orders with the development contractor on a negotiated basis. We have been involved in development and production of the AN/URC-64 for 36 months.

COST DIFFERENCE BETWEEN SERVICES

Mr. DAVIS. We talked about radio survival kits for the Navy last week. The unit cost was about $764 apiece, while these apparently will run about $350 apiece.

General PITT. I believe the unit price on these has been around $600 apiece. It depends on the quantity of buy on the price. There has been a price increase on the URC–64. The Navy article is called PRC–90 and previously it was around a $600 item article.

As General Ruegg said, we are going to, during the forthcoming year, compete these articles to get the best buy for the Government.

Mr. DAVIS. I don't understand this modern day mathematics but if my arithmetic is correct, you divide 6,650 into $2.4 million and it comes out to something in the neighborhood of about $350 a unit.

Mr. PRITCHETT. Included in the line item are 3,148 radio beacons at a cost of $81 each and 3,505 radio sets at a cost of $612 each. When you average those two, it comes out that way, but the radios are $612.

Mr. DAVIS. Are these comparable to what we talked about last week?

General PITTS. The radios are. There are two items being discussed. One is a beacon which is a small compact piece of gear which emits a beacon and lets a rescue plane home in on it to find the location. At the point in time when the aircraft arrives over the beacon site, the two-way radio allows the ground crewman to talk to the rescue plane and effect his rescue. The radios you are talking about, I think Mr. Pritchett said are at a cost of about $612 apiece.

Mr. DAVIS. Why would the Navy have to pay $764? They are for the same purpose, apparently, aren't they?

General RUEGG. There is a difference. We have required four channels because of the fact that we have had at one time several rescue operations going on at once and we have been channel limited. So our people have insisted they need four channels. The Navy hasn't run into that problem. They say two channels will do their job.

Generally speaking, we would like to get together with the requirements so we could buy the same one or compete between the Navy source and the Air Force source to get the best price if it will indeed meet our requirements and this is being again looked at very critically by the Air Staff with the Pacific Air Forces.

Mr. DAVIS. That makes you look pretty good if you can get four channels for $600 and the Navy is paying $764 for only two channels.

General RUEGG. I can't give you the reason why we are paying less, but it will depend again here on how many we buy this year and what our final requirement comes out to.

Mr. DAVIS. Are any of the four channels of the Air Force radio identical with either of the two channels of the Navy radio set?

General RUEGG. Yes. The Navy AN/PRC–90 radio operates on 243.0 and 282.8 Mega Hertz. The USAF AN/URC–64 radio operates on 243.0, 282.8, 247.3, and 248.2 Mega Hertz. Two channels are identical, and it should be noted that the USAF radio may be operated on 243 Mega Hertz and any three other frequencies in the band between 225 and 285 Mega Hertz.

Mr. MAHON. What is the outside measurement of this radio?

General RUEGG. We have an example here. This is the model, Mr. Chairman.

Mr. MAHON. Do you mean that we have to pay $600 for that gadget?

General RUEGG. The reliability and capability built into this radio and the fact that we want it to work all the time under every condition--we have not yet been able to get industry to build one for less. We are looking for ways to do that but this is a very reliable piece of equipment that has to operate whether dropped in the ocean or on land and often after being rocked very hard. It has to operate under various and very severe environmental conditions.

Mr. MAHON. Can't American industry do a better job for less money?

General RUEGG. Sir, we are constantly probing American industry to see if they can produce a more reliable model.

Mr. MAHON. I assume "sole source" is causing this.

General RUEGG. Sole source, coupled with the severe technical requirements for this piece of gear.

Mr. MAHON. Who is the manufacturer?

General PITTS. Magnavox for the URC-64 and Sylvania for the PRC-90, the Navy model.

General RUEGG. We agree that we would like to lower the price, Mr. Chairman, and that is why we want to compete it if it is at all possible. We don't want to compete it if it is going to lessen the rescue capabilities.

Mr. MAHON. We want it to be good; we want it to be effective. We want it to be the best type of equipment for our service people that money can buy, but I don't believe you could convince a group of grammar school students or a group of Ph. D.'s or a group of militants or nonmilitants that you ought to have to pay $600 for this item.

General PITTS. I have some statistics that say from December 1964 through May of 1969 some 1281 U.S. Air Force air crewmembers associated with aircraft losses have been saved by the use of a survival radio.

Mr. MAHON. This is very good. We weren't talking about the necessity for saving these men. We have already said we want the best gadget that money can buy. The issue here is, should you have to pay through the nose in order to get this item in our free society? That is my point.

General RUEGG. The only answer I can give right now, Mr. Chairman, for the record, is that with previous survival rescue radios we had numerous failures under operational conditions where they couldn't establish radio contact and a number of our aircrews didn't get back. We got a few of them back because they were visually rescued when the radio failed. We have cranked in very rigid operational requirements. We want the most in reliability that industry can provide. We pay for it and we think it is worth it.

Mr. MAHON. I still say that little gadget ought to be bought from competent people for less money. I insist on that and I predict for the record that when this record is read and you compete it, you will reduce the price.

General RUEGG. Sir, this is what we want to do and that is why we are looking at both the Navy source and our source, to see if we can compete them.

General BOYLAN. Mr. Chairman, may I make a comment, please?

General Estes is commander of the airlift command and is responsible for the rescue service. In the fall of 1965, based on his personal survey of our recovery of airmen, the experience in South Vietnam, he found that our recovery rate was something like 20 to 28 percent, depending on the circumstances. He found that basically there were four factors that had to be solved to increase that recovery rate. One was to get the man out of the airplane if he was hit. Second, to get him down on the ground. The third is to find and the fourth is to recover.

The incident rate in North Vietnam and South Vietnam was such that there was high urgency toward improving the last two factors for which General Estes is responsible and that is to find and recover. He went to the Chief of Staff and personally insisted that if the Air Force was to improve its rate of recovery of air crewmen, it had to have help now. That radio is one of the problems and it represents the urgency. The price represents in part the urgency of that requirement.

You are right. The radio, based on today's technology and U.S. manufacturing know-how, shouldn't cost that much. But the Air Force basically had no alternative if it was going to recover more airmen than to go to industry and, to some degree, be at their mercy. I hate to use those words, but that is the fact.

Mr. MAHON. That is an interesting comment—I think the American people would be willing to pay $1 million a radio if that is necessary, but that is not the issue.

General BOYLAN. What the base price would be I am not competent to say, but a radio of that reliability and weight will probably cost more than most of us in this room would estimate it would cost.

Mr. MAHON. I agree but it wouldn't cost $600 or $700.

General BOYLAN. Perhaps not, sir.

Mr. MAHON. I would think probably much of this cost is cranked into research and development, going to high-powered people who produce the radio. This is the cost that is going into it probably. Not the cost of the material and not the cost of the workmen, but the cost of the development.

General BOYLAN. And to produce it in a hurry.

General RUEGG. To be responsive to each new failure that shows up out there and to get it back and to crank the fix into the production model in a hurry. It is a high-cost operation until we get this thing standardized.

General BOYLAN. You understand, Mr. Chairman, this is a two-way radio.

INVENTORY POSITION OF RADIOS

Mr. MAHON. Are these replacement items for equipment in the inventory, or are they new items to be added to the inventory in areas where you have no equipment at the present time? Please answer that for the record.

(The information follows:)

These are new radios to meet operational requirements in Southeast Asia, however, they will replace single channel radios now in use which will be returned to fill shortages in non-SEA units.

Mr. MAHON. For the record will you tell us the cost of developing the single channel radio now in use in Vietnam, will you also provide the number of procurements, the quantity and unit cost of each procurement, the total inventory of these radios, and whether or not there is a new or proposed buy of this single-channel radio pending? Identify also the development contractor and whether or not any of the buys had been completed.

(The information follows:)

Air Force crews in Vietnam are currently using the single-channel RT-10 survival radio. This is a modification of our URC-10 radio. Our technicians prepared a performance specification for the URC-10 and our initial procurement was in 1961 when we bought 7,500 from Philharmonic Radios for a unit cost of $171. There was no separate development for this radio. Follow-on procurements of URC-10 radio are:

Manufacturer	Quantity	Cost
Philharmonic Radio	7,500	$171
Bendix	17,000	182
Do	1,430	182
Do	25,888	188
Do	2,700	238
Do	2,770	247
ACR Electronics	4,541	199

The URC-10 has the battery pack separate from the radio and is attached by an electrical cable of some 20 inches. For convenience of our SEA forces, this design was modified to attach the battery directly to the radio. This was done by ACR Electronics and the modified radio designated RT-10. We have a total of 41,467 single channel radios with 13,243 in PACAF. Of our gross quantity, some 10,000 are of an earlier design (URC-4 and URC-11). We have recently awarded a contract to ACR Electronics for 2,854 single-channel URC-10 radios for the U.S. Army. As previously indicated, there was no development contract for the URC-10 radio and all procurements have been completed except the recently awarded to ACR Electronics.

Mr. MAHON. What is the unit price of the AN/URC-64 radio set and what is the set which it will replace and the unit cost for that set?

(The information follows:)

UNIT PRICE OF AN/URC-64 RADIO SET—COST OF UNIT TO BE REPLACED

The unit price of the AN/URC-64 used in this budget request is $612. This was based on the original production contract price. Recent quotation from the contractor indicates a price of from $806 to $685 depending upon the size of the order. We believe that competition or threat of competition, plus hard-nosed negotiation will result in a price of ———.

The AN/URC-64 replaces the single channel RT-10 in PACAF. The latest contract price for the RT-10 was $196.

GUARD AND RESERVE EQUIPMENT

Mr. MAHON. What is involved in the $1.8 million requested for Air National Guard and Air Force Reserve equipment in item 283?

(The information follows:)

The request includes fixed and portable radio sets, communication modulator/demodulator equipment totaling $1.1 million for the Air National Guard; and vehicular mounted radio equipment in the amount of $0.7 million for Air Force Reserve Tactical Air Support Groups.

ELECTRONIC AND COMMUNICATION SPARES & SPARE PARTS

Mr. MAHON. With respect to spares and spare parts, you are requesting $56.1 million for spares and repair parts for electronics and telecommunications equipment. This is an increase above the $42.5 million programed in fiscal 1969. Would you explain this increase?

General RUEGG. Yes, sir. Colonel Russell, will you speak to this?

Colonel RUSSELL. About $8.6 of the increase is for SEA requirements and the remaining approximately $5 million is for support of introduction of equipment such as the 407–L and the 949 program.

Mr. MAHON. To what extent are spares and repair parts for electronics and telecommunications equipment purchased from vendors who make the parts and to what extent from prime contractors?

Colonel RUSSELL. Generally initial spares are procured from the prime manufacturer and replenishment spares are procured from the vendor.

Mr. MAHON. What is your estimate of the inventory in the Air Force for spare parts for electronic and telecommunications equipment at the present time?

Colonel RUSSELL. Approximately $198.9 million.

MODIFICATION TO EXISTING FACILITIES AND EQUIPMENT

Mr. MAHON. Under Class V modifications, what modifications are proposed for the $6.8 million related to item 301, the traffic and control landing system?

General TANBERG. This line item involves three primary modifications. First, $5 million will go to incorporating the AIMS capability in 20 GCA radars. Second, is $1 million, which will modify our mobile Radar Approach Control facilities by providing a supervisor's scope at the console. Third, $800,000 is to modify the antennae of this equipment which will provide improvement to the radar beacon return signal on the controller's scope.

Mr. MAHON. What modifications are proposed under 310 for program 496–L spacetrack?

(The information provided the committee is classified.)

Mr. MAHON. What are the major modifications proposed in item 312 for which you are requesting $7 million for organization and base?

General TANBERG. This involves two major modifications. We are spending a little over $5 million modifying two of our radars, which are precision ground-based bomb directing controls like those now in use in SEA. This will result in improved capability and provide a system which then can be carried by helicopter and moved into remote areas in Southeast Asia.

The other major mod for $1.2 million involves a modification to our air-ground radios that will permit simultaneous transmission on three or more channels.

Mr. MAHON. Submit to the committee a listing of the industrial facilities proposed in the $3.7 million requested for 1970.

(The information follows:)

MODIFICATION TO INDUSTRIAL FACILITIES

Of the $3.7 million requested for industrial facilities, $1.1 million is for expansions to provide primarily metalworking equipment in support of production requirements for production of air munitions. Past experience indicates that the types of metalworking machinery required includes presses, die casting machines, potting facilities, and automatic mixing equipment, as well as metal removing equipment. There is no brick and mortar in this requirement. $1.4 million is budgeted for the nonrecurring, capital-type maintenance of Air Force-owned industrial real property and equipment. Additionally, $200,000 is budgeted for preparation for shipment of Government-owned equipment from approximately 22 contractor locations to the defense industrial plant equipment center or to other priority production programs. $1.0 million is requested for the manufacturing methods program in the air munitions and electronics area. The objective of the program is to bridge the gap between research and development and production by the application of practical new production processes or techniques. It results in greater product reliability, shorter leadtimes and lower production costs.

BIDDING FOR ELECTRONICS AND COMMUNICATION EQUIPMENT

Mr. MAHON. For the record will you tell us the dollar percentage of your procurement of electronic and telecommunications equipment done competitively? Also tell us whether you have in recent years increased the dollar amount of competitive procurement in this area?

(The information follows:)

The competitive procurement projection for the fiscal year 1969 electronics and telecommunications area is 70 percent or $237.4 million of the $339.2 million programed. This represents a decrease in our fiscal year 1968 projection which was 74 percent. This projection does not include cryptographic equipment and industrial facilities portion of electronics and telecommunications area.

The primary reason for the projected decline in fiscal year 1969 is that the program for the defense communications planning group's direct support for SEA has increased from $2.8 million in fiscal year 1968 to $43.3 million in fiscal year 1969. Almost all of the procurements for this group are sole source due to the classification of the requirements. Excluding this group, our fiscal year 1969 percentage would approximate 80 percent.

OTHER BASE MAINTENANCE AND SUPPORT EQUIPMENT

INCREASED FUNDING FOR TEST EQUIPMENT

Mr. MAHON. You are requesting an increase of $5.2 million for test equipment; $12.1 million was provided last year and $17.3 million is requested for fiscal year 1970. What new items are requested in the 1970 program? What are the functions of these new items? This is "test equipment" under "Other base maintenance and support equipment."

Colonel RUSSELL. Basically there are two new items, sir. One is an intermittent fault detector for approximately $600,000 and the instrumentation for a radio frequency interference calibration system for about $1.5 million. The detector is a lightweight portable tool designed specifically to detect and isolate intermittent faults and potential failures in circuit connections in electronic systems.

The instrumentation for the radio frequency interference calibration system will measure density and pattern of various communications electronics systems. It is used to measure wave lengths, strengths, distance, frequency of various radio and radar sets.

Mr. MAHON. Who negotiates with industry to see to it that we get a rock bottom price on these procurements?

Colonel RUSSELL. The procurement and production people.

General RUEGG. This is our procurement people out in our air materiel areas, our procurement people in our various divisions in the Air Force systems command. They are subject to periodic reviews by procurement specialists in my office to insure that we do compete everything that is "competable" and that we don't go back to the vendor once we have got the item standardized and we are able to compete. We place a lot of emphasis on insuring that we get maximum competition in this area.

Mr. MAHON. For the record, tell us the development status of these new items and whether they will be ready for procurement in fiscal year 1970.

(The information follows:)

Service testing of the intermittent fault detector has been completed and procurement data is available. Specifications for the radiofrequency interference calibration system are under final engineering development and procurement data is scheduled to be available during the third quarter of fiscal year 1970.

INCREASE IN FUNDING FOR THE NEWARK AIR FORCE STATION

Mr. MAHON. For the record will you tell us the reason for the much higher request for the Newark Air Force station calibration package? You programed $500,000 in fiscal year 1968, $700,000 in fiscal year 1969, and are requesting $2.4 million, a fourfold increase, in fiscal year 1970. We want you to give us a good answer.

(The information follows:)

NEWARK AFS CALIBRATION PACKAGE

Of the increase of $1.7 million in fiscal year 1970 over fiscal year 1969, $1.5 million is related to the requirement for instrumentation for a radiofrequency interference calibration system. The system is comprised of two basic groups of equipment, that is antenna pattern measurement equipment and antenna intensity calibration equipment. This is a new requirement. The equipment was not previously available and is considered essential to calibrate the base precision measurement equipment laboratory standards which in turn will calibrate or test user systems antenna for electromagnetic and radiation hazards. This is a new measurment area resulting from the entry into Air Force inventory of high-power, high-frequency communication and electronic systems.

PERSONAL SAFETY AND RESCUE EQUIPMENT

Mr. MAHON. With respect to personal safety and rescue equipment, you are requesting $600,000 for 4,759 one-man life rafts. Data which has been submitted indicates that a total of 22,668 of these life rafts will be dropped from the inventory in fiscal year 1970. The life expectancy of the rafts is 5 years. Are most of the 22,668 losses due to the fact that the rafts have been on hand for 5 years?

General RUEGG. Yes, sir.

Mr. MAHON. Are the 5-year-old rafts which are dropped from inventory declared surplus and sold?

General RUEGG. No, sir. We used to do that. Now we salvage and repair the reusable equipment and destroy the rest.

Mr. MAHON. Are they procured from a single source, noncompetitive?

Colonel RUSSELL. They were initially procured from the developer of the item. We will go competitive this year.

AIR CARGO PALLETS

Mr. MAHON. Why are air cargo pallets, item 327, procured under the heading "Personal Safety and Rescue Equipment"?

General RUEGG. Mr. Chairman, that was a decision by somebody on the administrative side. They won't be there next year but they are there this year.

Mr. MAHON. Why do you anticipate consumption losses of 63,089 of these pallets through the fiscal 1970 funded leadtime? How many times can one of these pallets be used?

General RUEGG. They can be used over and over again. Our present experience in Southeast Asia indicates we use them about 15 times before they are damaged or worn out to the point where they have to be replaced. Actually we have two years' buy in this particular program to make up for previous shortages, and to meet our requirements based on our losses in SEA. We are trying to tighten our controls so that we will have fewer of these lost but it is a really tough item to account for when you land in some obscure landing strip over in Southeast Asia where there is a danger of being shot at. They off-load them and intend to pick them up when they come back. I have seen these pallets used as bomb shelters where they hurriedly construct fortifications. We know we don't get them all back. We are tightening our procedures to get the maximum number back.

Mr. MAHON. You are requesting $2.2 million for the procurement of net cargo tiedown assemblies to be used with the pallets just discussed. The tiedowns cost $237 each. What is involved in this item other than some rope? Why is the cost so high? What is the life expectancy of this item? Is this a case where we are taken for a ride?

General RUEGG. No, sir. These are very stringently controlled items. They are made of heavy nylon belts because they do have to hold these loads down sometimes under extreme conditions and it isn't a case where we can just go out and buy some rope. We have to have a very strong net that is quickly adjustable to the load and will hold the load under all flight and drop conditions, or ground conditions.

Mr. MAHON. You are paying $237. That is bought competitively?

Colonel RUSSELL. Yes, sir; it is bought competitively. You have three nets in a set, two side nets and a top net. This covers a pallet 108 inches by 88 inches, which is a considerable amount of net. There is also a large amount of hardware, buckles and clamps that are part of these nets.

Mr. MAHON. What would one of these tiedowns weigh probably?

Colonel RUSSELL. The net set weighs approximately 65 pounds.

General PITTS. They are engineered to provide a forward restraint of a 10,000-pound load at 8 G's. Those are the qualifications General Ruegg was talking about.

Mr. MAHON. It seems to me if we were to make a strenuous effort to get equally good or better quality for less money, we might do better. Does anybody agree with me on that side of the table?

General RUEGG. If we did what, Mr. Chairman?

Mr. MAHON. If we made a more strenuous effort to get equal or better quality for less money, we might do better on procuring this item. I am sure it would be hard to convince the average citizen that one of these little nets should cost $237. I understand the average citizen might be wrong.

General RUEGG. Sir, we devote a lot of effort to this and we have our people out in the field who are given all types of incentives to come up with ways of saving money and redesigning this equipment so we can have simpler equipment. These are very demanding specifications and we have people with skill in procurement and with technical skills looking at these things all the time and our system is working toward that end. I agree with you we ought to do better in some of these areas and we are striving to do better across the board.

(CLERK'S NOTE.—The following additional information was subsequently submitted by General Ruegg for the record.)

In arriving at the unit cost of $237, the side nets were erroneously costed at $86 each or $172 for the side net plus $65 for the top net. The correct unit cost is $151 per complete net assembly and is comprised of $86 for two side nets and $65 for the top net. At the time the budget estimate was prepared a unit cost of $151 for the complete set (2 side and one top net) was used. This unit cost was based on our experience in prior years. Our latest negotiated unit cost (March 1969, several months after the fiscal year 1970 budget was finalized) is $124.60 excluding transportation. This is the lowest cost we have obtained since the beginning of fiscal year 1967. It is possible that we may be able to negotiate our fiscal year 1970 procurement at a cost of less than $151. However, with the general trend of inflation this cannot be accurately forecast.

ENVIRONMENTAL CLOTHING

Mr. MAHON. What is the life expectancy of the anti-G coverall of which you are requesting 24,500 units for fiscal year 1970?

General RUEGG. The life expectancy is normally 1 year. However, in the environment of Southeast Asia, we have had to cut it down to 9 months.

Mr. MAHON. With respect to item 332, there is an antiexposure suit to be quickly donned by passengers in Air Force aircraft in the event of an over-water accident. You have 22,733 suits. Are these replacements? Is the replacement based on 5-year life expectancy?

General RUEGG. That is their computed life and they are donned only in emergency. This is basically the shelf life because they are only donned in emergencies and 5 years is all they will last.

Mr. MAHON. Would it be wise to try to use them beyond that period?

General RUEGG. We have people observing their shelf life and if it looks like they will last longer, we will extend it.

PROCUREMENT OF PHOTOVIEWERS

Mr. MAHON. While my questions may appear to be a little sharp, I don't want to leave the inference that we don't want the very best job done. However, a well-run shop, I think, with careful cost evaluation, will come nearer getting you the quality equipment you want with the price that might be desirable. This is just my feeling about it.

With respect to photographic equipment, how urgent is the request for 19 photoviewers at a unit cost of $36,800 and a total of $700,000?

General RUEGG. These 19 viewers are initial-issue requirements for Air Force reconnaissance and tactical organizations and they are initial equipment. We need them.

Mr. MAHON. How do you use them? Who knows? It is a $36,000 item.

General TANBERG. These are for our photointerpreters. The equipment that is used in reviewing the film that our reconnaissance aircraft come back with.

Mr. MAHON. It is used on the ground for interpretation?

General TANBERG. Yes, sir. It is light magnified and some of them even have a three-dimensional capability.

Mr. MAHON. $36,000. Is one of those about the size of a large briefcase or would it be bigger?

General TANBERG. They are a sizable piece of equipment that goes in the Tactical Reconnaissance Photographic facilities.

Mr. MAHON. Give us the dimensions of that for the record.

(The information follows:)

DIMENSIONS OF PHOTOGRAPHIC EQUIPMENT

The dimensions are approximately 90 inches long, 51 inches wide and 68 inches high.

Mr. MAHON. You do not indicate any losses or consumption of this item. The 19 viewers are for augmentation. What is the requirement for the 19 additional viewers?

General RUEGG. We have six of them going to PACAF, two of which are for Southeast Asia, eight for SAC, four for the Air Training Command, and one for TAC.

Mr. MAHON. You are using something else now rather than this type thing?

General RUEGG. No, we have been using these viewers for some time, but we have a lot of our facilities tied up in Southeast Asia and this is to augment our capabilities so we can meet other contingencies and other requirements.

Mr. MAHON. I am not so sure that is too clear.

LARGE GROWTH IN COST INFORMATION PROCESSING AND INTERPRETATION SYSTEM

You are requesting $20 million for the "Tactical Reconnaissance Information Processing and Interpretation System." This system involves mobile shelterized equipments for the handling of tactical intelligence information. The committee discussed this item last year when $8.4 million was requested.

In the discussion last year, we were told that the cost to complete the program was $243.8 million. Information provided this year indicates the total cost is now estimated to be $334 million, an increase of nearly $100 million. Is this typical estimating?

General RUEGG. Mr. Chairman, the total Air Force costs that we now estimate for this program are $317 million. This increased cost results primarily from two factors: The first was an upward reevaluation of the number of shelters needed to fulfill the display and control storage and retrieval segment requirements, while the second results from a final definition of our image interpretation.

Mr. MAHON. General will you meet this business of the additional cost head-on and give us a good explanation of it. Also tell us why we were not told last year what it would cost, please, General? You can do that for the record.

(The information follows:)

TACTICAL RECONNAISSANCE INFORMATION PROCESSING AND INTERPRETATION SYSTEM

Since we last reported to you on this program, two factors have combined to increase total program costs. First, current data indicates the total cost of the 70 image interpretation segments proposed for procurement will be $54 million higher than we predicted last year. This increase corrects deficiencies found during the previous year's development, covers increasing prices and provides some improvement in capability. Second, additional study and testing during the past year confirmed a requirement for an additional 44 digital and physical storage shelters to handle and store data for the display and control storage and retrieval (DC/SR) segments. These additional shelters will cost $19 million. A critical requirements review, conducted subsequent to the submission of the $334 million total program cost figure, resulted in a downward revision in the scope of the total program and a corresponding decrease in total costs from $334 to $317 million.

(CLERK'S NOTE: In the committee's opinion this response still does not adequately answer the basic questions of (1) why program costs have increased and (2) why the committee was not advised last year of anticipated increases in cost. Information subsequently provided by the Air Force appears in the appendix, at page 1162.)

DEVELOPMENT STATUS OF RECONNAISSANCE EQUIPMENT

Mr. MAHON. To what extent has the equipment included in this system completed development? Has all of the equipment in the fiscal year 1970 buy completed development? Answer that for the record will you please.

(The information follows:)

Three items of equipment are planned for procurement in fiscal year 1970—the image interpretation (II) segment, the image processing and interpretation (IPI) subsystem, and a production prototype of the display and control/storage and retrieval (DC/SR) segment. The II segment has completed development and initial production prototyping quantities are scheduled for procurement in early fiscal year 1970. The IPI subsystem equipments are off the shelf and will not require development. The DC/SR segment will complete development and production prototypes procured during fiscal year 1970.

CONTRACTS FOR RECONNAISSANCE EQUIPMENT

Mr. MAHON. To date, what procurement contracts for components of the system have been let? To what extent were the procurement contracts let competitively? Provide that for the record.

(The information follows:)

No production contracts have been let to date. In the R. & D. phase, all components have been competitively designed except the display and control/storage and retrieval (DC/SR) segment and production quantities of this segment will be competitively procured.

COST TO COMPLETE SYSTEM—BY YEARS

Mr. MAHON. What is your schedule for the completion of this information processing and interpretation system? How much money will be required by fiscal year? What is your answer to that, General?

General RUEGG. For 1970 we will require $24 million. ———. Those are rounded off figures. That totals up to ——— when you add the $19 million prior development cost.

Mr. MAHON. Our procurement program sheet, supplied by the Air Force, indicates for fiscal year 1970 $20 million. I believe you said $24.

General RUEGG. I am sorry. I had $4.5 million of R.D.T. & E. money in there and there is a small amount of R.D.T. & E. money for each year in those figures that I gave you.

Mr. MAHON. How much improvement will the new system provide over present systems and how much greater are the maintenance problems connected with the new system as compared with the present systems? Provide that for the record.

(The information follows:)

SUPERIORITY OF NEW RECONNAISSANCE EQUIPMENT

Two of the four working segments of the new system are not contained in the present system. These are the display and control storage and retrieval (DC/SR) segment and the tactical electronic reconnaissance processing and exploitation (TERPES) segment. The DC/SR provides both manual and automatic display, correlation, and exploitation of intelligence data. The TERPES segment provides equipment for processing electromagnetic radiation information. With respect to our current capability, we expect a 40-percent improvement in the imagery interpretation (II) segment. Presently, an interpreter must spend 70 percent of his time in nonproductive research and 30 percent extracting new information. In the new system these figures are reversed. We are holding fairly close to present equipment in the image processing segment. There are major technological improvements on the horizon in the processing area but they are not sufficiently proven to be included at this time. The key to the whole effort is responsiveness. The new system will provide more timely, complete, and accurate data to the tactical commander than he now possesses.

COST OF RUNWAY BARRIERS

Mr. MAHON. With respect to aircraft handling and launching, you are requesting $2.5 million for 37 runway barriers at a unit cost of $27,000. Computation indicates that you could buy 37 items at a unit cost of $67,000 for $2.5 million. Is your funding request overstated? Provide that for the record.

(The information follows:)

The fiscal year 1970 program requirement of $2.5 million includes $1.5 million for the installation of 26 barriers procured in fiscal year 1969 for Southeast Asia and $1.0 for the procurement of 37 barriers for other bases.

Mr. MAHON. For the record tell us if the installation costs of the 37 items requested in fiscal year 1970 are included in the funds requested?

(The information follows:)

The installation costs for the 37 barriers are not included in this request. These installation costs will be included in the fiscal year in which they are installed.

Mr. MAHON. Would not this appear to be an example of partial funding on your part in fiscal year 1969? In fiscal year 1969 you purchased 26 barriers with funding of only $700,000. Is this the case? Answer that for the record.

(This information follows:)

FUNDING OF AIRCRAFT BARRIERS

The cost of installation as programed in the fiscal year installation is to be accomplished. The cost of installation of the 26 barriers procured in fiscal year 1969 is included in the fiscal year 1970 request.

Mr. MAHON. Tell us for the record is the installation of these barriers performed by the manufacturer of the barriers?

(This information follows:)

Normally, the installation of newly procured arresting barriers is accomplished by the manufacturer. As was previously stated, the cost of the installation is included in the fiscal year 1970 program.

Mr. MAHON. Give us for the record also a comparison of the unit costs of the BAK–12 and 13 barriers compared with the unit cost of the BAK–9 of which we have 186 in the inventory.

(This information follows:)

COST COMPARISON BAK–12 AND 13 WITH BAK–9

The BAK–9 with a cost of $24,000 which has not been bought since 1962, has a comparable cost to the BAK–13 with a current cost of approximately $27,000. The BAK–12 barrier with a cost of $34,000 includes B–52 brake assemblies not procured with other barriers.

PURCHASE OF ELECTRICAL GENERATORS

Mr. MAHON. With respect to electrical equipment, you are requesting $13.5 million for approximately 100 electrical generators. What part of this request is for South Vietnamese and other free world forces in Southeast Asia?

General RUEGG. Included in the $13.5 is $4.1 million for the free world forces. This $4.1 million is included in item 371 under items less than $500,000 each.

Mr. MAHON. To what extent are these generators commercial units available off the shelf and to what extent are they special equipment?

General RUEGG. None of them are available off the shelf.

Mr. MAHON. To what extent are your generators purchased under fixed-price contracts awarded through competition?

General RUEGG. We award all of our contracts in this area following competitive procurement and we do get fixed prices.

Mr. MAHON. Some of the large electrical generators purchased by the Army Corps of Engineers in recent years have been foreign-made items. Do you buy foreign-made items?

General RUEGG. None of the generators being procured will be foreign-made items. The Air Force policy is to buy CONUS-manufactured generators.

Mr. MAHON. How long has the total Air Force requirement for the MB–15 generator been 921?

General RUEGG. That requirement of 921 units was developed in August of 1968 when we had a complete review of this area.

Mr. MAHON. For the record tell us what was it before that?

(The information follows:)

The previous requirement for MB–15 generators developed in August 1967 was 983 units.

Mr. MAHON. You purchased 52 of these generators in fiscal year 1968 and 65 in fiscal year 1969. Why must you procure 193 in fiscal year 1970? Answer that for the record.

(The information follows:)

FISCAL YEAR 1970 REQUIREMENT FOR MB–15 GENERATORS

Of the 193 units, 140 are replacement of old and unsuitable Caterpillar and Grimco models procured in the early 1950's and 53 for initial issue.

Mr. MAHON. You are also requesting a much larger buy of MB–17 generators. You bought 70 in fiscal year 1968, 101 in fiscal year 1969, and are requesting 247 at a cost of $2 million in fiscal year 1970. What is the basis for this increased procurement? You can answer that for the record.

(The information follows:)

BASIS FOR PROCUREMENT OF MB–17 GENERATORS

Of the 247 quantity, 225 are for replacement of old, unsuitable International Fermont and Consolidated Diesel models obtained by the Air Force in the early 1950's, with 22 units for initial issue.

OTHER BASE MAINTENANCE AND SUPPORT EQUIPMENT

COMPUTATION OF REQUIREMENTS FOR BASE PROCURED EQUIPMENT

Mr. MAHON. You are requesting $23.8 million for base procured equipment as compared with $21 million for the current fiscal year. Is the increase generally spread throughout the items or are there a few items which account for the major part of the increase?

General RUEGG. The increase of $2.8 million is generally spread throughout all of the items of equipment. These requirements are classified as investment items with a unit cost of $1,000 or more and these migrated from our O. & M. appropriation to the "Other procurement" appropriation beginning with fiscal year 1969 under the ground rules of "Project Prime."

Mr. MAHON. To what extent does the Air Force and probably other services say, "Well, we got a little inflation; we don't know for sure what we are going to want, and we will probably need about what we had last year, so let's just up it from 21 to 23." Is that more or less the way you do this, or do you really compute this on an item-by-item basis? Is this more or less meaningless?

General RUEGG. In those areas where we don't have it tied to specific operations or specific requirements, we use our years in the past, all the experience we have had in the past; we try to crank into it any change in requirements that, as our operations change, might insure to arrive at a really sound figure.

CLERK'S NOTE: Subsequent to the hearings General Ruegg changed his answer to read: "The requirement estimates in this area are initially developed at base level, reviewed and approved at command headquarters and then submitted to Headquarters U.S. Air Force for final review and approval."

Mr. MAHON. It is sort of an educated guess and is always an increase, isn't that right?

General PITTS. The field estimate for this item came in for $32 million and we scrubbed it down to $23.8.

Mr. MAHON. The year before it came in for about $2 million less and you scrubbed it down. That is about the way it works, isn't it?

General PITTS. In other words, there is a review process here that scrubs the field estimates down to what we feel is a reasonable price for the article.

COMPARISON OF ESTIMATES FOR OFFICE MACHINES

Mr. MAHON. How does the $2 million requested for office machines compare with the amount for the current fiscal year? Tell us that for the record.

(The information follows:)

The amount for office machines in fiscal year 1969 is $1.8 million.

PURCHASE OF AUTOMATIC DATA PROCESSING EQUIPMENT

Mr. MAHON. With respect to automatic data processing equipment, the request for automatic data processing equipment, item 374, totals $17.6 million. Only $700,000 was programed for this line item last year. What would be the effect of the deferment of this item?

Colonel VELLA. Sir, this $17.6 million is for the purchase of 30 computers, part of which are leased in 1969, part of which will be leased in 1970. Now, if we don't spend the $17.6 million and we defer it, the end result will be an increase in our O. & M. funding. The result will be an increase in the overall cost of this equipment.

Mr. MAHON. Because of inflation?

Colonel VELLA. No, sir. As you know, the life span of a computer is roughly about 5 years. After you have paid rent for about 5 years, basically you have paid for that machine. If you are going to use the machine in excess of 5 years—in this case about six—you are better off buying it. Additionally, in this particular case, approximately 45 percent of the first year's rent is nonrecoverable. After the first year no portion of the rent is recoverable and all of the rent paid becomes sunk costs; so the earlier the buy is made, the greater will be the savings.

COMPUTER LEASE PROGRAM

Mr. MAHON. How does this procurement tie in with the computer lease program funded in O. & M.? Are you leasing computers which you plan or hope to buy later? Answer that for the record.

(The information follows:)

The Burroughs 3500 computers which we are planning to buy with the $17.6 million were scheduled for lease with O. & M. funds in fiscal year 1969 prior to purchase in fiscal year 70. No O. & M. lease funds are contained in the fiscal year 70 O. & M. budget for the B3500 computers planned for purchase with this $17.6 million. We are leasing other computers, some of which we also plan to purchase in the future. Leased computers are constantly subjected to economic analyses to identify those which result in significantly less total costs of operation if purchased. They are considered for actual purchase, subject to the availability of procurement funds. There are two general conditions under which we purchase computers, the first is when the computer has been specially built and is not available by other means than purchase; the second is when the purchase of the computer will result in lower total operating costs. We do not buy computers unless we are assured they will be continued in the inventory well past their break-even point and the investment will prove to be a profitable one.

Mr. MAHON. Also for the record tell us whether any of the funds being requested are for the purchase of equipment now leased?

(The information follows:)

The Burroughs 3500 computers to be purchased were originally scheduled for lease in fiscal year 1969, however, some minor slippages in the schedule will result in the actual installation of some of these computers very early in fiscal year 1970. These computers are still planned for purchase because of the associated savings of $7.6 million.

(CLERK'S NOTE: For a full discussion of the management of Air Force automatic data processing systems, including the lease and purchasing of equipment, see pp. 769–789, operation and maintenance hearing, pt. 2 of the Department of Defense appropriation for 1970.)

LAUNDRY AND DRYCLEANING EQUIPMENT

Mr. MAHON. Now to clean up this mess, we come to laundry and drycleaning.

What is involved in your request for $1 million for the purchase of laundry and drycleaning equipment?

General RUEGG. Included are 196 items of modern labor-saving laundry and drycleaning equipment required to replace obsolete or uneconomically repairable like items used at 11 overseas bases and 13 of our CONUS bases. The average age of the equipment being replaced is 15 years, which substantially exceeds the established useful life expectancy, which is considered 7 to 10 years for such equipment. The use of new high production units will assure the maximum output per employee and enable us to save maintenance and repairs on old equipment and to do a better job as far as cleaning is concerned and with less manpower.

Some of the representative items are 51 washers; three flat iron ironers; 12 marking machines; 52 presses; 16 tumblers; and 42 drycleaning equipments.

Mr. MAHON. Section 524 of the appropriations bill relates to the procurement of drycleaning equipment and it says that any such equipment procured must either be for an overseas base or certified by the Secretary of Defense. Is this equipment for overseas use or CONUS?

General RUEGG. Eleven for overseas and 13 for CONUS. The CONUS bases did pass that rigorous test.

Mr. MAHON. Have they been certified in writing by the Secretary of Defense?

General RUEGG. They have all been certified, yes, sir.

REVIEW OF OTHER PROCUREMENT REQUIREMENTS

Mr. MAHON. General, we have been discussing for a couple of days here "Other Procurement, Air Force," which is quite a conglomeration of items. You and your people have wrestled with how to handle these requirements for a long time. If you were a dictator, how would you change this system? How would you improve it?

General RUEGG. Sir, I think our system is pretty good. I think we get our money's worth by and large in this area.

The people we have out in the field doing the buying, doing the engineering and the maintaining do this to the best of their ability. I think our system is, overall, efficient. When we do find ways of doing it better, we certainly are open to any suggestion from any department of the Government, and we get a lot of help.

Mr. MAHON. Do you think if this installation was carefully investigated and all these operations exposed to the bright light of day, that they would stand up fairly well?

General RUEGG. In comparison to any other organization of this size, military or private, I say, "Yes, it would."

Mr. MAHON. Well, you ought to be a competent witness and I was just interested in having your view of this matter.

You understand, of course, that Congress cannot administer programs. We can provide or deny funds, but we can't get out and run the program, and this Government—and I am speaking specifically of the military—must depend on people like you and the various services and others who work with you to do the job.

I would think that some of these procurements could be made to look a little bad, certainly if the whole truth were not fully brought out on the table and only a portion of the information made available, but it is very important that the top people know not only about the policy, but about what actually goes on. How do you know what is going on?

General RUEGG. Sir, I have a staff in my Procurement Policy Division of about 38 experts who spend all of their time visiting the various Air Force buying organizations at all levels in the field. I visit each one of our major buying organizations, each one of our divisions. I visit the base procurement activities on a year-round basis with members of my staff, where we get down and look at what they are buying and how they are buying it, to see if we can do any more in the way of competitive procurement, if we can simplify some of these gadgets that look complex and are expensive when we look at them individually. It is a constant cycle of trying to get the most out of the resources we have.

We have training programs to teach our people the latest methods of procurement, the latest technical innovations of how to write a specification that will allow us to procure these things competitively. We know there is room for improvement. We are trying to take every opportunity to make improvements.

Mr. MAHON. Are these visits to some extent routine? Are they more or less expected and does anything come out of them?

General RUEGG. Yes, sir. We frequently find very fine examples of where one individual had a procurement to make and he used some ingenuity. We bring it back and we immediately publish it and send it out to all of the procuring agencies to use this same technique. We constantly have a crossfeed of information, of new and ingenious ideas as to how we can get more for our money in the way of quality or delivery, or performance. It is a very active program.

OTHER BASE MAINTENANCE AND SUPPORT EQUIPMENT

AIR CARGO PALLETS

Mr. LIPSCOMB. General, I would like to go back to the net for use with pallets. Did I understand they were $237 per net?

General RUEGG. I think that is right.

Colonel RUSSELL. That would be approximately correct.

(Clerk's Note: The following additional information was subsequently submitted by General Ruegg for the record.)

In arriving at the unit cost of $237, the side nets were erroneously costed at $86 each or $172 for the side set plus $65 for the top net. The correct unit cost is $151 per complete net assembly and is comprised of $86 for two side nets and $65 for the top net.

At the time the budget estimate was prepared a unit cost of $151 for the complete set (two sides and one top net) was used. This unit cost was based on

our experience in prior years. Our latest negotiated unit cost (March 1969, several months after the fiscal year 1970 budget was finalized) is $124.60 excluding transportation. This is the lowest cost we have obtained since the beginning of fiscal year 1967. It is possible that we may be able to negotiate our fiscal year 1970 procurement at a cost of less than $151. However, with the general trend of inflation this cannot be accurately forecast.

(Clerk's Note: See page 1141 for the earlier discussion of this subject.)

COMPARISON WITH OTHER EQUIPMENT

Mr. LIPSCOMB. How do these compare in size, cost, and specification with similar restraining equipment which is used by commercial air freight carriers, by the Army for overland movement, by the Navy for ocean shipment, by the railroads? Can you answer that or do you want to find that out for the record?

Colonel RUSSELL. I am not sure I understood the full question, sir; but, as I understand, it is how do we compare ours with the other activities?

On surface-type transportation, one big difference is the G-loading factor. These nets are designed to restrain 10,000 pounds for an 8-G impact. To keep the cargo from shifting, walking up to the cockpit, and ruining the airplane. I do not have the information on commercial air carriers. I suspect their requirements may be less because they are not operating in the type of fields and circumstances we are.

Mr. LIPSCOMB. Will you see if you get a comparison on the cost of these nets?

General PITTS. As I understand, you would like to look at commercial air carriers, sea transportation, overland transportation, as opposed to the nets that we use in the Air Force for this operation.

(The information follows:)

COST OF NETS COMPARED WITH OTHER SERVICES

The Air Force net used to restrain cargo on pallets is 88 inches wide by 108 inches long by 96 inches high and consists of three pieces—two sides and one top. The only comparable net is used by the air freight carriers. The Army, Navy, railroads, and commercial ships do not use this type of net to restrain cargo in transit. The walls of the carrier (i.e., ships' holds, truck bodies, containers) perform the restraint function but the fuselage of an aircraft cannot be used for this purpose. Aircraft fuselage walls act as pressurization envelopes, contain hydraulic and control lines etc.

Commercial air freight carriers employ 88 inches wide by 108 inches long by 96 inches high and 88 inches wide by 125 inches long by 96 inches high nets to fit the two sizes of pallets they use. One of the leading manufacturers of nets for both commercial and military use advises that both sizes used by the airlines are made to either 3 g. or 9 g. restraint specifications. The manufacturer's price to the commercial user for the 3 g. nets range from $325 to $400 per set and the 9 g. nets range from $400 to $425. One commercial airline has indicated an average unit cost of $260 for the nets that line uses. The 3 g. nets are generally used to restrain containers to the pallet and added cargo restraint is provided by the container structure. The price range is created by a variation in the number of fastening points on the pallet and the resultant difference in the number of crisscross webbing straps.

NET FOR STRONGEST PALLET

Mr. LIPSCOMB. Why do you have to have a net that withstands a forward force of 8 g.'s?

General RUEGG. Because we found through experience we frequently run into this, that when we run into a rough runway or we have land-

ings where we have a gear failure, if it doesn't hold the 8 g.'s, the cargo goes forward and we lose crews because of inadequate restraint. The net must hold the cargo in place up to the strength of the airplane.

Mr. LIPSCOMB. Does the requirement of 8 g.'s bring about what appears to be a high cost?

General RUEGG. It is a large factor in the cost. It is a tough requirement. The net, the pallets, the tiedowns in the airplane, along with the structure of the aircraft itself must be as strong as is necessary to assure that the cargo does not give way and crash forward.

Mr. LIPSCOMB. It seems like not only a high requirement but a high cost. It is not a great item, but it seems like a high cost.

General RUEGG. These are produced competitively and are procured competitively. Our requirement was developed to overcome failures we had experienced in the past. We think it is probably a well-justified requirement to build something this reliable.

Mr. LIPSCOMB. Wouldn't a commercial airline have the same requirement?

General RUEGG. Not necessarily, because they build their equipment to land on 10,000-foot-surface runways at all times. There is a big difference in how we use these same things. They are used to constrain the cargo in a C–130 landing on a strip of 3,000 feet of dirt in Southeast Asia, as well as for landing back at a main base in Japan or even the ZI. We have a much wider range of operational requirements than the commercial operators run into.

Mr. LIPSCOMB. Will you check out the differences?

(The information follows:)

REQUIREMENTS FOR NETS AIR FORCE VERSUS COMMERCIAL

For commercial carriers the FAA establishes a forward restraint factor of 9g.'s for a duration of 3 seconds. The Air Force requirement is 8g.'s for one-tenth second. The reason for these high restraints is the protection of personnel seated ahead of the cargo. In the event of a crash this protects the crew from possible crushing by cargo that has become missile. The airlines achieve the 9 g. restraint by means of a net holding the cargo to the pallet and a spiderweb barrier net, fastened to approximately 42 strong points radially around the fuselage, between the crew and the cargo.

ELECTRONIC AND TELECOMMUNICATION EQUIPMENT

DEFENSE REVIEW OF COMMUNICATION EQUIPMENT REQUIREMENTS

Mr. DAVIS. General, is there someone at the Office of the Secretary of Defense level who has a prime responsibility for communications equipment?

General GOULD. Under the Assistant Secretary of Defense for Installations and Logistics there is an office called Director of Telecommunications Policy. This is a major focal point for major changes in communications including policies as well as the procurement of major items of equipment.

Mr. DAVIS. Is this the place where the requirements of the three branches of the services are funneled in an attempt to coordinate potential common use items?

General GOULD. Actually, If you look at the total communications picture you can divide it into two broad areas. One is the strategic communications. This is described as the defense communications sys-

tem. It operates under the management of the Defense Communications Agency. The Defense Communications Agency for those portions of our total communication requirements makes a very determined and definite effort to coordinate all procurements of equipments and insures proper standardization. In the tactical area there is a similar type of activity that operates under the JCS which attempts to achieve a maximum degree of standardization for tactical type of communications equipment.

Mr. DAVIS. Where would survival radio equipment fit? Is that tactical?

General GOULD. Yes, sir; that would be included. It is certainly not strategic. So in broad terminology you would have to put it under tactical.

Mr. DAVIS. But not under defense communications.

General GOULD. No, sir; it would not be under the defense communications.

Mr. DAVIS. Is the office of the Director of Telecommunications Policy the place where someone would direct, let's say, when the Navy came in with a request for a particular type of equipment, "the Air Force has something like this, use the same thing as the Air Force is using."

General GOULD. Are you still referring to the survival radio?

Mr. DAVIS. That is a good example; yes.

General RUEGG. That is personal equipment. Each individual service takes that as its own personal responsibility because we all have unique conditions under which our troops are going to fight and be exposed. We do coordinate with the Army and Navy in this area. When we find equipment that they have that we can use, we use it whenever we can. But that is service-coordination for personal survival gear that is done on a service-to-service basis more so than OSD. I am sure they look over our shoulder and if they see duplication they call it to our attention. In this area we work very closely with the other services.

Mr. DAVIS. It seems to me if a man is down and needs this kind of equipment, it does not make much difference whether he is an Air Force crewman or a Navy crewman or a Marine crewman, does it?

General RUEGG. And they are all compatible. We rescue Navy people and they rescue ours. The Army rescues our people and we rescue the Army people.

General PITTS. There is an additional review of requirements by the various services at budget formulation time, and the OSD analyst that analyzes the budget submissions delves into this area very deeply, why can't you use a piece of gear like the Navy has? They are quite searching in requiring complete justification for our requirements.

General RUEGG. In addition, in the R. & D. area we also have coordinating committees so that we do not spend money in development if another service is developing something that will meet that requirement.

In General McNickle's area of R.D.T. & E. he can expand on how we coordinate with the other services in the development of these items.

Mr. MAHON. Gentlemen, thank you.

General RUEGG. Thank you, Mr. Chairman.

APPENDIX

Aircraft Production Base Support

There are a total of six projects included in the requirement for aircraft production base support.

Project 1706048 is for replacement of wornout Government-owned industrial production equipment at the Bell Helicopter Co. at Fort Worth, Tex. The cost of this project is $1,800,000. This project will replace equipment worn beyond economical repair with modern, high-productive equipment. This project is intended to reduce machine downtime, and sustaining production capability with a reduced number of equipment items. This project will support the production of the following aircraft: UH-1, AH-1G, OH-13, and OH-5A. In addition, it will support repair and overhaul of the UH-1 and AH-1G helicopters. Anticipated savings are approximately $500,000 per year.

Project 1707049 is for disposal/redistribution of excess equipment. The purpose of this project is to cover the cost of preservation, packaging, crating, handling, and transportation of Government-owned items of production equipment which have become excess to current or mobilization requirements during the fiscal year and must be redistributed and/or disposed of. The cost of the project is $100,000, and it will be monitored by the U.S. Army Aviation Command at St. Louis, Mo.

Project 1707061 is for the development of a process for mass production of ceramic armor. The cost of this project is $150,000. The primary agency of responsibility is the Army Materials and Mechanics Research Center at Watertown, Mass. The project will lead to the availability of higher quality, lighter weight, ceramic armor for aircraft seats, flight helmets, and personal armor and will have an immediate application in SEA. Benefits cannot be measured in terms of dollars saved but will result in reduced vulnerability of aircraft and air crews in SEA.

Project 1706069 pertains to the determination of optimum manufacturing processes for producing large-size transparent ceramic armor. The cost of this project is $150,000. The Agency of responsibility is the Army Materials and Mechanics Research Center at Watertown, Mass. Government and/or privately owned installations or firms will be used to accomplish this effort. These ceramic armor sheets will provide crew protection as helicopter transparent armor windows and will permit weight reduction of 60 to 70 percent without loss of ballistic protection.

Project 1706078 is for determining production processes and techniques needed to produce high-tenacity organic fibers for aircraft armor. The cost of the project is $200,000. The project will be supervised and coordinated by the Army Materials and Mechanics Research Center (AMMRC) at Watertown, Mass. The private contractors for this project have not been selected. These special fibers will be incorporated into flexible ballistic protection material (such as used in flack curtains) for all aircraft. /The benefits cannot be directly measured in terms of dollars saved but will result in reduced vulnerability of aircraft and air crews in Southeast Asia.

Project 1706073 pertains to determining optimum manufacturing processes for new plastic armor material. The cost of this project is $320,000. It will be performed at Picatinny Arsenal in Dover, N.J., under the direction of the Army Materials and Mechanics Research Center of Watertown, Mass. The program objective is to develop manufacturing methods and techniques for the production of material which will be used tto increase the survivability of aircraft on the ground, as in a shelter or barricade (for protection against rocket and mortar fire), and in the air against secondary fragments. The direct benefits will be a reduction of SEA aircraft and crew vulnerability as well as an increase in helicopter lift capability as a result of reduced weight.

PRODUCTION BASE SUPPORT, OTHER MISSILES

There are a total of 24 projects included in the requirements for missile production base support.

Project 3702146 is for machine tool replacement at the Michigan Army Missile Plant at Warren, Mich., in preparation for production of the Lance missile system. The cost of this project is $1,546,500. It provides for replacement of worn and obsolete Government-owned metal working machinery. Savings for this project are difficult to determine, but could reach $400,000 per year.

Project 3702154 is for the repair and rehabilitation of plant facilities at the Michigan Army Missile Plant, Warren, Mich. The cost of this project is $2,461,000. This project provides for major repairs and rehabilitation of plant facilities. The purpose is to prevent further deterioration to the facilities and to assure that minimum safety and security standards are insured. The dollar savings involved in this are intangible, and benefits can only be estimated on the basis that the value of the total facility exceeds $80 million.

Project 3702281 is associated with the Hawk missile system. The cost of this project is $881,500, and it covers the replacement of certain worn and obsolete Government-owned industrial plant equipment located at the Raytheon Co. at Andover, Mass. The purpose is to reduce machine setup time, decrease downtime, increase accuracy, and productivity. Savings will be indirect and could approximate $400,000.

Project 3702138 is for the Twin Cities Army Ammunition Plant, Honeywell, Inc., New Brighton, Minn., for the Lance warhead section. The cost of this project is $1,440,000. This project will permit acquisition of the items of equipment needed to produce the Lance warhead. The purpose of the project is to establish a production capability which will insure the timely and steady delivery of this critical component.

Project 3702137 is for the development of facilities for the loading, assembling, and packaging of the Lance warhead section. The cost of this project is $2,158,000 and will be monitored by the Picatinny Arsenal at New Dover, N.J. This project covers the conversion and the modification of existing facilities and the procurement of equipment for mass loading, assembling, and packaging of the Lance warhead. Cost savings are not specifically involved in this project.

Project 3702909 is for the advance production engineering of the Lance missile system. The cost of this project is $6,500,000 and will be monitored by the Michigan Army Missile Plant at Warren, Mich. This project will complete all engineering effort necessary to insure that the industrial base established will be able to support the mass production and procurement objectives prior to the awarding of the production contract. This project will permit the Government to procure components and assemblies of the Lance system on a competitive basis.

Project 3702149 is for the purchase of test equipment for the Procurement and Production Directorate of Redstone Arsenal, Ala. The cost of the project is $241,815 and will be monitored by the guided missile systems control facility of Redstone Arsenal, Ala. The purpose of this project is to purchase test equipment for Redstone Arsenal. This will provide equipment to support the missile quality assurance program. Testing of missiles will result in an intangible saving to the Government in that inferior products will not be procured for distribution to the field.

Project 3702152 is for the maintenance and repair of facilities at the Lawndale Army Missile Plant. The cost of this project is $283,000 and will be monitored by the Lawndale Army Missile Plant at Hawthorne, Calif. The purpose of this project is to perform repair and maintenance on those facilities currently being used in the production of the Shillelagh. The purpose of this project is to maintain capability. Savings are incidental.

Project 3706006 is for friction welding of missile system hardware. This project costs $150,000 and will be supervised by the Missile Command at Redstone Arsenal, Ala. Its purpose is to determine the feasibility of developing manufacturing methods that will utilize the techniques of friction welding. If successful, this technique will be employed in subsequent production and will assist in cost reduction and in reduced production leadtime. At this time, cost savings cannot specifically be identified.

Project 3706007 is for the application of rolled and welded large missile motor cases. The cost of this project is $100,000 and will be monitored by the Missile Command at Redstone Arsenal, Ala. This project is for the development of an improved production technique whereby rolled and welded preforms will be used in the production of large motor cases. If successful, this technique

will be incorporated into subsequent production and will permit higher production rates. This project will permit a reduction in the cost of motor cases; however, the exact amount is unknown.

Project 3703009 is for the manufacturing of electronic modules. The cost of this project is $300,000 and will be monitored by the Missile Command, Redstone Arsenal, Ala. This project will combine the results of past studies and establish a fast reaction, fast turn around production capability for the electronic modules used in the missile systems. This project will develop information which will result in substantial reduction in cost, however, the amount is unknown at this time.

Project 3703012 is for the production of plastic molded quadrant missile airframes. The cost of this project is $180,000 and will be monitored by the Missile Command, Redstone Arsenal, Ala. This project will determine the feasibility of developing a new process in the production of missile airframes. The purpose of this project is to lower production cost and increase the rate of production. Savings to be achieved by this project will be in the area of reduced costs and increased production rates, however, no exact amount can be given.

Project 3703014 is for the development of molding techniques for plastic containers. The cost of this project is $140,000 and will be under the supervision of the Missile Command, Redstone Arsenal, Ala. This project will develop data for new and improved manufacturing processes that will expand the use of plastic materials in missile containers. The purpose of this project is to reduce the cost and weight of missile containers as compared to those currently made of wood or metal. Cost savings at this time cannot be specifically identified.

Project 3703016 covers a study of methods for high-volume production inspection of tubing. This project is $260,000 and will be controlled by the Missile Command, Redstone Arsenal, Ala. This project will investigate the methods for conducting high-volume production inspection on tubing associated with missile components. This project will influence future competitive bidding, reduce costs, and develop higher production rates. This project will establish a savings to the Government by providing a more exact and rapid method of checking tubing; however, an exact price cannot be determined.

Project 3702578 is for the packaging, crating, handling and transportation of excess Government equipment. This project is for $50,000 and will be controlled by the Missile Command, Redstone Arsenal, Ala. This project covers the redistribution and/or disposal of production equipment excess to the Missile Command.

Project 3702150 is for the acquisition of equipment for missile motor grain manufacture. This project is for $272,000 and will be monitored by the Radford Army Ammunition Plant at Radford, Va. The purpose of this project is to adopt present facilities to manufacture TOW missile propellant grains. The project will provide for procurement and installation of additional production equipment required to meet scheduled production. It will augment existing facilities in support of materiel plan objectives.

Project 3702579 is for plant clearance of UNIVAC (sergeant) equipment. The cost of this $100,000, and will be monitored by the Missile Command Redstone Arsenal, Ala. This project will remove and prepare for shipment of Government-owned equipment now located in Salt Lake City, Utah. Equipment will be sent to various storage locations throughout the United States.

Project 3702088 is for determining the parameters of fluid production of missile control systems. The project cost, $200,000, and will be monitored by the Missile Command, Redstone Arsenal, Ala. This project will develop guidance necessary for the use of various fluidic devices in production of missile fire control systems. There are no direct savings identified; however, the projec' will provide information that will be used in reducing production leadtime.

Project 3702093 is for determining methods of manufacturing thick-film hybrid micromodules. This project will cost $197,000 and will be monitored by the Missile Command, Redstone Arsenal, Ala. The project will establish manufacturing processes that will offer greater flexibility in the commercial production of thick-film hybrid micromodules used in the manufacture of electronic components for missiles. There are no direct savings identified; however, the process will provide in the future reduced costs and leadtime.

Project 3703005 is for development of production and inspection techniques for infrared components. The cost of this project is $300,000 and will be monitored by the Missile Command, Redstone Arsenal, Ala. This project will refine techniques used in the manufacture of infrared components. These components will be used in the guidance systems of various Army missiles currently in in-

ventory. Specific cost savings cannot be immediately identified; however, the project will assist in increasing production rates and assist future competitive procurements.

Project 3703008 is for infrared inspection of electronic missile circuits. The cost of this project is $140,000 and will be monitored by the Missile Command, Redstone Arsenal, Ala. This project will improve current methods of testing electronic missile circuits. When adopted, the current testing methods will be speeded up, resulting in a higher rate of production at a lower overall cost. In addition, production leadtime will be reduced over methods currently in use.

Project 3703013 is for the development of new production techniques for missile propellant binder polymers. The cost of this project is $175,000 and will be monitored by the Missile Command, Redstone Arsenal, Ala. The current methods require 1 or 2 weeks before the missile propellants and its binder are sufficiently aged to permit additional assembly. This project will reduce the time required for this aging process thereby permitting a higher production rate. Specific savings cannot be identified.

Project 3703011 is to determine commercial techniques for better preventing the deterioration of missile containers. The cost of this project is $90,000 and will be monitored by the Missile Command and by the Watervliet Arsenal, N.Y. This project will develop commercial techniques whereby the corrosion of missile containers can be reduced below the level now experienced. Specific savings cannot be identified although increased serviceability and storage of missiles is to be expected.

Project 3703015 is to develop refined alinement techniques of missile components. The cost of this project is $280,000 and will be monitored by the Missile Command, Redstone Arsenal, Ala. This project will study and improve production methods in the rapid and precision alinement of various missile components. The project will develop the manner in which missile components, consisting of many and varied surfaces, can be interfaced. There is no specific cost savings related to this project; however, reduction of alinement time at the plant and reduction of maintenance in the field can be expected.

Activity 6—Weapons and Other Combat Vehicles

The $15.7 million for replenishment spares are projected in the following categories:

	Millions
Field artillery digital automatic computer system	$2.5
Maintenance and support equipment	4.1
Weapons and fire control	2.2
Tools and industrial equipment	3.8
Others	3.1
Total	15.7

The above projections of fiscal year 1970 expenditures are estimates as detailed data by line item are not readily available.

Construction of Facilities

The fiscal year 1970 production base support program for $345.5 million consists of $300 million for provision of industrial facilities, $1 million for layaway of industrial facilities, and $44.5 million for production engineering measures.

The $300 million provides for sustaining our current production capability, certain required facility expansion, and the initiation of our plan to replace and modernize our production facilities. In terms of commodity areas, this $300 million will provide $279.3 million for ammunition plants; $13 million for facilities for weapons and other combat vehicles, and $7.7 million for facilities for other commodities.

The $279.3 million for ammunition includes $81.1 million for projects to sustain the Army's current production capability at 27 manufacturing installations, $14.1 million to establish new production capability ($13.1 million for an improved 8-inch selected ammunition round and $1 million for chemical facilities), and $184.1 million to replace production facilities which are obsolete, worn, and inefficient, with new and more efficient facilities.

With regard to the $184.1 million, I would like to emphasize the Army's need to replace and modernize the Army-owned production base. This production base consists largely of ammunition plants which are primarily of World War II vintage. These plants have been intensively operated in support of three wars. Over the years the processes have become grossly inefficient and in some instances unsafe. A program to rehabilitate and modernize this base has been developed to insure the capability to provide ammunition support for emergencies.

The $184.1 million includes $101.5 for upgrading the manufacturing of propellants and explosives, $29.4 million for upgrading load, assembly and pack operations, $27.2 million for upgrading the manufacture of metal parts, $22.5 million for upgrading small arms production and $3.5 million is proposed for updating existing facilities used to perform production engineering, preproduction evaluation and quality control operations. The following is a discussion of the budget request for each of the production processes:

(*a*) In fiscal year 1970 we are proposing that six TNT lines be replaced with a modern process at a cost of $50.5 million. An automated line for manufacturing propellants in the amount of $22.3 million is also planned. This project will replace the current costly and hazardous process. Other projects in this category include a nitroglycerin transfer line, two nitrocellulose manufacturing units (an essential ingredient to propellant manufacturing), an oleum facility and an automated mortar propellant line.

(*b*) The facilities for load, assembly, and pack operations include $7.4 million to upgrade the production of primers, $5.6 million for automating the bag loading for artillery propellants and $5.2 million to upgrade the mixing and pressing of illuminant materials used in artillery shells, signals, and flares. Other projects in this category incude fuze, mortar, artillery, and rocket assembly lines.

(*c*) Of the $27.2 million for facilities for the manufacture of metal parts, $5.4 million is for the 105-millimeter projectile, $5.6 million is for 81-millimeter mortar, $8.6 million is for 155-millimeter projectile, $6.5 million is for 175-millimeter projectile and $1.1 million is for the 105-millimeter cartridge case.

(*d*) The small arms projects proposed for fiscal year 1970 total $22.5 million and will bring about a complete change of production operations and techniques. The current process which requires a large number of individual machines performing single operations will be replaced by a continuous flow process with module-type production units. For ammunition less than .50 caliber this unit can operate at a rate of 1,200 rounds per minute rather than the present rate of 100 rounds per minute.

The $13.0 million for weapons and other combat vehicles includes $4.3 million and $5.6 million to sustain current operations at Watervliet Arsenal and Rock Island Arsenal respectively; $3.0 million to upgrade the mobilization base; and $0.1 million for for rehabilitation of Government-owned industrial plant equipment.

The $7.7 million for other commodities includes $6.8 for engineering design funds to support projects involving construction, $0.7 million for improving and augmenting test capabilities at three proving grounds; and $0.2 million for rehabilitation of Government-owned industrial plant equipment.

The $1 million for layaway of industrial facilities provides funds for the necessary rehabilitation and layaway, redistribution or disposition of industrial facilities when no longer required to support current production. A major portion of this amount ($600,000) is for the layaway, redistribution, or disposal of excess Government-owned production equipment related to weapons and combat vehicles. The remaining projects totaling $400,000 involve production equipment for ammunition and communication and electronics items.

The $44.5 million requested for production engineering measures consists of $18 million for ammunition, $17.3 million for communications—electronics, $3.2 million for weapons and combat vehicles, $2.4 million for tactical vehicles and other support equipment, and $3.6 million for no specified single commodity.

Of the $18 million for ammunition production engineering measures, $6 million is to maintain production capability for biological munitions. Another $6.5 million is for five projects consisting of process and equipment improvement in the production of small arms ammunition, automating the manufacture of particular boosters and fuze components, and evaluation of continuous freeze drying of biologicals. The remaining $5.5 million will be used to support 36 projects under $500,000 which include such production engineering measures as substituting

steel for brass for 20-millimeter cartridge cases, use of welded iron overlay rotating bands, an automatic fuze assembly machine for chemical munitions, and the application of radar to ballistic testing of ammunition.

Of the $17.3 million for communications-electronics, $7.8 million is for the production engineering of night vision equipment components and another $0.7 million for the far infrared indicator program. The advanced production engineering for the automatic atmospheric sounding set for $1.2 million will provide the major component for the AN/UMQ-7 meteorological data sounding system. A manufacturing methods and technology project for $0.5 million will provide a computer software package for the design of integrated electronic circuitry. The remaining $7.1 million will be used to support 31 projects under $500,000 each—such as the study of the method of manufacture of hydrocarbon fuel cells (to reduce battery weight), ceramic polymer film for more reliable capacitors, and an atmospheric meteorological probe for use with artillery and target acquisition systems.

Of the $3.2 million for production engineering measures for weapons and other combat vehicles, $0.5 million is for the implementation of the modern manufacturing technique of machine tool numerical control systems. The remaining $2.7 million supports 31 projects under $500,000—for studies in areas such as new methods for boring gun barrels, development of electron beam welding techniques and evaluation of manufacturing processes for high temperature, thin wall tubes.

Of the $2.4 million for tactical vehicles and other support equipment, there are three projects totaling $2 million for qualification and proof testing of new or redesigned commercial items used in military end items in order to expand the qualified products list and the competitive procurement base. The remaining $400,000 is for five other projects of a similar nature.

The $3.6 million for production engineering measures for no specified commodity is to provide for development and documentation of test methods and procedures for quality assurance testing and preparation of technical data for procurement of calibration equipment for the U.S. Army Test and Evaluation Command and the U.S. Army Missile Command.

ACTIVITY 9—OTHER SUPPORT EQUIPMENT

The $15.1 million for replenishment spares for activity 9 is for the support of the following systems:

	Millions
Tractors	$3.0
Graders/Loaders	1.5
Military standard engines	1.2
Material handling equipment	1.0
Generators	2.3
Cranes	.9
POL equipment	.6
Environmental equipment	.6
Miscellaneous	4.0
Total	15.1

The above is an estimation based on summarization of the stock position of ground forces support equipment. Detailed requirements by line item are not readily available.

TACTICAL RECONNAISSANCE INFORMATION PROCESSING AND INTERPRETATION SYSTEM

Since we last reported to you on this program, two factors have combined to increase total program costs. First, current data indicates the total cost of the image intepretation (II) and the display and control/storage and retrieval (DC/SR) segments proposed for procurement will be $54 million higher than we predicted last year. During development of the II segment and the DC/SR segments in the past year to the final acceptable configuration for production, changes were made to the equipment. The development of the segments to an acceptable configuration required production cost increases. These price increases also include to a small degree increases as a result of inflation. Previous cost was submitted before the development effort was completed. Therefore, these

price increases are a result of unforeseen changes in the equipment. Secondly, a requirement for an additional 44 digital and physical storage shelters to handle and store data for the DC/SR segments exists. These additional shelters will cost $19 million. A critical requirements review, conducted subsequent to the submission of the $334 million total program cost figure, resulted in a downward revision in the scope of the total program and a corresponding decrease in total costs from $334 to $317 million. The $243.8 million was our estimated cost of completion at the time of the formulation of the fiscal year 1969 budget request. With the program in the early stages of development, the Air Force did not have a better estimate at the time of our discussions with you last year. The increase in cost became evident subsequent to last year's discussions.

LIST OF WITNESSES

INDEX

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