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92d CONGRESS, SECOND SESSION

Fiscal Year 1973

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DEPARTMENT OF DEFENSE APPROPRIATIONS FOR FISCAL YEAR 1973

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS UNITED STATES SENATE

NINETY-SECOND CONGRESS

SECOND SESSION

ON

H.R. ———

AN ACT MAKING APPROPRIATIONS FOR THE DEPARTMENT OF DEFENSE FOR THE FISCAL YEAR ENDING JUNE 30, 1973, AND FOR OTHER PURPOSES

Printed for the use of the Committee on Appropriations

PART 4



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[1] Deceased, July 27, 1972.
[2] Appointed, Aug. 10, 1972.

DEPARTMENT OF DEFENSE APPROPRIATIONS FOR FISCAL YEAR 1973

WEDNESDAY, FEBRUARY 16, 1972

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, D.C.

The subcommittee met at 10 a.m., in room S–126, the Capitol, Hon. Allen J. Ellender (chairman) presiding.

Present: Senators Ellender, Young, Allott, Case, and Symington.

DEPARTMENT OF DEFENSE

DEPARTMENT OF THE AIR FORCE

STATEMENTS OF:

HON. ROBERT C. SEAMANS, JR., SECRETARY OF THE AIR FORCE

GEN. JOHN D. RYAN, CHIEF OF STAFF, U.S. AIR FORCE

ACCOMPANIED BY:

LT. GEN. DUWARD L. CROW, COMPTROLLER OF THE AIR FORCE

LT. GEN. OTTO J. GLASSER, DEPUTY CHIEF OF STAFF, RESEARCH AND DEVELOPMENT

LT. GEN. GEORGE S. BOYLAN, JR., DEPUTY CHIEF OF STAFF, PROGRAMS AND RESOURCES

MAJ. GEN. JOSEPH R. DeLUCA, DIRECTOR OF BUDGET, COMPTROLLER, U.S. AIR FORCE

TOTAL DEPARTMENT OF DEFENSE BUDGET REQUEST

Chairman ELLENDER. The subcommittee will please come to order.

This morning the subcommitee begins its consideration of the Department of Defense appropriation bill for fiscal year 1973.

The subcommittee will consider requests totaling $76,731,384,000, which figure is comparable to $73,316,349,000 for the current fiscal year when the pending supplemental requests are considered.[1]

[1] EDITOR'S NOTE.—The total budget requests to be considered were increased to $76,986,184,000 by the President's budget amendment of March 29, 1972 (H. Doc. 92–272). Based on final action on the fiscal 1972 supplemental requests, the fiscal 1972 appropriations total $72,856,995,000.

SUBCOMMITTEE PROCEDURE

Prior to last year, we always opened the hearings on the Defense appropriations bill with the Secretary of Defense and the Chairman of the Joint Chiefs of Staff. It will be recalled that last year we started

these hearings on March 15 with the Secretary and Chief of Staff of the Air Force, because the Secretary of Defense and the Chairman of the Joint Chiefs were testifying before the Senate Armed Services Committee. We have the same circumstance today.

However, I felt that we should get started as early as possible if we are to have a timely enactment of the appropriations bill for the Department of Defense.

1972 APPROPRIATION AND 1973 BUDGET REQUEST

The subcommittee is pleased to have the Honorable Robert C. Seamans, Secretary of the Air Force, and General John D. Ryan, Chief of Staff of the Air Force, with us this morning to present the Air Force's budget for fiscal year 1973.

The subcommittee will consider Air Force budget requests totaling $23,677,501,000 for fiscal year 1973, which is comparable to fiscal year 1972 appropriations totaling $23,050,631,000, and which includes supplementals in the amount of $806,061,000.

ALLOCATION OF FUNDS BY APPROPRIATIONS

The fiscal year 1973 requests are included in the following appropriations:

Military personnel, Air Force	$7,251,075,000
Reserve personnel, Air Force	131,442,000
National Guard personnel, Air Force	169,359,000
Operation and maintenance, Air Force	6,202,405,000
Operation and maintenance, Air National Guard	461,743,000
Aircraft procurement, Air Force	[1] 2,726,500,000
Missile procurement, Air Force	1,772,300,000
Other procurement, Air Force	1,883,300,000
Research, development, test and evaluation	[2] 3,232,177,000
Total	[3] 23,830,301,000

[1] Includes $113,800,000 in the Mar. 29, 1972, budget amendment (H. Doc. 92-272).
[2] Includes $39,000,000 in the Mar. 29, 1972, budget amendment (H. Doc. 92-272).
[3] Includes increases of $152,800,000 in the Mar. 29, 1972, budget amendment (H. Doc. 92-272).

(EDITOR'S NOTE.—The total Air Force budget requests were increased to $23,830,301,000 by the President's budget amount of March 29, 1972 (H. Doc. 92-272). Based on final action on the fiscal 1972 supplemental requests, the fiscal 1972 appropriations total $22,882,597,000.)

PRESIDENT'S 3-YEAR PEACE INITIATIVES

Chairman ELLENDER. Mr. Secretary, you may proceed.

Secretary SEAMANS. Mr. Chairman, members of the committee, I am pleased to have this opportunity to meet with you again. In the course of 3 years as Secretary of the Air Force, this is my fourth appearance to testify concerning the Air Force budget.

During the last 3 years, President Nixon has taken a number of important peace initiatives. He has announced withdrawal of nearly 90 percent of the American forces that were in Vietnam when he took office. Through the on-going strategic arms limitations talks, we hope to achieve an effective agreement that will improve the security of both nations. With our NATO allies we are hoping to pursue negotiations on mutual and balanced force reductions between NATO and the Warsaw Pact.

STRUCTURING OF MILITARY FORCES

But as we move further in our negotiations, we must continue to maintain adequate defenses as a necessary foundation for peace. In structuring our military forces we are implementing the Nixon doctrine, which calls for a more balanced partnership with our allies. And we are following a strategy of realistic deterrence—one which involves a continuing evaluation of the military threat together with the total force capabilities of the United States and its allies. Under this strategy we have helped our friends in Asia strengthen their forces and take over more of their own defense. And in Europe, our NATO allies have agreed to increase their defense efforts.

MORE EFFECTIVE USE OF PEOPLE AND EQUIPMENT

With respect to our own forces, we have adopted programs designed to achieve more effective use of our people and equipment. In the Air Force, we are improving our personnel management and human relations programs. We are also providing more modern equipment and better manning for our Guard and Reserve units. And most important we are emphasizing the need for steady, step-by-step modernization that should provide more ready and stable defense, at less cost, than stop-and-go defense programs geared to emergency situations.

STRATEGIC ARMS LIMITATION TALKS

Chairman ELLENDER. Before you go to that, I notice you still have faith in the SALT talks.

Secretary SEAMANS. Yes; I do, Mr. Chairman.

Chairman ELLENDER. Are you kept informed as to the current status of the SALT talks?

Secretary SEAMANS. I am kept reasonably up to date on it, Mr. Chairman.

Chairman ELLENDER. What progress has been made?

Secretary SEAMANS. I think it would be best if you discussed this with the Secretary of Defense when he is here because he is much more intimately involved with it than I am.

NIXON DOCTRINE: CONTRIBUTION OF ALLIES TO THEIR DEFENSE

Chairman ELLENDER. You mentioned here the Nixon doctrine. Can you define it for the record?

Secretary SEAMANS. Yes. I think the Nixon doctrine has had as its purpose to work with our allies in such a way that they contribute to their defense according to their capabilities.

Chairman ELLENDER. Do you think that is happening?

Secretary SEAMANS. I think we are working in that direction. I don't think we have completely achieved that goal.

Chairman ELLENDER. That "working" you speak of has been going on, to my knowledge, for 20 years, and the goal hasn't been reached yet. Do you really expect success?

Secretary SEAMANS. I think in Southeast Asia, for example, we have come a long way.

WESTERN EUROPE

Chairman ELLENDER. I was referring to Western Europe particularly.

I know, from my own knowledge, for the past 20 years every Secretary of Defense who has appeared before us, when asked the question, "What are you going to do about it?" answered, "Well, we will try."

Mr. Laird has boasted of having been able to obtain a promise of a billion dollars over a 5-year period, which amounts to relatively little. Assistance to our own forces has been very little.

As I have often said, Secretary Seamans, I don't see how we can continue those vast expenditures. I don't understand how you administrators can back such a program. Sooner or later, it well may destroy our economy and then what?

Proceed.

PRESENTATION FORMAT

Secretary SEAMANS. In my statement today, I will briefly cover the Air Force role in Vietnamization and then focus on four critical areas of resource management: (1) organization and personnel policy; (2) weapons procurement; (3) research and development; and (4) installations and logistics.

VIETNAMIZATION PROGRAM

In Vietnam we believe that we are successfully meeting the first test of the Nixon doctrine. We have moved steadily toward full South Vietnamese responsibility for their own defense. For example, last December, I participated in a ceremony which turned over Phu Cat, one of our most modern air bases, to the South Vietnamese Air Force, thus reducing the number of U.S. Air Force bases in South Vietnam from a high of 10 in 1968 to the present level of four.

Chairman ELLENDER. What became of the other bases?

Secretary SEAMANS. They have been turned over to the South Vietnamese.

Chairman ELLENDER. They are still there?

Secretary SEAMANS. They are still there. They are being utilized by the South Vietnamese Air Force.

Chairman ELLENDER. At whose expense?

Secretary SEAMANS. We are financing the effort.

Chairman ELLENDER. The only change is in personnel?

Secretary SEAMANS. The change is that we can bring our aircraft and personnel home. We don't have to have the extra expense of having our aircraft over there.

More important, it seems to me that the South Vietnamese Air Force are carrying the burden of the fighting in South Vietnam and, to a certain extent, in Cambodia.

Chairman ELLENDER. Insofar as expense is concerned, there has been very little change?

Secretary SEAMANS. I would have to check carefully on that. The total expense in Southeast Asia has come down dramatically in the last few years.

Chairman ELLENDER. You mean insofar as we are concerned?

Secretary SEAMANS. Insofar as we are concerned.

Chairman ELLENDER. Our Air Force?

Secretary SEAMANS. That is correct.

(The information follows:)

CHANGES RESULTING FROM SEA WITHDRAWAL

The following table shows the declining total of Southeast Asia costs from fiscal year 1969–72. Within this total decreases have occurred in USAF support and corresponding increases have occurred in free world force (military assistance service funded) support.

[In millions of dollars]

	Fiscal years				
	1969	1970	1971	1972	1973
Direct USAF costs in Southeast Asia	6,573	4,220	2,858	2,336	
Indirect USAF costs in Southeast Asia (free world force support)	307	356	436	427	[Deleted]
SEA total	6,880	4,576	3,294	2,763	

SOUTH VIETNAM AIR FORCE INCREASE

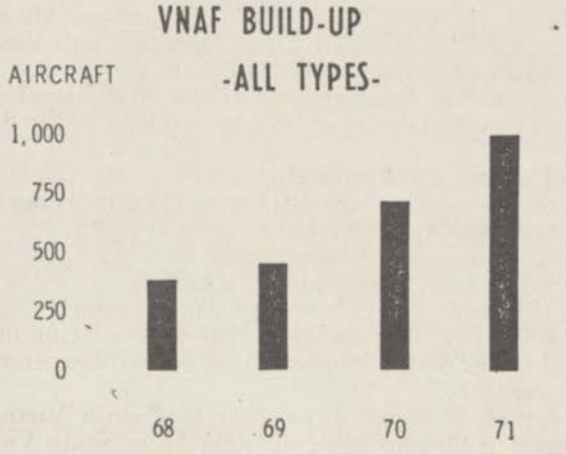
Secretary SEAMANS. During that latest trip, I concluded that the South Vietnamese have made a great deal of progress. The growth of their air force can be seen from chart I.

I have a series of charts.

That chart I shows in the last 3 years it has increased from 400 to over 1,000 aircraft.

(Chart I follows:)

CHART I



AIRCRAFT BREAKDOWN

Senator YOUNG. What number of these aircraft are jets?

Does this include helicopters?

Secretary SEAMANS. This includes all aircraft and helicopters, the A–37 which is a jet. It includes a squadron of F–5's which are jets. It also includes the A–1 which is not a jet.

We can submit for the record a breakdown of the aircraft.

(The breakdown follows:)

BREAKDOWN OF AIRCRAFT IN VIETNAM BY TYPE

VNAF aircraft unit equipped (UE) (as of Feb. 25, 1972)

	UE
Tactical (jet):	
A–37	90
F–5	18
RF–5	6
Total	114
Tactical (conventional):	
A–1	60
AC–47	18
AC–119	18
Total	96
Cargo:	
C–47	16
C–119	16
C–123	48
Total	80
Helicopter:	
CH–47	16
UH–1	500
Total	516
Other:	
EC–47	1
O–1	155
RC–47	3
T–41	18
U–17	42
U–6	8
VC–47	4
Total	231
Total number of UE aircraft	1,037

PROFICIENCY OF SOUTH VIETNAMESE FIGHTER PILOTS

Senator YOUNG. How proficient are the South Vietnamese as pilots?

Secretary SEAMANS. I think they are doing extremely well. They are able to maintain them and supply them. They have recently been involved in the air defense mission up in Danang where they rotate their F–5's in and out. They have proficient pilots who are doing a good job.

Senator YOUNG. Are they as capable as the North Vietnamese?

Secretary SEAMANS. I would like to have General Ryan answer that question.

Senator YOUNG. Are they as good fighter pilots as the North Vietnamese?

General RYAN. Those that are flying the F–5's; yes, sir. They are highly experienced pilots. They have been flying them for 6 or 7 years now.

Secretary SEAMANS. A few of them have had remarkable experience. They have been trained by the French and they have had well over 3,000 combat missions. They are good pilots.

NONENCOUNTER WITH NORTH VIETNAMESE IN AIR-TO-AIR COMBAT

Senator YOUNG. Are the South Vietnamese better in the air than on the ground?

General RYAN. Senator, they have not had an air-to-air encounter with the North Vietnamese. Their mission rate and operational ready rates, in both the F–5's and A–37's are comparable to our rates.

Chairman ELLENDER. That is the point I had in mind. There is very little conflict in the air.

General RYAN. That is right. In the Laotian area, we have had the incursion of MIG–21's in Laotian air space.

Chairman ELLENDER. Have there ever been any engagements between the South Vietnamese and North Vietnamese?

General RYAN. No, sir; not to my knowledge.

AIRPOWER INCREASE AT U.S. EXPENSE

Chairman ELLENDER. You spoke of a big increase in airpower. All of that has been done at our expense?

Secretary SEAMANS. Yes, sir; it has.

Chairman ELLENDER. No other country has contributed anything at all toward assisting us in providing these aircraft?

Secretary SEAMANS. That is correct.

NONEXPENDITURES BY ALLIES, EXCEPT AUSTRALIA AND NEW ZEALAND

Chairman ELLENDER. To what extent, if you know, have we been assisted in South Vietnam by any country other than Australia and New Zealand?

Secretary SEAMANS. Korea had ground forces in South Vietnam.

Chairman ELLENDER. We had to pay them.

Secretary SEAMANS. They provided significant manpower, however.

Chairman ELLENDER. I say, we had to pay the expense of it.

Secretary SEAMANS. That is correct.

Chairman ELLENDER. I understand that, in addition to paying for the expense of their presence in South Vietnam, we had to supply the costs of training an equal number of men for South Korea as were sent to South Vietnam.

Secretary SEAMANS. Well, we have withdrawn some of our troops from South Korea in the last year.

Chairman ELLENDER. I did not mean that. When the South Koreans agreed to send troops to Vietnam, they did that on condition that we train another South Korean division at our expense.

Secretary SEAMANS. I believe that is correct.

Chairman ELLENDER. The burden of cost to sustain the South Korean division you mentioned is all done at our expense?

Secretary SEAMANS. That is correct.

AIRFIELDS IN SOUTH VIETNAM

Chairman ELLENDER. You mentioned 10 airfields. All of them have been taken over by the South Vietnamese except four?

Secretary SEAMANS. That is right.

AIRFIELDS IN THAILAND

Chairman ELLENDER. How about the ones in Thailand?

Secretary SEAMANS. As of 2 years ago, we were operating out of six bases there. We are now operating out of five bases.

Chairman ELLENDER. Whose planes are those?

Secretary SEAMANS. The U.S. Air Force.

Chairman ELLENDER. No effort is being made to secure assistance from any other country to operate those planes or pay the cost of operating them?

Secretary SEAMANS. That is correct. The Thais do have some aircraft that they fly. They carry out some training missions from some of those bases.

Chairman ELLENDER. At whose expense?

Secretary SEAMANS. At our expense and theirs.

Chairman ELLENDER. All at our expense?

Secretary SEAMANS. Generally that is correct.

Chairman ELLENDER. So that you can say that for this entire program in South Vietnam the United States picks up the tab?

Secretary SEAMANS. We have borne a tremendous expense of it; there is no question about it.

Chairman ELLENDER. Isn't it all the expense except what is provided by Australia and New Zealand?

Secretary SEAMANS. To the best of my knowledge, yes.

I would like to check on that and be absolutely sure, but that is my understanding.

PHILIPPINE TROOPS

Senator ALLOTT. Haven't we forgotten the Philippines? Didn't they send some troops over there, too?

General RYAN. That is correct. The Philippines had a small contingent in South Vietnam.

Senator ALLOTT. They are withdrawn now?

General RYAN. They are withdrawn.

Chairman ELLENDER. We paid those expenses, too.

General RYAN. I am not aware of it.

Chairman ELLENDER. I am positive we did. We paid dearly, too. I will ask Mr. Woodruff to get the exact figure and put it in the record.

(The information follows:)

PAYMENT FOR AUSTRALIA, NEW ZEALAND, AND PHILIPPINE TROOPS IN SOUTH VIETNAM

There have been no costs incurred by the Department of Defense in the support of Australian and New Zealand troops serving in South Vietnam. All associated costs were covered by their respective Governments. And regards support of Philippine troops, Department of Defense costs from fiscal year 1966 through fiscal year 1970 were as follows:

Fiscal year:	*Millions*
1966	$6.0
1967	14.7
1968	7.1
1969	6.2
1970	2.0

All Philippine troops were withdrawn by the end of fiscal year 1970. The majority of the amounts shown above were expended by the U.S. Army for materiel and service support of the Philippine troops.

SOUTH VIETNAMESE AIR FORCE STRENGTH, AIRCRAFT AND ATTACK SORTIES

Chairman ELLENDER. Proceed, Dr. Seamans.

Secretary SEAMANS. In the past year, the South Vietnamese activated 12 new squadrons—meeting or exceeding every operational ready date. They now have over 40 squadrons with more than 1,000 aircraft and 2,500 pilots. As they improve their capabilities, they are assuming more of the combat role. Since November 1, they have been flying about 90 percent of the attack sorties in South Vietnam and nearly 70 percent of the sorties in Cambodia and South Vietnam taken together. And during fiscal year 1973 they should reach a strength of over 50 squadrons and more than 50,000 airmen.

U.S. PAYMENT FOR TRAINING OF VIETNAMESE PILOTS, TECHNICIANS, AND MECHANICS

Chairman ELLENDER. Where are these being trained, Mr. Secretary?

Secretary SEAMANS. The pilot training for tactical pilots has been in this country. The helicopter pilots have also been trained in this country. The technicians and mechanics, those involved in logistics, have been trained in South Vietnam at Nha Trang.

Chairman ELLENDER. At whose expense?

Secretary SEAMANS. At our expense.

Chairman ELLENDER. Do we pay to transport them here and sustain them during the entire period of their training?

Secretary SEAMANS. We pay the total cost of their training.

Chairman ELLENDER. Thank you.

Proceed.

REDUCTION OF U.S. ATTACK AIRCRAFT AND SORTIES FLOWN IN SOUTHEAST ASIA

Secretary SEAMANS. And as the Vietnamese Air Force has increased, the number of U.S. attack aircraft in Southeast Asia has been steadily reduced. The drop in U.S. attack aircraft and sorties flown can be seen from charts II, III and IV.

U.S. attack sorties in South Vietnam alone were down 78 percent in 1971 and down 35 percent in all of Southeast Asia, and the latter includes a drop of 17 percent in B–52 sorties.

(Charts II, III, and IV follow:)

CHART II

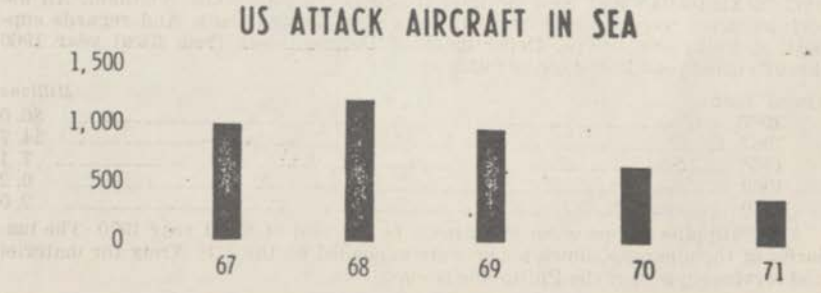


CHART III

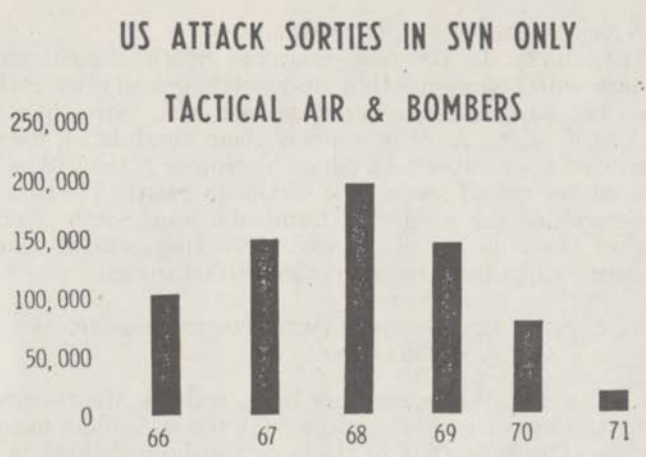
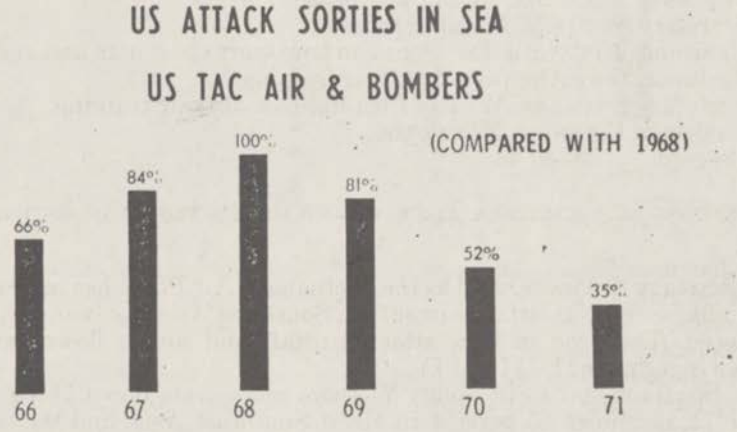


CHART IV



REDUCTION IN AIR MUNITIONS DELIVERED BY ALLIES

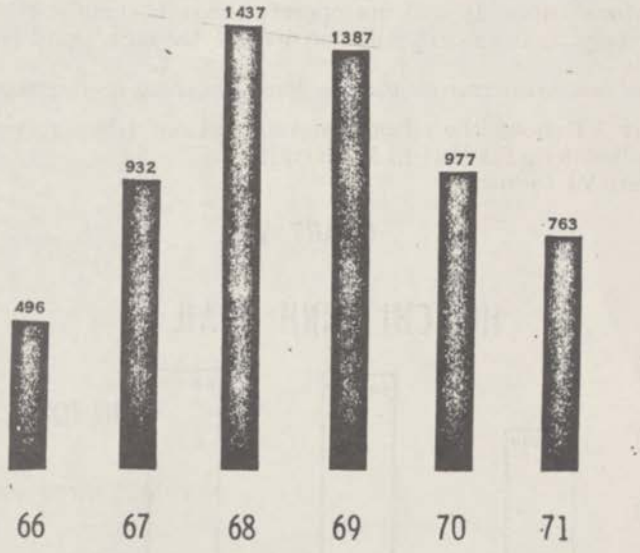
Secretary SEAMANS. The reduction in air munitions delivered by all allied forces in Southeast Asia is shown by chart V.

(Chart V follows:)

CHART V

ALLIED AIR MUNITIONS DELIVERED IN SEA

(IN THOUSANDS OF TONS)



INCREASED EFFECTIVENESS OF INTERDICTION EFFORTS

Chairman ELLENDER. Those charts, as well as your entire statement, Mr. Secretary, will be placed in the record at the conclusion of your remarks.

Secretary SEAMANS. Fine, Mr. Chairman.

At the same time our interdiction efforts have increased in effectiveness. This is due partly to the use of gunships with rapid firing cannon and advanced optical and electronic sensors. We now have 18 of our AC–130 gunships in operation. Our laser-guided bombs are also making an important contribution to the interdiction effort. And our ground sensors and aircraft control systems are playing an important role.

LASER-GUIDED BOMBS

Senator YOUNG. Please explain how laser-guided bombs "home" on the designated target.

Secretary SEAMANS. Yes.

We start off with a conventional bomb, a 500 pounder or 2,000 pounder and we attach to it equipment that comes in kit form. On the nose of the bomb, you put a laser seeker and put fins on the tail, so that as you get signals that you are not going toward the target, you correct the bomb trajectory. The target has to be illuminated by a laser beam from either the attacking aircraft or a separate aircraft. Then, after the weapon is released, it will "home" on the laser signal reflected from whatever target is being designated. It is possible to designate an

antiaircraft gun or a truck or a wide variety of targets that require extreme precision if we are going to knock them out.

Senator YOUNG. What is the approximate range of the laser beam?

Secretary SEAMANS. You can extend essentially as far as you have visual sighting. It does not operate through the clouds, for example. In good weather, the illumination can be from, say, an AC–130; a gunship at 10,000 feet can illuminate a target being attacked by an F–4, at 6,000 feet.

Senator YOUNG. It will not operate through cloud cover?

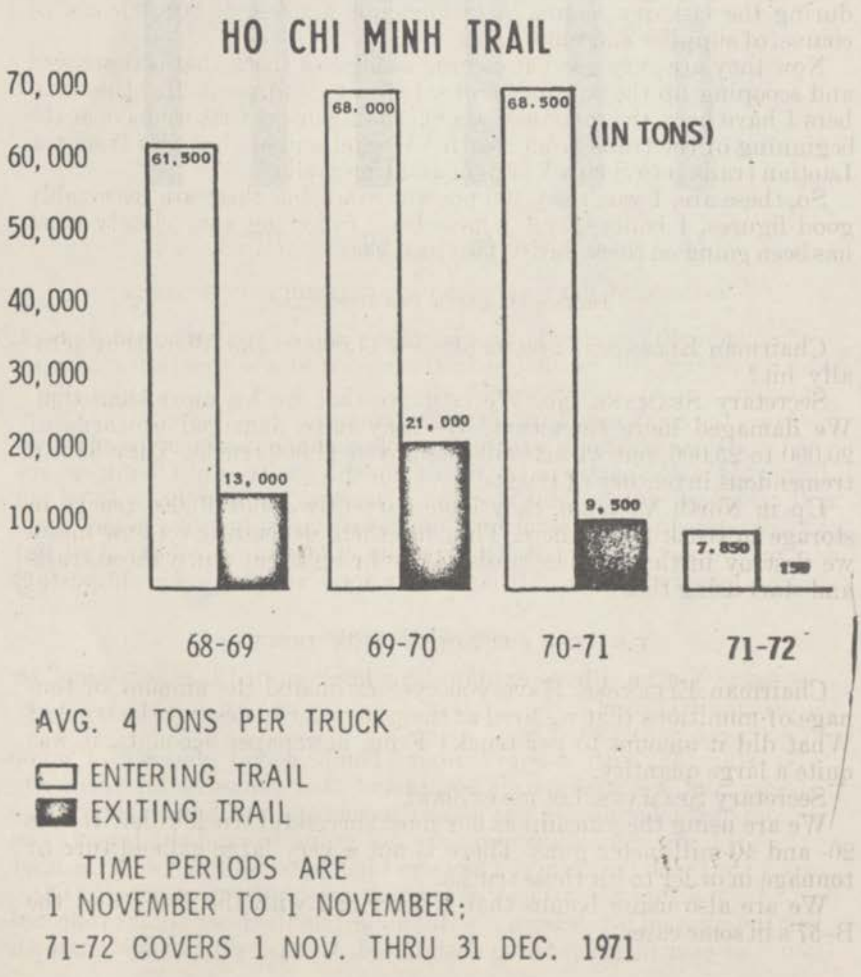
Secretary SEAMANS. It will not operate through cloud cover.

EFFECT OF INTERDICTION ON FLOW OF SUPPLIES ALONG HO CHI MINH TRAIL

Chart VI shows the effect that interdiction is having on the flow of supplies along the Ho Chi Minh trail.

(Chart VI follows:)

CHART VI



ESTIMATED TONS GETTING THROUGH TRAIL

Secretary SEAMANS. In the last year, we estimate that only about 9,500 tons got through of the 68,000 tons that entered the trail. Of course, this does not mean that enemy troops are completely out of supplies. In fact, we believe that they have been conserving supplies for possible offensives this year. But there were no major attacks in all of 1971, and our interdiction efforts must have been an important factor in bringing that situation about.

Chairman ELLENDER. What became of the difference between the 9,500 tons and the 68,000 tons?

Secretary SEAMANS. The 9,500 tons got through and the difference didn't get through. The difference was used in part to take care of the 40,000 to 50,000 troops and men they have operating the trail. Also, we don't know to what extent they have stored supplies.

In addition, a large percentage was actually destroyed by our air power. We estimate that we attacked about 35,000 trucks and of that number we probably hit about 25,000.

We probably destroyed in the order of 11,000 trucks in the trails during the last dry season. A tremendous number of truck loads, of course, of supplies and munitions.

Now they are very good at coming along to a truck that is destroyed and scooping up the supplies and salvaging equipment. But the numbers I have here, the tonnages, are based on sensors that we have at the beginning of the trails from North Vietnam and at the exits from the Laotian trails into South Vietnam and Cambodia.

So, these are, I won't say 100 percent exact, but these are reasonably good figures, I believe, and I have been following very closely what has been going on there during this past year.

TRUCKS DAMAGED AND DESTROYED

Chairman ELLENDER. You mentioned 11,000 trucks. Were they actually hit?

Secretary SEAMANS. No. We estimate that we hit more than that. We damaged more than that. We may have damaged upwards of 20,000 to 25,000, but we actually destroyed 11,000 trucks. They have a tremendous inventory of trucks.

Up in North Vietnam, they have currently about 10,000 trucks in storage in truck parks there. They use them depending on how many we destroy in the Laotian trails. They bring them down those trails and start using them.

U.S. COST FOR DESTRUCTION TRUCKS

Chairman ELLENDER. Have you ever estimated the amount of tonnage of munitions that we fired at them in order to destroy the trucks? What did it amount to per truck? From newspaper accounts, it was quite a large quantity.

Secretary SEAMANS. Let me explain.

We are using the gunship as our most successful truck killer. It uses 20- and 40-millimeter guns. There is not a very large expenditure of tonnage in order to hit those trucks.

We are also using bombs that I described with the F–4's and the B–57's in some cases.

But the large tonnages are coming from the B–52's. The B–52's are not used to hit individual trucks but to hit truck parks and to hit supplies that have accumulated. Also the B–52 can be used to break up any massing of troops.

Chairman ELLENDER. Are we to understand that the major number of the trucks are destroyed by these gunships you speak of?

Secretary SEAMANS. Yes.

Chairman ELLENDER. Describe the type of aircraft used.

Secretary SEAMANS. The AC–130 is a four-engine airplane. It has a crew of 14. It has guns that fire out of the side. It has two 40-millimeter guns and also 20-millimeter guns. It flies in a circle around the target. When everything is set, when the plane is banked at the right angle and the computer has indicated the geometry is right for firing, they fire.

Chairman ELLENDER. There is also bombing by B–52's?

Secretary SEAMANS. That is high altitude bombing, from over 30,000 feet.

Chairman ELLENDER. That is mostly to strike large force concentrations?

Secretary SEAMANS. That is correct; to strike any concentration of troops or supplies.

Senator YOUNG. Mr. Chairman?

Chairman ELLENDER. Senator Young.

NORTH VIETNAM BUILDUP

Senator YOUNG. I don't question the figures you have given in the discussion of North Vietnamese trucks and other military equipment destroyed, but in spite of all this, they probably have built up a strong force in South Vietnam, according to the information we have. They can probably conduct a stronger offensive than they did during Tet of 1968.

Secretary SEAMANS. General Abrams has been concerned about the buildup, the increase in infiltration, and has asked for some Reserve Air Force capability which we are providing.

We are providing, should that buildup lead to a Tet type of offensive, some increase in B–52 sorties and some additional fighter aircraft.

Senator YOUNG. I am no authority, but if it were not for our air power there, it seems to me that the South Vietnamese would be in a hopeless situation now. They would not be able to hold their own. We may be able to stop the North Vietnamese with the bombing, but it is amazing how they can continue building up supplies and personnel, They must be a determined and capable people.

Secretary SEAMANS. I agree they are determined.

PROVISION OF ADDITIONAL U.S. AIR CAPABILITY

Chairman ELLENDER. You say you sent Reserve forces. That is in addition to the forces that are there?

Secretary SEAMANS. In addition to the forces that were there, we have sent some additional B–52's. We have sent two squadrons of B–52's to Andersen Field in Guam.

Chairman ELLENDER. How many did you send?

Secretary SEAMANS. There are 18 additional fighters that were in the Pacific that have been sent to Southeast Asia and as I said, two squadrons of B–52's.

General RYAN. We will supply the exact number; roughly 40 B–52's.

(The information follows:)

A/C SENT IN RESERVE OF SEA

We deployed [deleted] B–52's from Andersen AFB to U-Tapao. In addition, we deployed [deleted] B–52's from four different SAC bases in the CONUS to Andersen AFB.

RULES AND REGULATIONS RESTRICTING AIR OPERATIONS

Senator SYMINGTON. Mr. Chairman, I am not happy about the rules, regulations, and restrictions that have been laid down on our Air Force with respect to its operations. The people against airpower say and repeat that we have dropped more in Vietnam than we did in Germany.

The question is: What are the targets our flyers were permitted to hit and how were they allowed to operate?

I would hope we can ask the Secretary of Defense, also the Chairman of the Joint Chiefs, as to where the rules came from that prevented us using airpower properly, make it as ineffective as the Israelis have been effective against the Arabs.

PROCUREMENT OF AIRCRAFT FOR UNITED STATES VIS-A-VIS ALLIES

In going through the statement about the airplanes we are buying, I note that we have not had a new airplane in the Air Force except the TFX since 1954. Seventy percent of the aircraft we are buying this year are planes for other countries. Thirty percent only of the new airplanes we are buying are for the U.S. Air Force.

Chairman ELLENDER. Would you repeat those figures on aircraft?

Senator SYMINGTON. Yes, sir; 251 airplanes are being requested, only 73 for us out of 251. The rest are for our allies.

Chairman ELLENDER. As I announced earlier, Secretary Laird and the Joint Chiefs will appear before us Thursday and Friday. I hope you will be present so that you can go into that in detail.

Senator SYMINGTON. Thank you.

Chairman ELLENDER. Have you any comment to make on the Senator's observations?

Secretary SEAMANS. Those observations are correct.

The new airplanes are in part a payback to the Army of helicopters already supplied to South Vietnam, as well as 57 F–5's for South Vietnam. The helicopters and the 57 F–5E's make up the preponderance of the aircraft for allies and the U.S. Army. The remainder comes to 73 and these are the aircraft that are for the use of the U.S. Air Force.

AIRCRAFT FURNISHED TO SOUTHEAST ASIA AND AIRCRAFT DESTROYED OR LOST

Chairman ELLENDER. In connection with that, Mr. Secretary, I wonder if you can supply for the record the number of airplanes used in Southeast Asia and the number that have been destroyed or lost.

Secretary SEAMANS. Yes; we have that information. We will be happy to supply it for the record.

Chairman ELLENDER. Also include the number of aircraft you have on hand, particularly the B–52's.

Secretary SEAMANS. Yes. We can supply that.

(The information follows:)

SEA A/C USED, DESTROYED, AND ON HAND

The first column of this chart shows, through representative numbers of aircraft possessed, the numbers of aircraft in use at a given time during calendar years 1964–71. The second column shows the number of aircraft lost each calendar year from 1964 to 1971. Caution should be exercised when using these figures for they depict total losses, operational and combat, and not attrition rates. Combat attrition rates are based on losses per 1,000 sorties, while operational attrition rates are based on losses per 100,000 flying-hours.

AIRCRAFT USED AND DESTROYED

	SEASIA aircraft possessed [1]	SEASIA aircraft destroyed/lost		SEASIA aircraft possessed	SEASIA aircraft destroyed/lost
Year:			Year—Continued		
1964	191	34	1968	1,851	383
1965	759	219	1969	1,978	295
1966	1,266	368	1970	1,687	171
1967	1,699	412	1971	1,162	88

[1] Representative figures.

In response to the second question, we had a total of 847 aircraft in Southeast Asia as of February 26, 1972. [Deleted] aircraft were located in South Vietnam and [deleted] aircraft were in Thailand of which [deleted] were B–52's.

TEMPORARY AIRCRAFT INCREASE: REACTION TO ANTICIPATED NORTH VIETNAMESE ACTION

Secretary SEAMANS. I would like to make it clear, Mr. Chairman, that the increase in aircraft in Southeast Asia is on a temporary basis to cover this period around Tet.

Senator SYMINGTON. That will depend on what the North Vietnamese do, will it not?

Secretary SEAMANS. Yes, sir. It will depend on that.

Senator SYMINGTON. This is a reaction to an estimated action; if there is another action, you will have another reaction, correct?

Secretary SEAMANS. Obviously the period in which the aircraft are kept over there could be extended.

U.S. PRISONERS OF WAR AND MEN MISSING IN ACTION

Before leaving the subject of Vietnam, I again want to express the Air Force's concern for our prisoners of war and men missing in action. We will continue to assist the families here at home in every possible way, and we will see to it that the men will not be at a disadvantage when they resume their careers. These men deserve, and will receive, all possible help and consideration when they return.

AIR FORCE MANAGEMENT

Except for this brief review of progress in Vietnamization, I will leave the subject of military operations and force structure to General

Ryan and subsequent witnesses, and will focus on the four critical areas of Air Force management that I mentioned earlier. How well we manage these four areas will largely determine whether we can continue to provide adequate security with the resources available. The broad tasks before us can be summarized as follows:

IMPROVED ORGANIZATION AND PERSONNEL POLICIES

Improve our organization and personnel policies. We must tighten up our organizational structure and individual assignments so that our mission can be accomplished with minimum manpower. And we must improve our service living conditions and human relations techniques so that our personnel will be able to carry out their assignments in the best possible manner.

MANPOWER REDUCTION

Chairman ELLENDER. Mr. Secretary, I intended to go into a little detail about your manpower.

Many Members of Congress hope that you will be able to reduce the cost of our efforts in defense. I have always contended that the most effective area in which we can cut back is in manpower because, as I recall some estimates made some time ago, 56 percent of our budget is to provide for manpower needs.

Necessarily, if we are to make reductions in our defense budget, the manpower problem will have to be studied very carefully.

I notice you say our mission can be accomplished with minimum manpower. Do you envision cutting back on the number of people that you have?

Secretary SEAMANS. Yes. We are currently making manpower reductions, both military and civilian. We are doing it in part on the basis of studies that General Ryan and I have had under way for about a year's time. We have been trying to determine where we have functions, particularly headquarters type functions, that are not necessary.

We are cutting out a great deal of the activity in our intermediate headquarters, for example. By so doing we are taking out the middleman and putting more responsibility down at the base level and at the same time we will have to transfer somewhat more responsibility to the senior headquarters level.

COMBAT-TO-SUPPORT RATIO

Chairman ELLENDER. During the hearings on the various military personnel appropriations I intend to discuss the matter of the number of supporting troops required to sustain the number of combat troops.

It seems to me that too many of the men in our active military forces are engaged in activities other than actual combat activities. It is my hope to obtain from each of the services the number of men required to support each fighting man. When I refer to the fighting man I am talking about those individuals who are assigned to combat missions, such as those who fly the airplanes in contrast to the fellow who stays in an office or here in Washington.

Secretary SEAMANS. I agree with your observation, that the only way to cut cost is to get people off the payroll. The question is whether it is the military, civilian or Government, or contractor payroll.

Because the proportion of our total dollar that is going for personnel has been increasing, we have become increasingly concerned about the numbers of people we employ and we have been working to minimize support type personnel required to maintain the force, itself.

Chairman ELLENDER. I recall that you have a substantial number of people engaged in intelligence, including those in Embassies. I would like to have those, if you can, as I have just indicated.

I don't exactly know what your classifications are, but I would like to have, as I said, the approximate number in each classification.

Secretary SEAMANS. We will supply that.

(The information follows:)

INTELLIGENCE PERSONNEL AND SUPPORT

Using the major force program classification system, there are currently 11,754 intelligence personnel in the fighting man category and 27,829 classified as sustainers, for a total of 39,583 intelligence personnel.

FACILITY CLOSURES

Senator YOUNG. Mr. Chairman, may I ask this question?

Is the Air Force planning to close any bases in fiscal year 1973?

General RYAN. We have no base closures scheduled for fiscal year 1973.

General BOYLAN. None that have not been previously announced.

Senator YOUNG. I read about a base in Duluth.

General BOYLAN. We are shutting down some facilities, no major Air Force installations. At Duluth a BOMARC squadron and its facilities will be closed.

Senator YOUNG. But the base, itself?

General BOYLAN. I believe at Duluth there is an Air Defense Center which will remain open.

Senator YOUNG. You are not planning to close down any more?

Secretary SEAMANS. During fiscal year 1973, no major bases are planned for closing.

General BOYLAN. Senator Young, there are manpower reductions reflected in the 1973 budget. These manpower reductions have to be accommodated at all of our installations. They involve reductions in air defense activities, our undergraduate pilot training activities, and practically every Air Force installation will receive some adjustment downward in its total population.

RESERVE STRENGTH INCREASE

Senator YOUNG. Does this include the reserves, too?

General BOYLAN. The reserves in the main are increasing in total strength. The principal reason for that is the modernization program, the more advanced types of equipment, relatively more advanced types of equipment, requiring more pilots or maintenance personnel.

MANPOWER REDUCTION

Secretary SEAMANS. In the following part of my statement, I am going to get into this matter of personnel reduction but just to summarize it here, during the remainder of this fiscal year we are reducing our military force by 21,870 and have another 13,142 planned for fiscal year 1973.

Similarly, our reductions planned in our civilian force amount to about 10,000 for the remainder of this year.

Chairman ELLENDER. How much for next year?

Secretary SEAMANS. Next year, the civilian force is planned to be reduced by 2,496.

SAVINGS RESULTING FROM REDUCTION

Chairman ELLENDER. Have you figured what that reduction will save?

Secretary SEAMANS. Yes; we can give you those numbers. I can't give it to you extemporaneously. For comparability purposes, we will provide both the fiscal year 1972 and fiscal year 1973 savings. Together with any information which appears useful.

(The information follows:)

SAVINGS: CIVILIAN AND MILITARY PERSONNEL CUTS

1. The cost savings due to fiscal year 1972 and fiscal year 1937 strength reductions in the military personnel programs are:

[Dollars in millions]

	Fiscal year 1972	Fiscal year 1973
End strength reductions	24,755	13,142
Man-year reduction	12,308	33,502
Savings due to military personnel program reductions exclusive of fiscal year 1972 pay increases	$101.0	$308.8

The fiscal year 1972 savings of $101.0 million were offset by two military pay raises as reflected below. The fiscal year 1973 savings of $308.8 million compares to the full year costs of the fiscal year 1972 pay raises as shown below:

	Fiscal year 1972	Fiscal year 1973
(a) Public Law 92-129, effective Nov. 14, 1971	$345.8	$537.4
(b) Public Law 92-210, effective Jan. 1, 1972	184.6	356.4
Total pay raise costs	530.4	893.8

2. The full year cost-savings due to strength reductions in civilian personnel programs are:

[Dollars in millions]

	Fiscal year 1972	Fiscal year 1973
End strength reductions	10,119	2,496
Man-year reductions	3,199	12,893
Dollar savings	$22.6	$153.6

The above savings have been offset by pay raises:

[Dollars in millions]

	Fiscal year 1972	Fiscal year 1973
(a) Classification Act employees (Executive Order 11637) effective Jan. 1, 1972	$54.8	$104.5
(b) Wage Board employees (5 U.S.C. 5343)	50.2	66.7
Total pay raise costs	105.0	171.2

Overall Cost Increase Due to Salary Increase

Chairman Ellender. I am confident you will find that while you will have a small air force, strengthwise, the personnel cost will be more because of the recent large increases in military pay. As I recall, for fiscal year 1972 the Army will have some 50,000 men fewer than in fiscal 1971, but the cost of the personnel will be greater.

General Ryan. We have the same problem, Mr. Chairman.

For instance, in 1968, fiscal year 1968, we had 905,000 military. They cost us $5.6 billion. In fiscal year 1973, we will have 717,000 military. They will cost us $7.2 billion.

Chairman Ellender. That is because of the increase in military pay?

General Ryan. That is right.

Secretary Seamans. For fiscal year 1973, we are indicating an increase of military cost from $7.028 to $7.251 billion even though there is a decrease of 13,142 people. We are talking about pay increases, of course, which I think are deserved but it does cause an increase in overall cost.

Reduction Methods

Senator Young. How is that reduction being accomplished? Is it mostly by attrition or by other means?

General Ryan. We do it two ways, Senator.

First, by lowering the number that we take in each month. We have projected how many people are going to be completing 4 years of service. Of these, we are being more selective on whom we reenlist. We are also raising the quality of our people by being more selective on who can reenlist in the upper ranks.

So, I don't think in this year we will have what we would call a reduction in force.

Senator Young. How about civilian personnel?

General Ryan. Yes, civilian. There probably will be a RIF. In this case, as you know, under Civil Service rules, last on, first off. This, of course, involves chain reaction if this man goes out; you bump right on down the list.

General Boylan. We are attempting to reduce our civilian personnel to the authorized levels through attrition. However, the forecast is that about 3,000 will have to be involuntarily separated through RIF procedures.

(Discussion off the record.)

Senator Ellender. You may proceed.

Secretary Seamans. I mentioned organization and personnel policies. I will be discussing that in my statement more fully.

MANAGEMENT OF WEAPONS PROCUREMENT AND OPERATION

The next area is to manage our weapons procurement programs in such a way that these weapons systems are available to meet our security needs and that these weapons are properly tested and provided at minimum cost.

I could also add in there it is not a question of acquiring these weapons only, we must be able to operate them at minimum cost.

RESEARCH AND DEVELOPMENT PROGRAMS

Provide research and development programs that will make available an adequate range of new capabilities that can be selected, if necessary, in order to maintain our security in future years. Research and development should be a steady, step-by-step process, managed in a way that will make best use of available resources.

Senator SYMINGTON. Mr. Chairman, may I ask some questions on research and development?

FUNDING INCREASE AND HARDWARE SHORTAGE: NEW AIRCRAFT IMPERATIVE

Chairman ELLENDER. Senator Symington.

Senator SYMINGTON. Mr. Secretary, last year the Defense Department asked for $7.9 billion for research and development. They were given seven billion four hundred million dollars. The present statement of the Secretary of Defense asks for a billion dollars more this year for research and development.

Secretary SEAMANS. We are asking for $233 million more in the Air Force.

Chairman ELLENDER. The Defense Department is asking for a billion dollars more for R. & D., correct?

Secretary SEAMANS. Yes.

Senator SYMINGTON. We get a lot of high class erudite discussion and arguments, but we don't seem to get any hardware for all these billions.

BUDGET PROCESS

You, yourself, are close to the air situation. Are you told by the Director of Research and Engineering what you can and cannot do with this R. & D. money? In other words, are you just his representative here or do you have decision as to how to use the money if you get it?

Secretary SEAMANS. At the start of the budget process, we put in a plan for research and development for the following year. We started this process last winter for fiscal year 1973. This is then reviewed by Dr. Foster and his staff. We go through what might be called a negotiating process with him.

Of course, last year, Mr. Packard was the Deputy Secretary of Defense and he was very much involved in these decisions.

What we are presenting to you today is a program that is in large part based on what we presented to the Department of Defense almost a year ago. I think it is a good program. I think it is a program that does involve a lot of hardware effort. I agree that is what we ought to be concentrating on.

Senator SYMINGTON. The other day Admiral Rickover was testifying. He had a chart he showed to the committee which demonstrated that before any decision could be made on a nuclear submarine 26 people in the Navy alone had to approve any change, before the request went to higher authority.

The people are rebelling at the increasingly high cost of defense. I wonder, do you have any thoughts on this matter? You are a scientist, yourself; why is it that we spend these tremendous sums of money but don't come up with any hardware for a long period of time?

OTHER RESEARCH PRODUCTS

This is to me about as serious a matter as faces the Congress today. Now we are asking for a great deal more money for research and development, a billion dollars more. We are also asking for whole new weapons systems, ULMS, for example.

As you know, we had the biggest deficit in our history last year, except for 1945. In my opinion, we are probably going to devalue the dollar again before the end of the year.

One of the greatest sales jobs ever is to have everybody happy about having less than before, although I think devaluation was sound under the circumstances.

BUDGET REQUEST FOR AIRCRAFT RESEARCH

Why don't we get more for this research and development money we put up?

Secretary SEAMANS.. If you look at what has happened to our budget in the last 3 years, you will note that in fiscal year 1971 we had $767 million for aircraft R.D.T. & E. This year we are requesting $1.3 billion. That is an increase of almost 2 to 1. I think it is a step in the right direction.

Senator SYMINGTON. You are asking for $3.1 billion this year.

Secretary SEAMANS. I am just talking about aircraft research and development. I am picking out a particular area where I think we had fallen behind, where we had not done enough work and where we wanted to proceed with a new air superiority fighter; and we wanted to have an attack type aircraft for close support, we wanted to proceed with the development of a new strategic bomber.

In addition, we wanted to do some prototyping. I think what has happened in the last 3 years is going in a direction that is profitable.

1972 INABILITY TO DECIDE BETWEEN CHEYENNE, HARRIER, AND A–X AIRCRAFT

Senator SYMINGTON. The last time Secretary Packard appeared before the Armed Services Committee he said he could not make a decision between the Cheyenne, the Harrier, and the A–X planes for close-air support; therefore we ought to go ahead with all three. He didn't think a decision could be made until after 1973. They are all for the same use, supporting ground troops.

You also have the A–7, as well as the A–4.

We are faced with the greatest financial crisis, certainly since the early 1930's—maybe greater—because we have lost so much control over our economy. Nevertheless we seem to be getting more and more programs, but less and less hardware.

Secretary SEAMANS. My own view of this is that when it comes to close support that we did not have an aircraft that satisfied all our requirements. We want to have an airplane that would have a reasonably short takeoff, have a longer loiter time, and that would carry the weapons that were needed. This led us in the direction of the A–X.

Now, in the Air Force we have been stressing the need to go ahead with this development, the building of prototypes and determine on the basis of hardware whether to proceed into production or not. We have made it clear that when we get with the A–X competitive flyoff, we may want to buy more A–7's if the A–X does not turn out satisfac-

torily even though the A–7 is not as attractive from the standpoint of takeoff performance or loiter capability.

LETTER OF SENATOR GOLDWATER: LOADING AIRCRAFT WITH UNNECESSARY AND EXPENSIVE ACCESSORIES

Senator SYMINGTON. I had a letter from Senator Goldwater, an experienced pilot, in which he said he completely agreed with our protests. He wrote the trouble is that we get good airplanes, then load them up with a lot of "garbage." I asked if I could put his letter in the record and he said, "Yes." So it is a matter of public record.

For example, the F–15 is to be an air superiority fighter. But somebody, somewhere, added range to it, more range not essential to an air superiority fighter. We had testimony that at one point Marshal Stalin took many gadgets out of Soviet airplanes. Asked "Why?" he said, "Because these airplanes have to fight, have to go into combat."

Perhaps you read the testimony. It was before the Armed Services Committee.

F–14: COST RENEGOTIATION

What worries me is the price. You take the F–14, the Navy plane, now at a price of $16.7 million. The manufacturer says he does not want to make any more. The Defense Department says they are going to hold him to the contract, but might renegotiate the price. Certainly they won't renegotiate it downward. That means you may have a fighter that costs $20 million.

It seems one of the chief reasons for such unfortunate developments is the extra stuff put on these airplanes. About the time they are ready to go into production somebody has a new idea and holds everything up in order to get that new idea installed. In the long run it is all negative. We could get very short. We were caught very short in World War II, and were caught very short in the Korean war when it came to fighters. Will you comment?

A–X AIRCRAFT DEVELOPMENT

Secretary SEAMANS. Yes; I will be happy to. I assure you this is a matter that is of great concern to General Ryan and myself. In the case of the A–X, for example, we are developing it without frills. We are developing an airframe and a propulsion system and keeping the avionics as a separate development. We will only incorporate avionics as necessary to do the mission should we eventually produce the aircraft. Even then we will keep it down to a minimum.

B–1 AVIONICS

On the B–1, we are right now out for bid for the avionics. We are currently actually holding up final source selection until we review our requirements again because we are very concerned that the cost of the airplane might go out of bounds because of the avionics. We are going to cut out some of the avionics that we originally had thought desirable.

F–15 AVIONICS

With the F–15, we have reduced avionics complexity again for this very reason. We cut it down. After the contract award to McDonnell-Douglas, we had a thorough scrubbing of the avionics and we eliminated some features.

COMMANDER'S CONFERENCE

At a recent commanders' conference, we had a discussion of this point. General Ryan made it very clear while the commanders were there that they have a responsibility to see that we don't add on so many requirements for things which are attractive but which will drive the cost up to the point we won't be able to afford the overall system. That is a point of view that everybody in the Air Force has to have. It is not understood fully at this time but we are working on it.

RUSSIAN AIRCRAFT

Senator SYMINGTON. I would make one more observation, Mr. Chairman.

In Secretary Laird's statement yesterday he pointed out all the planes the Soviets have had. They have a lot of STOL's, and VTOL. We have no STOL or VTOL. In addition they have the Foxbat. He mentioned some of their other planes. We have had nothing new since 1954. Since I have been in the Senate we have put up over a hundred billion dollars of the taxpayers money for weapons research and development. Why don't we get any hardware? That is what I can't understand.

If it was a business we would have been bankrupt long ago because we would have nothing to sell. There is no profit motive, however, in Government. We constantly putter with all this stuff but get nothing out. I heard a former Assistant Secretary of Defense come back bitter after going to Korea and saying to the Secretary of Defense: The problem is very clear. All we have to do is teach the pilots how to fly the blueprints." We are back in that position today. I don't understand it, considering the billions upon billions of dollars that have been made available. It is not the fault of the Congress. Why can't we get hardware?

U.S. NEW AIRCRAFT: F–5E, F–15, A–X AND AWACS

Secretary SEAMANS. We are getting a lot of hardware. If you go over the list we will be flying the F–5E this year.

Senator SYMINGTON. That is a plane we are designing as relatively inferior to give to other countries who can't afford to buy. So I don't think that is part of this discussion.

Secretary SEAMANS. We will be flying the F–15 this year. I mentioned the A–X. We will be flying the AWACS this year.

Senator SYMINGTON. In 2 years it will have been 20 years since we have had a new fighter. During that time the Soviets have had, to my certain knowledge, 15.

Thank you, Mr. Chairman.

CONTINUING INDECISION RESPECTING A–X AND CHEYENNE: TEST OF 2 AIRCRAFT OF EACH TYPE

Chairman ELLENDER. You mentioned the A–X attack aircraft. This matter received considerable attention last year along with the Army's Cheyenne helicopter for the close air support mission.

I note that you are requesting $48.1 million for the continuation of the A–X program in fiscal year 1973. Am I to understand that you have done enough work on this aircraft to determine whether it or the Cheyenne should be produced for the close air support mission?

Secretary SEAMANS. That is correct, Mr. Chairman. The money that we have for the A–X program is to put together four airplanes, two by each of the contractors involved and start flying these aircraft later this year to determine whether their performance lives up to the plans that we have for the aircraft.

We also are running some special tests that Mr. Packard directed that really center around survivability of the aircraft, how susceptible it is to damage if it is hit in the fuel cells, and so on.

Similarly prescribed tests are to be run on the Cheyenne.

On the basis of all these tests, the Department of Defense will then make a decision whether to proceed in production with the Cheyenne or with the A–X.

Chairman ELLENDER. Not with both?

Secretary SEAMANS. Not with both.

ADDITIONAL COST AND PROMISE OF DECISION

Chairman ELLENDER. I had an occasion to discuss the A–X versus Cheyenne matter with Secretary Packard. I had hoped that we could have made a decision last year to proceed with the development of only one of these expensive aircraft for the close air support mission. However, I was convinced that such a decision could not be made at that time and I went along with the appropriation of funds to continue the development of both.

Now we have requests of $48.1 million to continue the development of the A–X, and $53.5 million to continue the development of the Cheyenne. That is quite a lot of money.

It is my understanding now that if this money is allowed, that by the expenditure of these two sums I just mentioned, one for the Cheyenne and the other for the A–X, the Department of Defense will then be in a position to make a decision as to which one is desired, the A–X or the Cheyenne?

Secretary SEAMANS. We definitely can do that. In addition, there are funds in the A–X budget for going ahead with the final development effort on the A–X assuming that we do go that route. All of the money in there, the $48 million is not just to complete the prototypes that we now have underway.

Chairman ELLENDER. What will be necessary for you to make the decision?

Secretary SEAMANS. All I am saying is that there is more than enough money in the two budgets, according to my understanding, to make this decision.

Chairman ELLENDER. To take one or the other?

Secretary SEAMANS. To take one or the other.

CONTINUOUS ABANDONMENT OF AIRCRAFT FOR MORE RESEARCH AND PRODUCTION VOID

Senator SYMINGTON. Mr. Chairman, we went all through this. We canceled the F–108 because the B–70 would be better. We canceled the B–70 because the B–52 with the Skybolt would be better. We canceled the B–52 with the Skybolt because the Dynasoar would be better. We canceled the Dynasoar because the MOL would be better. Then we canceled the MOL. So there is literally nothing except research and de-

velopment money, a lot of universities and manufacturers getting a lot of profit out of research and development; but no hardware.

Today you have the A–X, the Cheyenne and the Harrier, all for the same job. One of the three services will come out on top. I would personally, from what I know about it, go for the A–X. On the other hand, you already have airplanes built, ready to go. People are being laid off that build them. Why can't we use them? Why do we always have to hold up production to get something not so new? It would never happen if we were in a war because we would stop all this and start to really produce.

PROTOTYPE EVALUATION REQUISITE

Senator ALLOTT. Mr. Chairman, I think that part of what the Senator from Missouri says I can agree with. He just cited the fact that the Russians have come out with 15 new airplanes in the last few years. I don't think you can have both. Frankly, I think we got ourselves in a hell of a mess—I hope that stays in the record—over the system that we were following during the 1960's, not only with the F–111 but with the C–5A. I don't think the Air Force, and I don't think anybody else, can make an intelligent judgment about these two, the Cheyenne and the A–X, from blueprints. I hope that we are getting away from that.

I don't know how you are going to evaluate them unless you get a couple of what, in effect, are prototypes up in the air and evaluate them. I hope that we continue this way.

A–7 AIRCRAFT ABANDONMENT

As far as the A–7 is concerned, I have heard the Senator from Missouri over and over and over again say we should have abandoned this aircraft long ago.

Senator SYMINGTON. I believe that.

Senator ALLOTT. I agree with this. It dates to shortly after the Neanderthal age. I can't see any point going in that direction. I don't see how you are going to evaluate these planes other than on the basis of constructing prototypes and testing them. I don't want to see any more expenditures of billions and billions of dollars purchasing planes from blueprints.

Senator SYMINGTON. I thank my good friend from Colorado. We are in agreement.

A–7B SUBSONIC AIRCRAFT EXPENDITURES

I notice we are spending $241 million in 1971 for the A–7D and $209 million in fiscal 1972. I personally thought when we shifted and went on with this subsonic airplane that it was wrong based on the mission. Now we are talking about a mission where being subsonic is not important.

HARRIER AIRCRAFT DEVELOPMENT

The Senator mentioned the Cheyenne and the A–X. There is a third, being actively promoted by the third service, a modern Harrier. Apparently at a point the Soviets establish a cutoff point and get production. Certainly no one would object to criticism of what happened in the sixty's relative to the TFX and the C–5A. Again, however, the last fighter we have had, supersonic fighter was in 1954.

We have had exactly nothing since. That is the point I was trying to make.

Senator YOUNG. You may proceed, Mr. Secretary.

IMPROVED INSTALLATIONS AND LOGISTICS

Secretary SEAMANS. The final items I want to discuss is that we need to implement installations and logistics policies that will permit us to support our operating air forces in the most efficient manner possible.

BUDGET REQUEST AND INFLATION

In carrying out each of these tasks we are stressing improved management of resources. Emphasis on economy is increasingly important at this time in view of budget trends. The Air Force fiscal year 1973 budget of $24.4 billion is actually about $900 million lower than the fiscal year 1972 budget when the effects of increased pay and price inflation are taken into account. The following table shows that our funding reached a peak in fiscal year 1968 but has fallen back well below the prewar fiscal year 1964 level when corrected for past inflation.

That can be seen in the table I at the bottom of the page.

(Table I follows:)

TABLE I.—AIR FORCE BUDGET

[In billions of dollars]

	Fiscal year—				
	1964	1968	1971	1972	1973
Current dollars	20.0	25.0	23.2	23.8	[1] 24.4
Constant fiscal year 1973 dollars	30.8	33.9	26.5	25.3	24.4

[1] Includes $400,000,000 for estimated fiscal year 1973 pay increases carried in DOD totals not distributed to Air Force appropriations.

Note: A breakdown of major budget categories for fiscal year 1971, 1972, and 1973 is contained in table II.

1971, 1972 AND 1973 AUTHORITY

Secretary SEAMANS. There is a breakout of authority in millions of dollars, broken up in the 3 fiscal years 1971, 1972, 1973. You will notice in this case that the sum requested for 1973 is $24,022 million, which is roughly $400 million less than shown in the previous page because on the previous page we are including the estimated pay increases which are carried in the DOD total which have not yet been distributed to the Air Force.

INFLATION COSTS: AIRCRAFT AND PERSONNEL

Senator YOUNG. Mr. Secretary, do you have year-by-year figures on the cost of inflation in the building of a fighter or bomber?

Secretary SEAMANS. In our estimate we describe certain percentages that we use in making our estimates. I think they run around 4 or 5 percent per year.

General Crow. In the order of 3 to 4 percent per year. Unfortunately, as we move up year-by-year inflation turns out to be a good deal higher.

Senator Young. Has the largest part of the increase been in salaries?

General Crow. The salary increases for both military and civilian and, for that matter, people who make the aircraft have greatly increased over the past few years.

Senator Young. The Defense budget was $78 billion last year. You are buying less for the same amount than a year ago?

General Crow. Yes. That shows up in the figures that the Secretary just pointed out, Senator Young.

Secretary Seamans. In current dollars, say in 1972 we had $23.8 billion but in constant 1973 dollars that comes to $25.3 billion. Rather than having an increase in 1973 there is a decrease in real buying power because of inflation.

Senator Young. I think this is something that we have not emphasized: 1973 costs are higher than the budget for 1972, but your purchasing power with that higher figure is less than the lower figure of a year ago. Is that correct?

Secretary Seamans. That is true.

TABLE II: RESERVE AND NATIONAL GUARD FORCES

I would like to stress one thing on this table II broken out by categories. That is the Reserve and Guard Forces.

(Table II follows:)

TABLE II.—TOTAL OBLIGATIONAL AUTHORITY

[Millions of current dollars]

	Fiscal year—		
	1971	1972	1973
Military personnel	$6,524	$7,028	$7,251
Reserve and Guard forces	588	687	763
Operations and maintenance	6,328	6,372	6,202
Aircraft procurement	3,590	3,197	2,613
Missile procurement	1,492	1,684	1,772
Other procurement	1,555	1,574	1,883
R.D.T. & E	2,827	2,960	3,193
Military construction	286	307	345
Total (TOA)	23,190	[1] 23,809	[2] 24,022

[1] Includes fiscal year 1972 supplemental.
[2] Does not include $400,000,000 for estimated fiscal year 1973 pay increases.

Although that is a relatively small amount compared to total, it is becoming increasingly important. We show an increase from $588 million in 1971 to $687 million in 1972 to $763 million in 1973. That is a 30-percent increase in 3 years, and in constant dollars it represents about a 20-percent increase.

Provision of Better Equipment for Reserve Forces

We are putting more emphasis on the Guard and Reserve.

Senator Young. You are providing them with better equipment.

Secretary Seamans. We are giving better equipment. So their operating costs are going up for that reason. This is what we want. We want to have them more capable.

Chairman ELLENDER. To what extent is this related to the all-volunteer force concept?

Secretary SEAMANS. It is to provide a total force capability that will satisfy our needs at the time that we are actually reducing our regular forces as we have been discussing here this morning.

Chairman ELLENDER. I had the impression that the idea was to enhance the capability of both the Reserve and the Guard, to offset a smaller regular force under the all-volunteer force concept.

Secretary SEAMANS. That is part of it. Our manpower will be coming down in part because of the difficulty of sustaining the present force unless we are willing to increase our pay and allowances and so on, to some unrealistic amount. We have to anticipate that our regular force will reduce in size.

RECRUITMENT OF PRIOR SERVICE PERSONNEL

Chairman ELLENDER. Is it your plan to include in the Reserve both prior and nonprior service personnel?

General RYAN. Mr. Chairman, we will recruit for the Reserve, and for the Guard nonprior service people. We will also try to get our prior service people, in other words, as people leave the regular establishment. We have a program where we talk to these people before they leave at the end of their 4-year term of service to recruit them for the Guard and for the Reserve.

Chairman ELLENDER. At one time the Reserves were described as a haven for draft dodgers.

General RYAN. At one time I think the charge probably could have been sustained, Mr. Chairman, that the Guard and Reserve did become a place for someone who didn't want to be drafted. It is somewhat like the Air Force which has been able to continue as a volunteer service, because many personnel preferred Air Force service rather than be drafted. On the whole, we have had, and I hope will continue to have, some real fine Reserve and Guard units. As you know, we took four units to Vietnam and they worked side by side with the regular forces. They were top outfits.

Chairman ELLENDER. I presume then you are going to recruit for your branch of service the best talent you can obtain.

General RYAN. We are.

Chairman ELLENDER. And not necessarily to give them a place where they can evade service in the Active Forces.

General RYAN. That is right.

Chairman ELLENDER. You may proceed, Mr. Secretary.

RECOMMENDED THOROUGH TRAINING OF PERSONNEL WHO MUST BE SUPPORTED WITH RETIRED PAY

Senator ALLOTT. Mr. Chairman, could I say something? I would hope that we could do one thing. I have known so many people in my lifetime who have been members of the Reserve units. I think our Air National Guard in Colorado has been a pretty good outfit over the years. I don't say it is always the first, but it has been one of the top outfits. However, in the Reserves I have seen so many people who over the years have just gone to a meeting once a week, and at the end of 20 years they secure retirement that costs this Government a tremen-

dous amount of money. The work they are actually doing in these Reserve units as a whole is minimal. I think it is time for us to really take a solid look at these units. If we are going to have people in the National Guard—I am not critical of our Air National Guard as I have seen it in my own State—I think the training should be realistic, I think it should be tough, because these people in the long run are going to be drawing pensions based on their Reserve duty and a lot of them literally are not worth the powder to blow them up.

Flying Missions

Secretary Seamans. I don't claim that we have a perfect setup in the Reserve and National Guard, but the Reserves are flying a large number of missions. We have set up associate groups that are flying various cargo planes, including C–141's to Europe and over to Southeast Asia and back. They are not just sitting around going to evening meetings.

Senator Allott. Mr. Secretary, what I said is probably unfair to say to you. I will say this because I know they have been flying from our area, and from Wyoming over to Vietnam. But I think that we as a committee ought to see that our Reserve and National Guard programs are greatly improved. I have already made the exception of the good work that the Air National Guard has done. It costs this country millions and millions and millions of dollars in retirement pay for people who just go to a meeting once a week and then, when they retire as lieutenant colonels and colonels after 20 years, draw their retirement.

Other Service Units

I have known some very conscientious people who went into the Reserve for every patriotic motive. I know one man who retired from the Naval Reserve. He said, "I am just tired of going out there and doing nothing." Probably my remarks would better be aimed at another group than the Air Guard and the Air Reserve which I think have done a good job.

But this money comes out of the taxpayers' pockets. Yet all these fellows do is to go to a humdrum meeting once a week and end with retirement at the end of their time. They are actually not serving the country or the military, either one.

Small Service at Great Cost

Chairman Ellender. The committee spent considerable time on this matter during its consideration of the fiscal year 1971 appropriation bill. At that time the Reserve components of all services were costing the taxpayers about $2.5 billion annually. For fiscal year 1973 the estimate is $4 billion. My concern was the fact that while we had a large and well-trained Reserve force we did not, with minor exceptions, use this force to meet the need for additional men for the Southeast Asia buildup. This was true, even though a large percentage of these individuals were non-prior-service personnel of draft age that were permitted to escape service in Southeast Asia. I do not think that was fair. Of course, Secretary Laird has made it clear that any increase required in the Active Forces in the future will be met by calling the Reserves to active duty.

MAINTENANCE OF FORCES FOR TIMES OF NEED AND RESERVE PERFORMANCES

Secretary SEAMANS. The policy on this is pretty clear. We basically have these forces for time of need, but in addition even in their Reserve status they have to be performing a useful function during that time that they are not on duty. We have tried to follow that policy. I don't say we have done that perfectly but that has been our objective.

ORGANIZED UNITS AND MOBILIZATION ASSIGNMENTS

Senator ALLOTT. General Ryan, you have had units from your part of the country flying cargo ships to South Vietnam since we became involved in that war.

General RYAN. That is right, sir. I recognize your criticism of the system. Those who are in organized units are really doing a fine job. We have a long way to go on those who hold mobilization assignments and are not in an organized Reserve unit.

Senator ALLOTT. That is the point of weakness.

General RYAN. In my opinion.

Senator ALLOTT. Not in the organized units but in mobilization.

General RYAN. That is correct. Our Air Force organized units by and large are kept busy and they are contributing a great deal.

Chairman ELLENDER. You may proceed.

ORGANIZATION AND PERSONNEL POLICY

Secretary SEAMANS. I want to outline our progress in streamlining our headquarters and discuss our need for adequate grade authorizations; then touch upon our personnel plan as a management tool and our related recruiting efforts; next cover some of our important human relations efforts; and lastly mention the increasing role of our Air Reserve and Guard forces. In each of these areas our primary goal is to further increase the effectiveness of our people.

HEADQUARTERS ORGANIZATION

Throughout the Air Force we have already completed or are now completing the broad Air Force initiatives undertaken in late 1970 to streamline our headquarters management structure. This effort entailed fundamental restructuring of each of our principal command and management echelons. Our intermediate headquarters are being realined to emphasize their operational mission, eliminating support staff functions wherever possible. While some degree of centralization at major command headquarters will result, the projected net savings should be approximately 1,800 manpower spaces. Our overall headquarters streamlining actions will produce dollar savings well in excess of the $5.6 million directed by the Congress last year.

TABLE III: PERSONNEL COST INCREASE

Table III shows that even with reduced personnel strength, personnel costs are increasing. The pay raises to achieve comparability with the private sector have greatly increased the cost of personnel during the past few years. As a result, our projected military end strength for

fiscal year 1973 is 21 percent below the 1968 level, but the estimated cost is 28 percent higher.

Then follows table III which we have already discussed.

(Table III follows:)

TABLE III.—MILITARY PERSONNEL STRENGTHS AND COSTS

	Fiscal year—				
	1964	1968	1971	1972	1973
End strengths (thousands)	856	905	755	730	717
Cost (millions of current dollars)	$4,423	$5,687	$6,524	$7,028	$7,251
CIVILIAN PERSONNEL STRENGTHS AND COSTS					
End strengths (thousands)	338	356	313	302	299
Cost (millions of current dollars)	$2,256	$2,667	$3,299	$3,514	$3,409

MILITARY PERSONNEL END STRENGTH

Secretary SEAMANS. We are requesting authorization for fiscal year 1973 end strength of 717,210 military personnel.

1972 PERCENTAGE COST INCREASE OVER 1964

Senator ALLOTT. Those two percentages you just gave us, Mr. Secretary—wouldn't it give us a better perspective of this whole situation if we took the year 1964, for example? It was contemplated, I think, that we will have not over 60,000 troops in Vietnam in July of this year. What would those figures be, roughly?

Secretary SEAMANS. We have them here on this table III. I gave the percentages for the peak year but it might be more representative as you say, to go with the year 1964, when we started to expand. We went from 856,000 military down to 717,000, a reduction of over 16 percent, 15 to 20 percent. At the same time the cost has gone from $4.4 billion up to $7.2 billion, an increase of about 65 percent.

General CROW. Looked at another way, if we set 1964 as an index of a hundred, the military pay index for 1972 would be 224.

Senator ALLOTT. 224 percent?

General CROW. No, sir. An index increase from 100 to 224—a 124-percent increase.

NONINCLUSION IN BUDGET REQUEST OF JANUARY 1973 PAY INCREASE

Chairman ELLENDER. Then your figures for 1973 have not included the proposed increase this coming January. I think there is one due in January, if I remember the law.

General CROW. There is one in January. It is not included in our appropriations.

Chairman ELLENDER. So that it will make the picture look much gloomier.

General CROW. That is correct. The Secretary pointed out there was some $400 million included in DOD totals that had not been distributed to our appropriations. That would make the $7.3 billion roughly $7.7 billion.

Secretary SEAMANS. I will proceed.

In addition to the numerical strength of our forces, we must maintain the high experience levels, technical competence, and military expertise of our Air Force people. To do this we need to obtain new grade legislation. The Grade Limitations Act of 1954 provided lower authorizations for the Air Force than for the other services, reflecting the fact that the Air Force was a younger service with lower experience levels. Congress has recognized the growing needs of the Air Force through the years by providing grade relief, which will expire this year. Without new legislation, during fiscal year 1973 we will have no promotions to major, lieutenant colonel, or colonel, and we would also have to demote, retire early, or voluntarily separate some 3,000 field grade officers whom we need.

Increases in the percentage of field grade officers during the 25-year history of the Air Force are directly related to greater responsibilities, more sophisticated weapons systems and difficult logistical support functions, and a need to provide promotion opportunity comparable to that of the other services. In view of the importance of national security tasks and decisions in terms of national resources expended, it is clear that we need highly qualified and experienced people to fulfill these responsibilities.

Our total field grade officer needs stem not only from the technological changes that have occurred in our mission, but from the requirement to provide unified direction of the Services through joint staffs, both in the Pentagon and in the field. And the Air Force provides officers for many responsible positions in international organizations, especially NATO which did not exist in 1947. At the present time we have a total of about 5,500 officers assigned to other than Air Force activities, with approximately 4,400 of them being field grade personnel. This represents over 10 percent of the total Air Force field grade authorizations.

I have attempted to characterize an Air Force that has matured significantly since the original officer grade legislation was passed. We have taken great care in the preparation of the requested new grade authorizations. The latter are based on our need for management skills and experience necessary to carry out the Air Force mission as well as providing our people with reasonable and predictable career opportunities.

(Table IV follows:)

TABLE IV.—AIR FORCE GENERAL AND FIELD GRADE OFFICERS

End fiscal year	Total officers	Percent of total Air Force personnel	Percent of officer strength			
			General	Colonel	Lieutenant colonel	Major
1947	42,745	14.0	0.5	3.7	6.4	13.2
1953	130,769	13.4	.3	3.3	6.4	15.9
1963	133,763	15.4	.3	4.0	11.0	17.9
1968	139,600	15.4	.3	4.8	12.1	21.5
1971	125,726	16.66	.3	5.0	12.3	19.9
1972	121,462	16.63	.3	5.2	12.5	19.4

AIR FORCE PERSONNEL PLAN

The need for responsive personnel management takes on ever-increasing importance as we move further toward a zero-draft environment. In this connection the Air Force has developed a comprehensive long-range plan as its principal management tool. Our personnel plan, developed with the extensive use of computer analysis and simulation over the past 4 years, includes both qualitative and quantitative objectives for each element of the force—officer, airman, civilian and reserve. This document constitutes a breakthrough in personnel management and gives us a basis for evaluating the effects of strength and policy changes on the total force long-range goals.

Our personnel managers can use this new management tool to help determine Air Force needs and assist the individual to more accurately plan his career. We are convinced that this capability, which General Ryan will discuss further, constitutes one of the most important steps toward achieving a truly all-volunteer force.

PAY INCREASES SINCE 1964

Chairman ELLENDER. Will you place in the record for us, if you don't have it now, what the total increase in pay was when we started this trend of increases? It was around 1965, wasn't it?

General CROW. Pay increases have been made every year. We use 1964 as a base point to measure. There was a pay increase of 10.4 percent in 1965, an increase of 3.2 percent in 1966, and 5.6 percent the next year. Then a large increase in 1971. So that over the total time period including the increase for 1973 and using 1964 as a base, there has been an index increase from 100 to 224.8.

Chairman ELLENDER. 125 percent?

General CROW. The index increase translated to percentage is 124.8 percent.

PRIVATE PAY INCREASE SINCE 1968

Chairman ELLENDER. Now let us take a private who enters the service, what was his pay in 1964?

General CROW. Let me shift that base, if I may, Senator, to 1968 because it has been since then that the larger increases have taken place. A private in 1968 with less than 2 years of service had $102 a month; in 1972 he will be getting $288 a month.

Chairman ELLENDER. You do not include the 1973 raise?

General CROW. No, sir.

(The information follows:)

TOTAL INCREASE IN PAY FROM THE START

INCREASES BY YEAR

Fiscal year:	*Total increase (percent)*
1965	2.3
1966	10.4
1967	3.2
1968	5.6
1969	6.9
1970	12.6
1970	8.1
1971	7.9
1972	*11.6
1972	7.2
1973 (estimated)	6.4

*Applicable only to lower grade officers and airmen under 2 years service.

ELIMINATION OF PATRIOTIC SERVICE

Chairman ELLENDER. They are making a profession out of it. You will have a great many people going into the service. President Nixon had in mind in suggesting these increases to make it so attractive so as to provide a volunteer army.

Senator ALLOTT. Mr. Chairman, I am partially responsible for this. I think it is the only way we can go. Frankly, I don't feel that we can ask people to serve our country, whether by draft or voluntarily, for less pay than they can get in private life. I don't see how we can do it.

Chairman ELLENDER. It takes all the patriotism out of it, I tell you that. It makes it a business.

Senator ALLOTT. We had 1,400 families last year in the military service drawing public welfare because their salaries didn't come up to the minimum. This was before the pay raise of last year. I think this is a deplorable situation.

Let me ask one question: General Crow, you read off this list of percentages, but those are compounded.

General CROW. That is correct, sir.

Senator ALLOTT. So that if a man draws $100 a month and he gets a pay raise of 5 percent, he then gets $105. Then if his pay is raised the next year 5 percent he gets 5 percent of $105. So the figures you read compound just like interest in a savings account.

General CROW. That is correct.

Senator YOUNG. What was the percentage increase for a private over a 2-year period?

General CROW. The period from 1968 to 1972 the salary increase went from $102.30 to $288. That is almost 200 percent.

Senator YOUNG. In 4 years?

General CROW. Yes, sir.

RECRUITMENT AND RETENTION

Secretary SEAMANS. I will continue, Mr. Chairman.

To successfully implement our planning, however, we must make the Air Force more attractive and thus improve our recruitment and retention. Among our important goals are better family housing and expansion of in-service education.

BETTER HOUSING

The provision of adequate housing for our families is a prime factor in attaining all-volunteer military forces. Unfortunately, families of approximately 70,000 lower grade personnel are not eligible for military housing under current rules. These young airmen are now getting married and having families at an earlier age than in the past. A large percentage of these families are unable to find adequate homes in local communities. In addition, we have a shortage of over 40,000 family housing units for eligible personnel. These combined shortages have a marked adverse effect on progress toward all-volunteer military forces.

In the last 6 years, we have programed only 11,310 new housing units. However, we are most pleased that Congress has set aside 3,450 units of Public Law 236 housing for our lower grade airmen. We also have 3,168 new family housing units in our fiscal year 1973 housing program which I will discuss later in the Installations and Logistics section of my statement.

Expanded In-Service Education

Next I would like to mention our education and training programs, which provide key incentives for service in the Air Force. Many thousands of our men and women have taken advantage of a wide range of off-duty educational programs to complete the requirements for high school or higher educational levels.

Moreover, our formal military training provides about 90 percent of our Air Force people with a skill which has direct civilian utility. For example, we are emphasizing the development of various paramedical capabilities to complement the unique skill of our doctors, and we hope that these skills also will prove valuable to the civilian community. To provide the individual airman with the full advantage of his training, we are seeking further affiliation of our technical schools with regional college and university accrediting associations.

Recruitment of Women

In our recruiting efforts, we also hope to bring more women into the Air Force. We have already made considerable progress, having more than doubled the number of Air Force women in the last 5 years, and we anticipate additional increases. The rank, responsibility, and assignment opportunities for women in noncombatant roles will be commensurate with that of our male personnel. Toward this objective we have opened the AFROTC program to women, and now have more than 900 women enrolled.

Human Relations Programs

Ultimately, proper treatment of each individual is the critical factor in both retention of good people and achieving effective job performance. We are trying to improve all facets of our human relations programs. Here are some of the things we are doing.

First, we are broadening communications within our Air Force units. We now have a social action office at base and major command levels, and at Headquarters U.S. Air Force. The social actions officer is directly responsible to the wing commander, who chairs a human relations council. Some commanders have telephone Hotlines to enable their men to get immediate response to problems. In addition, junior officer, noncommissioned officer, and airmen councils are becoming increasingly active with respect to many social action programs.

One of our most crucial goals is to achieve racial harmony. To reach this goal, we are relying heavily on effective leadership at all levels, backed up by strong education programs. But we know that we have more to do.

Racial Discrimination

Racial incidents have increased, and surveys indicate that some of our Air Force people believe racial discrimination is a serious problem in the Air Force. Young minority group members are becoming increasingly intolerant of what they perceive as racial injustice. We have established Air Force standards for command which emphasize the critical importance of sensitive leadership in improving race relations. And the performance of our commanders and supervisors will be

judged, in part, on how effectively they promote equal opportunity for all of their people. This includes not only recognizing such problems, but heading them off whenever possible.

An important part of our race relations program is the commissioning of additional black officers. At the present time our black officer strength is still less than 2 percent of our total officer force. Our objective is to increase the number of black officers in both our Active and Reserve forces. To help achieve this goal, we added three AFROTC detachments last year at predominantly black colleges, and we will add another this year, making a total of eight. Still, we need an across-the-board increase in the number of black and other minority group officers from our commissioning programs: the Air Force Academy, Air Force ROTC, Officer Training School, the airman commissioning program, and the bootstrap commissioning program. And we are emphasizing recruitment and individual personal contacts in minority groups.

Drug Abuse

Another human problem we share with our civilian society is drug abuse. The Air Force measured worldwide drug abuse rate is only about one-half of one percent as indicated by urinalysis testing for narcotics, barbiturates and amphetamines. We, nevertheless, recognize that any drug usage constitutes a serious matter. Therefore, we have taken a number of steps in accordance with Department of Defense and other administration efforts to deal with this social problem confronting our Nation.

Drug abuse committees have been established and drug abuse personnel at all levels are active in prevention and education programs. A five-phase rehabilitation program has recently been developed with a 1-year follow-on support phase subsequent to successful completion of the initial treatment and rehabilitation training.

Our human relations efforts are part of a long-term, continuing program to face our problems in a responsible manner. We recognize that a better Air Force must rely upon people who understand and respect each other—certainly all of our people have a key role to play in building a better Air Force.

Contribution to Domestic Improvement

The Air Force, along with other agencies in the Department of Defense, recognizes that a responsibility exists not only to perform our assigned military missions, but to contribute whenever we can to domestic improvement. This is a most exciting area and much could be included in my statement in this regard if the time permitted.

The Air Force is a large community with one half of 1 percent of the total U.S. population. We have within the Air Force all the aspirations and concerns of the country; the need to improve training, education, health service, housing, and to reduce air and water pollution. As a result, much of what we learn from our military programs is also useful in the civilian sector. Some domestic benefits result from exchange of information with other departments of government, some through our people as they leave military life, and other exchanges result from specific projects for which we may be reimbursed.

Domestic Action Programs

Our domestic action programs also contribute to a better society. In these we stress summer youth employment and recreation, as well as providing additional training for underskilled workers.

Most of these programs directly benefit our equal opportunity goals. Over 80 percent of the youths participating in our summer activities are from disadvantaged homes and our educational and vocational training is geared to improving minority skills in adjacent communities.

We believe that our Nation is stronger for these domestic contributions.

Air Reserve and National Guard

As my final item in the area of organization and personnel policy I want to emphasize the increasingly important role of our Air Guard and Reserve forces. The personnel plan which I discussed earlier integrates planning for these components with that for our active units under the total force concept.

Our objective is to improve manning for Reserve and Guard components in order for these units to be able to respond immediately and effectively. While our officer personnel strength is encouraging at this time, we must continue to particularly stress the recruitment of highly qualified enlisted personnel. We are now counseling all personnel, prior to their leaving the active forces, concerning their opportunities in the Air Force Reserve and National Guard.

We feel that we are making significant progress concerning both recruiting and equipment modernization. In fiscal year 1973, the Air Force Reserve will reach a strength level of 53 units, including 13 MAC and C–141 and one C–9 associate squadrons. We will activate three new Reserve units and convert 23 percent of the flying units to more modern aircraft.

With respect to the Air National Guard, the number of flying units will remain at 92. However, as a result of our upgrading programs, 60 percent of our Guard units will have converted to more modern aircraft by the end of fiscal year 1973. These steps will better enable the Guard and Reserve Components to serve as the primary source of any future rapid augmentation of the Active Forces, a key objective of the new strategy now being implemented.

WEAPONS PROCUREMENT

The Air Force is structuring its procurement and R. & D. efforts in a way that will provide steady modernization of its forces over the long run. Since we cannot be certain in advance about either exact military requirements or the feasibility of particular development programs, we must maintain flexibility in our planning. We are striving to achieve this sort of flexibility through prototype programs that will provide options that can be picked up in the future, if necessary.

Table V shows the full range of our programs from development prototypes through deployments that have already received necessary funding and will be completed this year. We believe we have a reasonable effort on both strategic and general purpose forces, as well as a suitable flow of new developments and deployments of the various types of systems.

(Table V follows:)

TABLE V.—SUMMARY OF MAJOR WEAPON SYSTEM PROGRAMS

Advanced prototype	In development		In production	Recently deployed or undergoing deployment		
Programs	Delivery systems	Sensing and control	Weapons	Delivery systems	Sensing	Weapons
Strategic	B–1	Airborne command post.	SRAM	MM III	Satellite	
	SCAD (decoy)	AWACS		FB–111		
General purpose: Lightweight fighter.	F–15		Maverick	Gunships		Laser guided and electro-optical guided bombs.
STOL transport	A–X			F–111 A–7 C–5		

STRATEGIC AND GENERAL PURPOSE PROGRAMS RANGES

Secretary SEAMANS. This chart summarizes what we are doing for strategic and general purpose forces. Proceeding from left to right we show our most advanced prototypes through development, production, and finally, those systems either recently deployed or undergoing development.

AIRCRAFT

You can see that we have in advanced prototype the lightweight fighter and advanced medium STOL transport for the general purpose forces. In development under strategic forces, we have the B–1 system and to go with it the SCAD and under general purpose forces the F–15 and the A–X.

SENSING AND CONTROL SYSTEMS

Under sensing and control, the Advanced Airborne Command Post. The Airborne Warning and Control System is important both for strategic and for general purpose application. New weapons that are in production are SRAM for strategic purposes, and Maverick for general purpose.

DELIVERY SYSTEMS

Under delivery systems we are putting in Minuteman III at this time. We have some 160, I believe, already deployed. We have deployed the four squadrons of FB–111's. Under general purposes forces, we have new gunships in Southeast Asia, and have received about half of the F–111's, the A–7 and the C–5. We have 41 operational C–5's at this time. The Satellite—in order to keep this unclassified I didn't say any more than that—this is for early warning, the Satellite.

ELECTRO OPTICAL AND LASER GUIDED

Finally, under weapons we have the new type electro optical and laser guided bombs. This is the summary of the items I will be discussing under procurement and research and development.

Chairman ELLENDER. Are you going to discuss the B–1 further?

Secretary SEAMANS. Yes, I am.

Chairman ELLENDER. What about the C–5?

Secretary SEAMANS. I will discuss that as well.

AIRBORNE COMMAND POST AIRCRAFT

Senator YOUNG. How many planes are involved in the Airborne Command Post?

Senator SEAMANS. In this particular budget with our fiscal year 1972 supplemental and with the 1973 budget we are requesting six of the seven that we require. There are four in the 1972 supplemental, two in the fiscal year 1973 budget. These are 747's—we believe they are necessary for the replacement of the EC–135-type aircraft.

Senator YOUNG. Are these special order 747's, or do you modify them after you procure them?

Secretary SEAMANS. We will modify them. The first three we want to take and either have Boeing modify or modify ourselves with existing equipment. We will use the fourth one for prototyping. Then the final three will be operational. Then we will retrofit the first three.

General RYAN. The modification is to the interior. The airframe and engines are the same.

AIRCRAFT PROCUREMENT

Secretary SEAMANS. We are asking for a total buy of 251 aircraft, of which only 73 are for the U.S. Air Force—we are buying one small trainer for Laos, 57 F–5E's for South Vietnam, and 120 helicopters for the U.S. Army as replacements for those turned over to the Vietnamese Air Force. These 73 aircraft for the U.S. Air Force include limited numbers of the F–15's and AWACS, which I will discuss in conjunction with our R. & D. programs.

TABLE VI: MAJOR AIRCRAFT PROGRAMS

I will now review the status of the following procurement programs: the F–111, C–5, F–5E International Fighter, and the Advanced Airborne Command Post. Table VI outlines the major aircraft programs.

(Table VI follows:)

TABLE VI.—AIRCRAFT PROCUREMENT

[Dollar amounts in millions]

	Number of aircraft	Fiscal year 1971	Number of aircraft	Fiscal year 1972	Number of aircraft	Fiscal year 1973
A–7D	88	$240.3	97	$209.5	.....	.....
F–111A/D/E/F	12	596.8	12	481.3	12	$160.3
F–5E	.....	8.8	21	70.4	57	92.7
F–15	.....	.....	.....	.....	30	421.6
C–5	.....	544.4	.....	299.1	.....	207.6
AWACS	.....	.....	.....	.....	3	309.9
Advance airborne command post	.....	.....	4	113.8	2	103.8
Other tactical aircraft	155	177.6	60	218.1	.....	.....
Miscellaneous Support aircraft	69	74.5	11	53.1	27	73.5
Helicopters	300	71.8	.....	.....	120	35.9
Modifications	.....	538.0	.....	563.7	.....	465.6
Spares/parts	.....	494.4	.....	397.9	.....	504.1
Support	.....	842.9	.....	789.6	.....	237.7
Total (TOA)	624	3,589.5	205	3,196.5	251	2,612.7
Aircraft for allies/U.S. Army	475	.....	24	.....	178	.....
Aircraft for U.S. Air Force	149	.....	181	.....	73	.....

[1] Includes fiscal year 1972 supplemental.

C–5A Aircraft

Chairman Ellender. For the C–5A, you request $207.6 million. What is this for?

Secretary Seamans. That is to finish the work at Lockheed principally, but some of the funds are to finish the engine program at General Electric. The plan is to buy out the whole program with this $207 million. As a matter of fact, after the planes are complete, then the Lockheed Co. will owe the U.S. Government in the order of a hundred million dollars. But we have to finance them first and then get them to pay back a hundred million dollars.

They have already put a little over a hundred million dollars in it. This comes out with a net loss to Lockheed of $224 million, which is the settlement that Mr. Packard reached with them when we renegotiated the contract.

Chairman Ellender. You say that this money then will not obtain any more planes?

Secretary Seamans. No. The total number in this program is 81.

Chairman Ellender. They have not all been delivered?

Secretary Seamans. They have not all been delivered; 55 have been delivered so far.

Chairman Ellender. Then how much more will it cost to acquire the group of 81?

Secretary Seamans. That is the sum you see here; $207.6 million is the amount required to get the full 81.

Chairman Ellender. You say some of this will be paid back by Lockheed. They will spend the money, then deliver the planes, and then owe the Government a hundred million dollars?

Secretary Seamans. They will end up owing us a hundred twenty-four million dollars to be paid back.

Lieutenant General Crow. Over 10 years.

Chairman Ellender. Is there any interest attached to that?

Lieutenant General Crow. Yes, sir.

Secretary Seamans. Whatever the going rate is at the time.

F–111 Aircraft

Senator Allott. Mr. Chairman, before we leave this particular item, could I ask a question?

Chairman Ellender. Senator Allott.

Senator Allott. Will you explain the F–111 and the $160.3 million request? Does that wind up the procurement on the F–111?

Secretary Seamans. Our plan is that this will be the final buy of F–111's. These are F–111F's, as were the fiscal year 1971 and fiscal year 1972 buys. That gives us, I believe, a full wing of 96 of the F–111F's which will buy out the F–111.

Sale to Australia

Senator Young. What about this matter in which we sold F–111's to Australia?

Secretary Seamans. The Australians will get 24 F–111C's. We have been going through a series of analyses, reviews, tests, and negotiations with the Australians. They have within the last several months

agreed to go ahead and have us make certain modifications to the aircraft, and on that basis they will accept them.

Senataor YOUNG. They are going to accept them?

Secretary SEAMANS. They will accept the 24 F–111C's.

AIRCRAFT MODIFICATIONS

Chairman ELLENDER. On "Modifications," I notice you have an item of $465.6 million. Will that amount of money be spent to put modifications on existing planes?

Secretary SEAMANS. That is right, for that purpose.

Chairman ELLENDER. Give two or three examples.

Secretary SEAMANS. These are modifications we will make for the SRAM missile and ECM, to the B–52 and FB–111. Also visual sensor capabilities for the B–52—a whole series of modification to our aircraft, Mr. Chairman.

Chairman ELLENDER. Why is it necessary to modify the B–52's?

General RYAN. Regarding B–52's, the opposing capability that we would have to deal with requires a countercapability aboard our aircraft. For example, we are updating our B–52's by incorporating forward-looking infrared and low light level television. We are putting in new ECM gear.

Chairman ELLENDER. Are those on B–52's that are now in the service?

General RYAN. Yes, sir. They are the G and the H models.

Chairman ELLENDER. How old are the B–52's?

General RYAN. The last 52 was built in 1962, Mr. Chairman.

AIRCRAFT SPARES: INITIAL AND REPLENISHMENT

Chairman ELLENDER. In regard to spares, $504 million is also to be used in existing planes?

General RYAN. That is right.

Chairman ELLENDER. Planes that you have had in use over the years.

General RYAN. That is correct.

General CROW. Actually, it breaks down into two parts. One part is for initial spares for new airplanes that are being bought this year. Of the $504 million, $106.3 million is for that purpose. Most of it, $397.8 million, is to replenish the spares for aircraft that are in the inventory.

Chairman ELLENDER. Those spares are in addition to those that came with the airplane?

General CROW. That is correct. That is our normal procedure.

DISPOSITION OF EXCESS SPARES

Chairman ELLENDER. Do you actually use all of the spares that come with the planes you buy?

General CROW. No, sir. We make some mistakes and sometimes we buy too much of a given item. We try to watch that very closely. Our procedure is that with the initial procurement of the aircraft, we also buy what we describe as initial spares. Then we buy

replenishment spares to replace those as they are worn out and replace components of the initial spares themselves.

Chairman ELLENDER. What do you do with the spares you don't use?

General CROW. They are salvaged.

Chairman ELLENDER. How?

General CROW. Either sold if there is a market for them, or disposed of otherwise.

Chairman ELLENDER. As junk?

General CROW. Yes, sir.

Secretary SEAMANS. The only ones that really aren't used are those where we made a modification to the airplane during development or in the early production process, so that we no longer have those parts in the airplane. The other spare parts will be used over a period of time.

Chairman ELLENDER. I was asking a general question as to what you did with the spares you didn't use. You reply that those you initially get with the plane as well as those you buy later——

Secretary SEAMANS. Wherever we possibly can, we will use the spares.

Chairman ELLENDER. General Crow stated you make mistakes sometimes.

Secretary SEAMANS. We do.

Chairman ELLENDER. I am sure on many occasions you bought much more than you needed.

Secretary SEAMANS. The general trend is that we don't have enough spares when we put a new plane in the service. It is hard to anticipate exactly what will be the troublesome pieces of equipment. We oftentimes find we have a C–5 or an F–111 that we have to do a little cannibalizing between airplanes to keep them flying. Once we are using the airplanes, having them in operation, we keep careful statistical records of the life of each component and only buy what we need in the ensuing years.

Chairman ELLENDER. That is the practice you follow now?

Secretary SEAMANS. That is the practice we follow.

AIRBORNE COMMAND POST AIRCRAFT: POSSIBLE UTILIZATION OF C–5 IN LIEU OF 747

Senator YOUNG. Could you use the C–5A's for the Airborne Command Post rather than 747's?

Secretary SEAMANS. The C–5 is a large airplane and in that sense it could be used. We feel that the number we are buying are required for strategic airlift. For the AABNCP, we think it is better to go to the 747 than to buy additional C–5's which have a lot of features that are not needed in the AABNCP Post.

COST VARIANCE

Senator YOUNG. What is the difference in the cost?

General RYAN. Around $25 million plus or minus for a 747, and I would say our C–5's are probably costing us——

General CROW. On a comparable basis, 35 or 36.

Secretary SEAMANS. About $12 million more on a comparable basis.

C–5 Aircraft Procurement and in Service

Chairman Ellender. How many C–5's have you actually received?
Secretary Seamans. Fifty-five.
Chairman Ellender. How many of those are in operation?
Secretary Seamans. Forty-one.

Testing and Modifications

Chairman Ellender. What has become of the others?
Secretary Seamans. There are some that are being used for test purposes. Some are being used for training. There are a few that are being modified—we had a problem with the engine pylon. We are still making modifications to them. Then we have lost two.
Chairman Ellender. At whose expense are these modifications made?
Secretary Seamans. At the Government's expense.
Chairman Ellender. What was the reason for the modification?
Secretary Seamans. In some cases, for example, the pylon failure, which was a structural question, we are still reviewing whether the company should pay some of the cost or not. It is a question of whether they were inspecting the parts properly.

Outstanding and Total Costs

Chairman Ellender. The sum of $207.6 million will be the total cost of the Government of the remaining planes to be delivered?
Secretary Seamans. Yes.
Chairman Ellender. Which will provide a total of 81 altogether?
Secretary Seamans. That is correct.
Chairman Ellender. Have you figures to indicate the total cost of these 81 planes?
Secretary Seamans. Yes, I have it right here. The total Air Force outlay for the program, $4.540 billion with $100 million to he repaid to the Government.
Chairman Ellender. Does that include the $207 which you are now asking for?
Secretary Seamans. Yes, it does.
Chairman Ellender. Proceed.

Requirement for 747 Aircraft in Lieu of 707 Aircraft

Senator Allott. Mr. Chairman, I have one question.
Why a 747? Can't a 707 carry everything you need?
Secretary Seamans. We would welcome taking a member of this committee up in the present aircraft that are on alert out at Andrews Air Force Base. I went up last week, myself. Even with the present equipment, which is insufficient for what is needed in the future, those planes are very, very crowded. We must have additional equipment and also to be really useable in time of emergency we have to have more people aboard that you cannot now take on those aircraft. They are crowded when you get aboard and see the whole thing in operation.
Senaor Allott. Are we talking about Airborne Command Posts or are we talking about planes for present use?

Secretary SEAMANS. The same thing. The Advanced Airborne Command Post is for the National Command Authorities. In an emergency, [deleted.]

Senator ALLOTT. I was thinking in terms of another purpose. What about the planes, for example, that you are using at Omaha?

Secretary SEAMANS. We will also replace those planes with 747's. These seven aircraft will replace those EC–135 aircraft as well as the three aircraft that are at Andrews. They will end up as identical aircraft at both places.

Senator ALLOTT. How about the loiter time of your Omaha planes?

Secretary SEAMANS. Eight and a half hour sorties. The 747's are capable of upwards of 12 to 16 hours.

Senator ALLOTT. You have at least a third more time.

Secretary SEAMANS. That is right.

CONVERSION OF 707 AIRCRAFT TO TANKERS

Senator YOUNG. What will we do with the EC–135's?

General RYAN. Probably convert them back to tankers which they were in the beginning, Senator.

C–5 AIRCRAFT MODIFICATION

Chairman ELLENDER. One more question about the C–5's. I understand that a good deal of the modifications that you are going to make on those pertain to the wing structure which is weak.

General RYAN. Yes.

Chairman ELLENDER. Are you improving the strength of these wing structures for the rest of those you are now obtaining?

Secretary SEAMANS. Those wings are pretty much constructed at this time. Our thought is that we will probably make modifications to them after they are installed.

Chairman ELLENDER. Soon after they are installed?

Secretary SEAMANS. I will ask General Glasser to answer.

General GLASSER. That will occur at the first time they go back through the periodic overhauls and repairs. Then we will make these modifications. Some of them are being incorporated during the production line but others will not be.

PROGRAM COST

Chairman ELLENDER. That would be an additional cost to the C–5A, would it not?

General GLASSER. It is a very modest cost when you do it in connection with one of these overhauls.

Chairman ELLENDER. Can you give us an estimate of what that modest cost will be to provide all the modifications necessary?

General RYAN. Mr. Chairman, I do not believe we are in a position today to tell you what those costs will be exactly, because we are running through our fatigue cycles right now to determine what do we need to do to this wing in order to get the life out of it that we think is required. Now this airplane as it comes out is safe to fly at least until the time it gets to 1,500 hours, which looks like a pretty good figure right now, before we will have to modify them.

Chairman ELLENDER. In other words, defects occur.

General GLASSER. Exactly. After you have flown it for a while, you have to go back in and fix it up.

Chairman ELLENDER. Have you modified any yet?

General GLASSER. We have done some small modifications. The larger modifications have not been accomplished as yet.

Chairman ELLENDER. You have no idea what that will cost?

General GLASSER. An idea perhaps but not specific, Mr. Chairman.

AIRCRAFT LIFE EXPECTANCY

Secretary SEAMANS. What we are really talking about is the life expectancy of the airplane.

Chairman ELLENDER. What is the life expectancy?

Secretary SEAMANS. The life expectancy that we wanted is 30,000 hours.

Chairman ELLENDER. That will be how many years?

Secretary SEAMANS. It is difficult to say. We are not getting planned life expectancy today. We are getting life expectancy on the order of 7,000 hours. That is our estimate on the basis of the tests that we have run. So we want to extend the life of the aircraft. We are doing a number of things.

MORE CAREFUL UTILIZATION

One, we are flying the aircraft more carefully than we were. The worst thing you can do to an airplane is to take off with a full load of fuel and land it after a couple of hours with a lot of fuel still aboard. We were doing that in training. We are not doing that any more. It overstresses the wing.

Chairman ELLENDER. What do you do, supply less fuel?

Secretary SEAMANS. You just don't fuel it as much. Precautions of that sort are being used to stretch the life of each airplane.

STRUCTURE REVIEW

Also we have established a review group of around 120 people, including both our own Air Force people, people drawn from universities, from Lockheed and other companies, to look at the total structure of the airplane with an objective of trying to come up with recommendations for modifications?

RE-RIG OF AILERONS

The third thing that we are doing is to re-rig the ailerons of the airplane so that more of the aerodynamic load is carried closer to the fuselage and less out in the wing tip which again tends to minimize the flexing of the wing and stretches the life of the aircraft. We are doing a variety of things. We believe when we finish we will have a life expectancy that will be up above 20,000 hours, but may never reach the 30,000-hour mark

Chairman ELLENDER. This 30,000-hour mark was what you contracted for?

Secretary SEAMANS. That is what we had in the specification as a requirement when we started the program. What it means is that if we will have these airplanes ready to fly their primary strategic

airlift missions we must hold back on the number of hours they are flown. Still, if they are needed, they will do the job originally prescribed for them.

Chairman ELLENDER. You have no idea what those modifications will cost?

General RYAN. I couldn't give you a good estimate at this time.

Senator YOUNG. Mr. Chairman, I wonder if I could ask a question off the record.

(Discussion off the record.)

Chairman ELLENDER. As I understand, when you contracted for the C–5A you expected a life of 30,000 hours.

Secretary SEAMANS. That is correct.

Chairman ELLENDER. But you got only 7,000 hours.

Secretary SEAMANS. We will get more than seven.

Chairman ELLENDER. What is the minimum you expect?

Secretary SEAMANS. I expect we will get over 20,000.

Chairman ELLENDER. But you have to modify them?

Secretary SEAMANS. Yes, with all the steps I am describing.

Chairman ELLENDER. But the planes as delivered to you by Lockheed had a life expectancy of 7,000 hours.

Secretary SEAMANS. Right, with no modification.

Chairman ELLENDER. And all modifications necessary to make the planes operational for the 20,000 hours which you say will be the maximum will be done at Government expense?

Secretary SEAMANS. That is right.

LATER REPORT OF COST

Chairman ELLENDER. I wish you would keep account of that and the next time you come here, I would like to know what it will cost. This has been a very contentious bargaining matter that was presented to us between the Government and Lockheed. Every now and then we find that there is more Government cost added to it. These modifications which will give a life expectancy of 20,000 hours from the 7,000 you are obtaining after the plane is delivered may cost a large sum of money. I would like to have a true picture of it, if you can provide it, the next time you testify.

Secretary SEAMANS. All right, we will.

Chairman ELLENDER. You may proceed.

F/FB–111 AIRCRAFT

Secretary SEAMANS. Despite past problems with the F–111, our rapidly accumulating operational experience is proving this aircraft to be a very important addition to our force. We now have over 145,000 flight hours on the aircraft and are quite satisfied with the capabilities being demonstrated by our operational units. All F–111E's have been delivered and the F–111E wing at Upper Heyford, England, is now operationally ready and supporting our NATO commitment. All of the F–111A's and FB–111's have been delivered and are combat ready. The special structural coldproof load test program has been completed for all deployed F–111's and has been integrated into the remainder of the production program.

F-111F

The F–111F is the last of the series. The 12 aircraft which were added to the contract in November 1971, will be delivered by December 1973. The fiscal year 1973 budget request includes $160.3 million for 12 additional F–111F's and $5 million to complete category I and II flight tests.

SALE OF F–111C TO AUSTRALIA

I would like to add that the Government of Australia announced in December that they will accept delivery in 1973 of the 24 F–111C's built for them.

F–111D MARK II AVIONICS

Last year I addressed the difficulties in developing the Mark II avionics system for the F–111D. Five F–111D's with the Mark II have now been delivered to operational units at Cannon AFB, N. Mex. We have relaxed specifications for some of the less critical backup modes of operation, but flight tests show that its present performance provides a greatly improved capability for tactical missions. Our problem is to keep the procurement cost of this system from increasing still further, and to improve reliability in order to reduce maintenance costs.

The Mark II has a better capability for detecting small tactical targets, is effective against moving targets, and reduces navigation error by one-half. Also the advanced cockpit display simplifies crew tasks.

F–111F

Chairman ELLENDER. The sum of $160.3 million you just referred to on page 25 will pay for the delivery of 12 additional planes?

Secretary SEAMANS. That is correct.

Chairman ELLENDER. The clerk of the committee states that you have already requested a reprograming of $20 million more which will make this $180 million.

Secretary SEAMANS. That includes also some spare parts.

General CROW. The $20 million reprograming is a 1972 cost. It is long-lead money required to procure aircraft in 1973.

Chairman ELLENDER. I notice in 1971 you have the number 12 in front of the $596.8 million. Is that the cost of those 12?

Secretary SEAMANS. That is paying not only for those 12, but for additional aircraft that were authorized where we have had an overrun in cost.

Chairman ELLENDER. For fiscal year 1972, I notice you also have 12 in front of the figure $481.3 million.

Secretary SEAMANS. $112 million I believe is the fiscal year 1972 cost of the 12. The rest is for over target costs.

1973 PURCHASE

Chairman ELLENDER. For the 12 you are now requesting $160.3 million plus the $20 million for reprograming; that makes $180.3 million for the 12. Is that right?

General CROW. That is correct, sir. However, this $180 million includes supporting equipment. It is not just the direct cost of the aircraft.

Chairman ELLENDER. Is that over and above your contract?

General CROW. This is in addition to the prior contract; yes, sir. We plan new contracts for these twelve.

Chairman ELLENDER. Are you going to order any more of these, or does this complete your contract?

Secretary SEAMANS. There is an amendment to the existing contract to buy 12 in 1972. The 12 in 1973 will be a new contract.

Chairman ELLENDER. You mean the 12?

Secretary SEAMANS. This number of 12. We had not last year contracted for this 12. This is a new buy of 12 additional aircraft. We will negotiate with General Dynamics for that number.

Chairman ELLENDER. Was the price fixed at $180 million?

General GLASSER. If I may clarify this.

The $180.4 million you are describing is the total cost which is in the budget counting the $20.1 million from fiscal year 1972 funds. Within that then this is $9.5 million worth of pecular ground equipment that goes with these aircraft, $4.6 million in missionized equipment and $8.9 million worth of additional spares that were not included in the fiscal year 1972 buy.

AGGREGATE AND INDUSTRIAL AIRCRAFT COSTS

If you subtract those out of the aggregate, and subtract $22.2 million in assets which were available in fiscal year 1972 and applied to the cost of the 1972 aircraft you get about $135.2 million as the cost of the 12 aircraft, comparable to the FY 1972 budget. At this time, that is the estimated cost. The negotiation for these aircraft has, of course, not been undertaken because these are in the fiscal year 1973 program.

Secretary SEAMANS. If you look at the total cost of the program, Mr. Chairman——

Chairman ELLENDER. What is the total cost?

Secretary SEAMANS. The total program acquisition cost is $6.9 billion.

Chairman ELLENDER. How many planes do you get for that?

Secretary SEAMANS. That is 466. You divide one by the other, including everything, including development, the total program acquisition cost comes out to be $14.9 million per plane. If you leave out the development, military construction and spares, then it comes to $10.6 million.

Chairman ELLENDER. That is only part of the cost.

Secretary SEAMANS. Certainly.

AUTHORIZATION REQUISITE

Chairman ELLENDER. Did I understand you to say you are going to contract for more?

Secretary SEAMANS. We don't go out and contract for these 12 until we get an authorization to do so. We are requesting an authorization and appropriation for these additional 12 aircraft.

Chairman ELLENDER. As I understand, you are not certain that you will be able to get these for $140 million.

General GLASSER. I am certain that we will be able to get them for those funds. It could even be slightly lower than that but it is within that range right now.

AIRCRAFT MISSION

Senator ALLOTT. Mr. Chairman, may I ask a question?

Chairman ELLENDER. Surely.

Senator ALLOTT. What is the mission of the F–111 now? We have had so many conflicting stories over the year.

General RYAN. The F–111 is an all-weather interdiction aircraft, Senator. It is the finest one in existence today. It is not an air-to-air fighter. Not that you could not use it for such but it does not have the air-to-air characteristics that are considered optimum.

Senator ALLOTT. What is included in the term "interdiction?"

General RYAN. This is for any type target to hit at night or in bad weather using sensor units on the aircraft.

Senator ALLOTT. For bombing?

General RYAN. Bombing.

AIRCRAFT BOMB LOAD AND RANGE

Senator ALLOTT. What is the bomb load?

General RYAN. It will vary with range. I would say on a normal mission 12 750-pound bombs. It can carry much more than that. That was the bomb load that we put on the F–111 the short time we had it in Southeast Asia.

Senator YOUNG. What is the range?

General RYAN. A radius of action of about 350 miles.

Senator YOUNG. If you put on fewer bombs, what would be the range?

General RYAN. The aircraft, itself, with an internal bomb load, let us say with nuclear weapons internally, you are out in the 2,600-mile range.

Secretary SEAMANS. When we flew the airplanes from Pease Air Force Base to RAF Upper Heyford, England, they went over there without refueling.

Senator ALLOTT. That is not 2,600-mile radius. That is range.

General RYAN. Range.

General BOYLAN. Maximum bomb load without tanks would be on the order of 19,000 pounds.

Chairman ELLENDER. To round out the facts about the planes, General Glasser, you said that the average cost would be $14.9 million apiece.

General GLASSER. That is the program cost; yes, sir.

CONTRACT AND ULTIMATE AIRCRAFT COSTS

Chairman ELLENDER. But the cost that they agreed to when the contract was entered, as I remember, was $3 to $4 milllion.

General GLASSER. That is correct. That is the flyaway cost.

Chairman ELLENDER. It was $3 to $4 million. So that is quite a difference.

Secretary SEAMANS. The flyaway cost of the plane is $9.4 million.

General GLASSER. Another point is that we contemplated producing a thousand aircraft at that time. When you have several thousand aircraft, the effect of the development cost and the other fixed charges go way down.

Chairman ELLENDER. Is that what made the price go up?

General GLASSER. That plus a lot of difficulties that were encountered with the airplane that we have now resolved.

Secretary SEAMANS. We had some very difficult technical problems, no question about that, structural and electronic.

General GLASSER. The aircraft are much more capable than the F–111A that you are quoting at that price.

General CROW. Plus inflation, which no one would have believed had we projected what has occurred at the time the contract was originally established.

Chairman ELLENDER. Will you change your methods, so that such a situation will not recur?

Secretary SEAMANS. I believe by prototyping, which we have described, we will have a much better fix on the production cost before we go into production. That is our intention on all our developments from now on.

Chairman ELLENDER. I hope you do a better job.

Proceed.

C–5 HEAVY LOGISTICS TRANSPORT

Secretary SEAMANS. We have doubled the C–5 force during the past year, with 41 aircraft now operating on trans-Atlantic and trans-Pacific missions. Additionally, six are allocated for initial training of aircrews, and six are in test status. With the C–5 we have the capability to airlift a mechanized or armored division overseas with virtually all of its heavy equipment in a ready-to-go condition. The C–5's, C–141's and the Civil Reserve Air Fleet provide us with the ability to rapidly deploy a balanced force to any portion of the globe.

EXECUTION OF NEW CONTRACT

Last year we executed a new contractual arrangement with Lockheed under which they accepted a $200 million fixed loss. This agreement eliminated litigation then outstanding between Lockheed and the Government and provided a workable basis for management of the C–5 contract by the Air Force.

CONSIDERATIONS FOR EXTENDING LIFE OF AIRCRAFT

Remaining problems are chiefly related to the static strength and fatigue life of the aircraft. The possibility of installing a new wing to increase static strength was rejected because of the cost involved. Alternatives such as special flight management, including reduced load factors and payloads; design changes; and incorporating a lift distribution control system are being examined as means of extending the operational life of the C–5.

As a result of the C–5's structural problems, we have established a review team to conduct an in-depth assessment of the entire airplane structure. This effort should require 1 year to complete, but it should provide us with a clearer indication of the structural life expectancy of the aircraft, identify the most cost effective approach to future modification efforts and indicate operational procedures to conserve the life of the aircraft.

In view of these structural problems, as well as the reduced airlift requirements for Southeast Asia, we are not operating the C–5 at ini-

tially programed rates. However, the C–5 is capable of meeting its primary purpose which is wartime strategic airlift. And the peacetime use of these aircraft will be suitable to maintain combat readiness, while conserving their operational life.

FUNDING REQUISITE

We are requesting $207.6 million in fiscal year 1973 to cover prior year unfunded deficiencies. It is our intention to buy out the program with this amount.

F–5E INTERNATIONAL FIGHTER

The F–5E international fighter is designed to support the aims of the Nixon doctrine in assisting our allies to shoulder more of their own defense. The F–5E will be used initially to improve the capabilities of South Vietnam as part of the Vietnamization program. We are expediting procurement of this aircraft to provide an early air defense capability for the South Vietnamese.

The International Fighter is of simple design and will be easy to maintain. It is an outgrowth of the older twin jet Northrop F–5. Its primary role will be to provide an air superiority capability for our allies but it will have a secondary role of ground support.

FUNDING REQUISITE

We are requesting $92.7 million for procurement of 57 aircraft plus an additional $7.9 million for spares, and $17.7 million for development.

ADVANCED AIRBORNE COMMAND POST: 747 AIRCRAFT

Our fiscal year 1973 budget request also includes funds for procurement of a new Advanced Airborne Command Post to be used by the National Military Command System and the Strategic Air Command. The present EC–135's do not have the growth potential to accommodate improved communications and data processing equipment, and the needed battlestaff. General Ryan will discuss this subject in more detail.

1972 FUNDING

The fiscal year 1972 supplemental request includes $113.8 million for four 747 aircraft, plus $6 million for R. & D. One of these aircraft will be used as a test bed, and the other three will be equipped initially with the EC–135 communication and command and control package and will be deployed in 1973. This is an interim measure to improve the National Military Command System capabilities.

1973 PROCUREMENT AND RESEARCH AND DEVELOPMENT FUNDING

We are asking $103.8 million in fiscal year 1973 for the procurement of two advanced aircraft, and $26 million for research and development. Our R. & D. efforts will be directed primarily toward initiation of designs for the command and control equipment and airframe modification. The total program includes seven aircraft which will be fully deployed during 1975.

FACILITY TO TEST ELECTROMAGNETIC PULSE (EMP) EFFECTS ON AIRCRAFT SYSTEMS

In a related program we must develop a facility to test electromagnetic pulse (EMP) effects on aircraft systems. These are effects which could result from a nuclear explosion. The fiscal year 1972 supplemental contains $9 million for the facilities and for determining EMP hardness design criteria. There is an additional $10.5 million in the fiscal year 1973 R. & D. budget request. This capability will enable us to test the Airborne Command Post and other strategic systems to insure that they could function properly in a nuclear environment.

MISSILE PROCUREMENT

Our missile procurement request is summarized in table VII. Minuteman III is our largest missile procurement program. With the Mark 12 multiple reentry system, a single Minuteman III missile could attack more than one target, with a major improvement in penetration capability. This strengthens our deterrence by complicating enemy defenses and insuring our chances of having a credible retaliatory capability in the event of an attack against our strategic forces. Over half of our ICBM's will be Minuteman III's by the mid-1970's with the remaining being improved Minuteman II's and a small number of Titan II's.

TABLE VII: PROCUREMENT AND MODERNIZATION COSTS

On page 32 there is a breakout in table VII on missile procurement showing various amounts for Minuteman III procurement and modernization as well as other missiles, Shrike, Maverick, Sram, Sparrow, Sidewinder, target drones, as well as modifications, spares, and parts, and other support. You can see there is a slight increase in missile procurement from 1972 to 1973.

(Table VII follows:)

TABLE VII.—MISSILE PROCUREMENT

[In millions of dollars]

	Fiscal years		
	1971	1972	1973
Minuteman III procurement	497.8	471.1	419.3
MM force modernization	84.8	270.0	273.6
Shrike	9.7	12.1	10.8
Maverick	3.1	77.9	61.2
SRAM	112.9	222.0	202.5
Sparrow			19.5
Sidewinder			14.3
Target drones	11.0	7.5	7.7
Modifications	100.7	53.8	43.9
Spares and parts	47.7	43.6	46.7
Other support	624.4	525.7	672.8
Total (TOA)	1,492.1	1,683.7	1,772.3

MINUTEMAN III

Secretary SEAMANS. The first wing of Minuteman III missiles was turned over to the Strategic Air Command last December,

some seven weeks ahead of schedule, and with a projected savings to the Air Force of about $4 million.

We are requesting $419.3 million for Minuteman III procurement and we are also asking $273.6 million to continue the Minuteman force modernization program. This includes modifying the Minuteman I solos to accommodate Minuteman II and III missiles and improving the prelaunch survivability of the entire Minuteman force.

Short Range Attack Missile (SRAM)

Turning to nuclear missiles for our strategic aircraft, we are programing the Short Range Attack Missile (SRAM) for the B–52 and FB–111. And, if we decide to produce the B–1, it will also use the SRAM. This air-to-ground missile is designed to suppress enemy defenses as well as attack primary targets. It is a small high velocity missile capable of a low trajectory and will be difficult to defend against.

The final scheduled launch in the SRAM development test program was accomplished last July. Some 38 firings were completed during these tests and all specifications were met or exceeded. We expect to have a SRAM capability on some of our B–52s and FB–111s this calendar year.

Maverick Air-to-Ground Missile

In the tactical area, we have completed Category II testing of the Maverick air-to-ground non-nuclear missile. This weapon is designed for use on the A–7D, the F–4, and will be compatible with the A–X. It has television homing guidance and the warhead will be capable of penetrating heavy armor and triple reinforced concrete. It will be effective against hard targets such as tanks and field fortifications and can also be used effectively against SAMs, radars, and mobile missiles.

Category II testing was completed in September and we achieved hits on nearly all of the firings, with an average error of only a few feet. We have now begun the first phase of Category III tests, which will run until May of 1972.

We will also conduct joint tests with the Army to further validate the Maverick performance under various operational conditions before exercising Option B production in October of 1972. The fiscal year 1973 budget includes $61.2 million for missile procurement and $4.9 million for initial spares.

MINUTEMAN III

Chairman Ellender. How much of the program will this complete, that is, of the Minuteman III? I notice you have some $400 million. million.

Secretary Seamans. This provides for additional Minuteman III, so that we will have in place a little more than half of the Minuteman III we intend to procure.

General Boylan. By the end of the fiscal year, we will have [deleted] Minuteman III missiles operational.

Chairman Ellender. In place?

General Boylan. Yes, sir. In the fiscal year 1973.

MINUTEMAN SCHEDULE

Secretary SEAMANS. The schedule calls for [deleted]. The goal is to build up at 550 Minuteman III by fiscal year 1975, at which time we will have no Minuteman I's and 450 Minuteman II missiles.

Chairman ELLENDER. How many Minuteman I's did you have?

Secretary SEAMANS. We had 800 Minuteman.

Chairman ELLENDER. When were the Minuteman I's completed? Do you remember that?

General BOYLAN. The last in Fiscal Year 1965.

Chairman ELLENDER. Those are obsolete now.

General RYAN. We are replacing the Minuteman I with Minuteman II's and III's.

TEST PROGRAM

Chairman ELLENDER. What are you doing with Minuteman I?

General RYAN. Some we use in our test program out on the western test range. Some are going into storage. We have not figured out what to do with all of them.

Chairman ELLENDER. Why would you put them in storage? Are they obsolete?

General RYAN. As a weapons system, yes. However, there are good uses for some of them.

Senator YOUNG. Are you test firing the Minuteman III's?

General RYAN. Yes, sir.

TEST OF MISSILES TAKEN FROM SILOS

Senator YOUNG. Have you taken Minuteman III's out of the silos and test fired them? The reason I asked this question is because of the horrible experience we had with the Minuteman II. I have not forgotten it yet.

Secretary SEAMANS. We have actually, I believe, tested 52 to date; [deleted] have been considered successful.

Senator YOUNG. Before they were deployed in the silos?

Secretary SEAMANS. Of the 52 that were tested, 25 were R. & D. which has been completed, six were DASO; 13 were operational tests, and eight were special test missiles.

Senator YOUNG. After they are in the silos, will they work?

General RYAN. Could we supply that for the record, because I am not sure how many had actually been in silos before they were operationally tested.

Secretary SEAMANS. We are aware of your concern. We are, too. We do have a variety of tests that we perform. One of them is strictly electronic.

Senator YOUNG. I want to know whether they will fire after they are in the silo.

Secretary SEAMANS. We believe they will, of course, and we will confirm how many of the operational test missiles had been in silos.

Incidentally, we have the operational base-launch concept. We are planning to have test launches of an operational missile when we have made certain modifications that would permit it to be live-tested out of a silo, if that is a requirement.

Senator YOUNG. I had a difficult time finding out the problem when the Minuteman II's failed to fire in the tests. The Air Force was less than frank in responding to my question. Senator Russell shared my concern.

(The information follows:)

TEST FIRING RESULTS/MINUTEMAN MISSILES

The Minuteman III Operational Test program began with a launch on 24 March 1971. To date we have randomly selected 13 Minuteman III missiles from those deployed in the operational silos at Minot AFB, taken them to Vandenberg AFB and fired them down range. As background, an operational test exercise begins with the random selection of an alert missile from the operation force. This missile is then transported to Vandenberg AFB, placed on alert by operational base maintenance teams, and launched by operational unit combat crews. From the Operational Test program and ancillary ground test program we have derived high confidence in the reliability and accuracy of Minteman III.

Senator ALLOTT. Mr. Chairman, I would lik to ask one question off the record.

(Discussion off the record.)

TITAN II RETIREMENT SCHEDULE

Senator ALLOTT. What are your schedules on the Titan II retirement?

General BOYLAN. We are projecting [deleted].

Senator ALLOTT. You have 54 now, I believe.

General BOYLAN. Yes; 54.

MISSILE PAYLOAD

Senator ALLOTT. What is the load in pounds of the Titan II's?

General RYAN. [Deleted] pounds.

MINUTEMAN III PAYLOAD

Senator ALLOTT. What is that for the Minuteman III?

General RYAN. [Deleted] pounds.

Senator ALLOTT. Thank you very much.

Chairman ELLENDER. This might be a good place to stop.

Secretary SEAMANS. All right, Mr. Chairman.

SUBCOMMITTEE RECESS

Chairman ELLENDER. We will be in recess until 2 o'clock.

(Whereupon, at 12:35 p.m., the subcommittee was recessed, to reconvene at 2 p.m. the same day.)

(Afternoon Session, 2 O'Clock, Wednesday, February 16, 1972)

DEPARTMENT OF DEFENSE

Department of the Air Force

STATEMENTS OF:

HON. ROBERT C. SEAMANS, JR., SECRETARY OF THE AIR FORCE

GEN. JOHN D. RYAN, CHIEF OF STAFF, U.S. AIR FORCE—Resumed

OBSOLETE MINUTEMAN I'S

Chairman Ellender. The subcommittee will come to order.

As I understand, Mr. Secretary, you had completed page 34.

I would like to place in the record the question I just asked about the Minuteman I; how many are obsolete, and can't be used now, or won't be used.

General Ryan. By the end of this fiscal year we will have withdrawn [deleted] and will have [deleted] still in the force.

Chairman Ellender. Then you contemplate——

General Ryan. A total of [deleted] additional to be withdrawn during the next 3 fiscal years.

MINUTEMAN III REPLACEMENTS: SILO MODIFICATIONS

Chairman Ellender. You will replace those with Minuteman III?

General Ryan. Minuteman III's.

Chairman Ellender. You are going to use the same silos?

General Ryan. Yes, sir.

Chairman Ellender. Will you have to make many changes within the silos?

General Ryan. There are some changes, Mr. Chairman. But the physical characteristics, the silo, itself, remain. We are doing some upgrading of the silo to take care of electromagnetic pulse effects, to take care of shock that we have learned about over the years, and so forth.

Chairman Ellender. How about the hardening?

General Ryan. That is the part I was talking about, the electromagnetic pulse hardening and shock hardening. While we are changing the missiles in the silos, we are hardening the silo.

Per Silo Cost

Chairman Ellender. Have you any funds here to do that work?

General Ryan. Yes, sir.

Chairman Ellender. What does that amount to per silo?

General Ryan. Around a million dollars per silo.

Chairman Ellender. We have how many?

General RYAN. We have 1,000 silos——

Let me put it this way, Mr. Chairman: Our first missiles which are Minuteman I are of a certain configuration and hardness. Minuteman II silos, which came in later, are a bit harder. We are going to increase all the Minuteman I and Minuteman II silo hardening, both electromagnetic pulse hardness and shock hardness. It will vary between the silos.

Chairman ELLENDER. You are in the process of doing that now?

General RYAN. That is correct.

(The information follows:)

SILO CHANGES/TO ACCOMMODATE NEWER MISSILES

The changes made to the Minuteman I silos to accommodate newer missiles are accomplished in the Basic Force Modernization program. This program converts the weapon system ground equipment from the WS–133A, Minuteman I configuration to the WS–133A–M, Minuteman II/III configuration. It includes the assembly and checkout needed to physically exchange the missiles.

In concert with the Minuteman II/III missile compatibility, Force Modernization incorporates substantial improvements in command and control flexibility. Each launch crew can monitor all 50 silos in a squadron instead of only ten as in the Minuteman I system. Moreover, each launch crew has the capability of selecting one of [deleted] war plan options that define one of eight prestored targets in the Minuteman II and one of the [deleted] target sets in the Minuteman III missile.

The major changes to the silo to accommodate the newer missiles are modification of the missile suspension system, the silo interfacing electronics for the guidance and control system, the silo reference for the guidance and control system, plus increased emergency electrical power in Wings I and II.

MINUTEMAN II

Chairman ELLENDER. Is there any plan to replace the Minuteman II?

General RYAN. Yes, sir. Fifty will be replaced.

Chairman ELLENDER. So that the Minuteman II that you now have as operational remains as such?

General RYAN. That is correct, except for fifty.

Chairman ELLENDER. How many of those have you?

General RYAN. 500, total; 450 will be retained.

TOTAL MINUTEMAN INVENTORY

Chairman ELLENDER. The Minuteman III you will have in place by the time you take out these——

General RYAN. At the end of 1975, we will have 450 Minuteman II and 550 Minuteman III.

MINUTEMAN I

Chairman ELLENDER. All the Minuteman I's will be discarded?

General RYAN. Will be gone.

Chairman ELLENDER. You hope, as you said, to salvage something out of those?

General RYAN. We will use some of those missiles in our research program as boosters for other types of experiments, checking out reentry bodies, et cetera. However, we will probably not use up the total number.

Chairman ELLENDER. I understood you to say a while ago——

General RYAN. We will probably salvage some.

Chairman ELLENDER (continuing). That these missiles cost originally a million dollars. What do you expect to salvage altogether?

General RYAN. Very little, I would say, Mr. Chairman.

Chairman ELLENDER. Many of these missiles will have been in for how many years?

General RYAN. Ten to 12 years.

Chairman ELLENDER. General Glasser said just now that was a deterrent.

General RYAN. They were our first generation of solid propellant missiles.

MISSILE PLACEMENT AT GRAND FORKS BASE

Senator YOUNG. Mr. Chairman, may I ask a question?

Chairman ELLENDER. Senator Young.

Senator YOUNG. Are those Minuteman I's at Grand Forks the ones that you are changing now?

General RYAN. We made a change there, Senator. They were Minuteman II's. We had Minuteman I's down at Ellsworth. We took the Minuteman II out of Grand Forks and put them at Ellsworth to replace those I's and put Minuteman III into Grand Forks.

Senator YOUNG. I thought you said earlier you were just replacing the I's.

General RYAN. This was a dipsy-doodle. The reason for this is to give us a target coverage with the longer range missile.

Senator YOUNG. You changed that whole wing at Grand Forks in about a year's time, didn't you?

General RYAN. No, sir; that was Minot and it took about 18 months before the last flight was turned over to SAC. We are now at Grand Forks.

Senator YOUNG. Yes; but I think you changed the whole wing at Minot in something like a year.

General RYAN. No, sir; it was more like 18 to 20 months.

NUMBER OF MINUTEMAN SILOS

Chairman ELLENDER. The Minuteman I was, of course, the start of your program.

General RYAN. That was the original solid propellant intercontinental ballistic missile.

Chairman ELLENDER. You built 800 silos.

General RYAN. Yes, sir; we built 800 Minuteman I silos.

Chairman ELLENDER. Then, in addition to that——

General RYAN. 200 Minuteman II silos which gave us a total of 1,000 missiles.

We end up with 450.

Chairman ELLENDER. Those required additional silos?

General RYAN. Only 200, which with 800 earlier I's gave us 1,000 silos plus the test silos we had at Vandenberg. For the operational wings, we had 1,000 silos.

Chairman ELLENDER. When you put in the Minuteman III, the number of silos will not increase?

General RYAN. No, sir. We will use the same hole.
(Discussion off the record.)
Chairman ELLENDER. Proceed.

RESEARCH AND DEVELOPMENT

Secretary SEAMANS. Mr. Chairman, continuing now with the third item I want to discuss with this committee: research and development.

Our research and development programs insure that we will have sufficient options to meet the threats which may arise in the future. The Air Force R. & D. budget request of $3.2 billion in fiscal 1973 is about 35-percent less in purchasing power than the Air Force fiscal year 1964 R. & D. budget, just prior to the Vietnam war.

MANAGEMENT IMPROVEMENT

In order to meet our requirements within this budget squeeze, we are improving our R. & D. management. Perhaps most important, we are on guard against "goldplating." We cannot afford to spend large sums of money on design features that are "nice," but not absolutely essential to better combat performance. Then we are insisting on early hardware demonstrations with improved testing and evaluation. And we are making tough decisions, trading off performance, cost, and schedules as necessary to make available the best possible weapons alternatives for the resources expended.

In carrying out these policies, we have given primary responsibility to our program directors, who have direct access to the top leadership of the Air Force. In addition, we are giving particular emphasis to increased involvement of our laboratories in all phases of the R. & D. process.

TABLE XIII: MAJOR PROGRAM 3-YEAR COMPARISON

Table XIII shows our fiscal year 1973 R.D.T. & E. request along with a breakout of major programs and a comparison of the same data for the previous 2 years.

(Table XIII follows:)

TABLE XIII.—RESEARCH AND DEVELOPMENT

[Millions of dollars, funds in parentheses show funding for major systems]

	Fiscal year—		
	1971	1972	1973
Aircraft	$767.1	$1,197.3	$1,327.1
B-1	(75.0)	(370.3)	(444.5)
F-15	(349.5)	(419.9)	(454.5)
A-X	(27.9)	(47.0)	(48.1)
Advanced prototypes		(17.8)	([1] 92.0)
Missiles	691.5	418.1	387.4
Minuteman	(270.2)	(181.6)	(154.7)
Astronautics	429.7	341.1	345.7
Ordnance and combat vehicles	89.2	92.5	100.6
Other equipment	374.6	419.4	502.0
AWACS	(87.0)	(139.3)	(160.0)
Defense suppression	(14.0)	(16.1)	(11.0)
Military sciences	141.9	142.7	146.3
Management and support	333.2	349.3	384.1
Total (TOA)	2,827.2	[2] 2,960.4	3,193.2

[1] Includes $46,000,000 for lightweight fighter and $46,000,000 for medium STOL transport.
[2] Includes fiscal year 1972 supplemental.

FUNDING INCREASE RESULTING FROM INFLATION

Chairman ELLENDER. Your request is more than was provided in fiscal year 1972.

Secretary SEAMANS. It is more than last year in current dollars by $230 million.

Chairman ELLENDER. It is more than you got last year.

Secretary SEAMANS. Yes. But in constant dollars, it is less.

General CROW. It is almost the same. Inflation in R.D.T. & E. is about 5 or 6 percent. Six percent of the $3 billion is $180 million. That almost balances the increase in current dollars.

MINUTEMAN MISSILES

Chairman ELLENDER. Are you going to explain that planned utilization of that request?

Secretary SEAMANS. Yes; I am, Mr. Chairman.

R. & D. expenditures in the missile field continue to show a decrease. This is primarily due to progress in the Minuteman program. Our primary efforts here involve work on a remote retargeting capability for Minuteman III, continued development of the silo modifications to insure prelaunch survivability, and a new instrumentation package to get a more precise measurement of Minuteman III guidance system performance.

Chairman ELLENDER. Where does that item appear on page 36?

Secretary SEAMANS. That appears under Minuteman, $154.7 million.

Chairman ELLENDER. Is that amount to be used to develop a better weapon?

Secretary SEAMANS. This is to develop equipment that is more survivable against nuclear blast for both the electromagnetic pulse and the shock, itself, of the blast, as well as the retargeting capability.

Chairman ELLENDER. This is in the research field?

Secretary SEAMANS. This is development; not research, really.

CONTINUOUS MODIFICATION COSTS

Chairman ELLENDER. Is the purpose to improve the Minuteman as it is now constituted?

Secretary SEAMANS. Yes; it is, to improve both the ground launch equipment, as well as the Minuteman, itself. It involves running tests out at Vandenberg on these missiles.

Chairman ELLENDER. How will you apply it to those already in place?

Secretary SEAMANS. As we make modifications to the silos that we have been discussing previously in connection with the deployment of missiles.

Chairman ELLENDER. All this shows me that there was still work to be done on those Minuteman III's that you have in place.

Secretary SEAMANS. We have modifications——

Chairman ELLENDER. I say it seems to be a continuous process. In 1971, you spent $270 million. In this current year, you spent $181 million. All of that was used, as I understand, to improve what you had already put in place. Am I right in that?

Secretary SEAMANS. The improvement, as I understand it, is to the silos, themselves, to the electronic equipment and to the physical characteristics of those silos.

UTILIZATION OF NEWLY GAINED KNOWLEDGE

General RYAN. Mr. Chairman, as we learn more about the effects of nuclear detonation, then we have to go back to take advantage of what we have learned to upgrade that system to withstand these effects. As we learn, we make improvements.

Command data buffer gives us the capability to retarget missiles in a fraction of the period of time that it takes us today. There is continuing research. Money spent on this will develop a capability to retarget.

Chairman ELLENDER. I am not questioning that. I am just making the point that this additional money will be to improve what you already have in the ground.

General RYAN. That is correct.

Chairman ELLENDER. Have you any funds other than what you are asking for here to do that work?

General GLASSER. Everything for Minuteman is in this line.

BUDGETARY FUNDING RULES

Chairman ELLENDER. Why do you have it in R. & D.?

Secretary SEAMANS. Because it is in the category of development.

Chairman ELLENDER. That is what is confusing to me.

You started out with your Minuteman III. You had it perfected, according to whoever was in charge of it. After it was perfected, you put it in the silo. Is that right?

Secretary SEAMANS. That is right.

General GLASSER. Mr. Chairman, under the funding rules, any time we develop a modification we must pay for the development of that modification with R. & D., funds, and procure that modification with procurement funds. The numbers you are looking at here in R. & D. are the cost of developing modifications for the Minuteman system.

Chairman ELLENDER. And not to procure?

General GLASSER. Not to procure; no, sir.

CONTINUOUS PROCESS

Chairman ELLENDER. So, you see, this continuous process is what is so costly as you go along. We will have to do something to correct that.

Dr. Foster is going to testify and will plead for all of this and will explain how important it is.

It seems to me that before a weapon is placed in the ground, as you did with Minuteman III, it should be perfect. But you keep on perfecting as you go along.

Secretary SEAMANS. It is the environment that is not constant.

General GLASSER. This is for improvement in our capability, our reaction to our understanding of the problem and, as General Ryan mentioned, command data buffer permits us to retarget quickly and remotely without the necessity of opening the holes. This was something we have wanted to do in the past but we were unable to do.

Chairman ELLENDER. What about the silo, itself? Are experiments being carried on to determine whether or not you can improve your present silos?

Secretary SEAMANS. Exactly. That is what this development is.

General GLASSER. Also, we have learned through experience that dust stirred up in the atmosphere is a hazard to missiles [deleted]. So, we had to develop ways of protecting those missiles. So, R. & D. for that is included in here.

RETARGETING OF MINUTEMAN I

Senator YOUNG. You mentioned retargeting improvement. How would you retarget Minuteman I? If you had a target in country *x* and you wish to retarget to some place in country *y*, what process did you go through?

General RYAN. On the Minuteman I, we had the capability to put two targets in. When I say Minuteman I, the majority of Minuteman I. In order to change those targets you had to send a retargeting team of three people out to the missile. First, you had to get a tape cut back at the home base. You went out, reopened the silo, put in the new target tape, buttoned up the silo. This took one team [deleted] for each silo.

MINUTEMAN II AND III RETARGETING PROCESS

Senator YOUNG. On the Minuteman III, is that a multiple warhead?

General RYAN. That is right.

We can do it the same way except we are storing [deleted] targets in it at the present time. In order to change those, you have to physically open up the silo, take your tapes out and insert new targets.

Senator YOUNG. You mentioned remote control.

General RYAN. With what is known as command data buffer we will have a remote control target capability. You can retarget those missiles from the launch control facility without opening up the silo and you can do it in a matter of hours instead of days.

Senator YOUNG. Are you improving the accuracy at the same time the other improvements are being accomplished?

General RYAN. For Minuteman III, very definitely.

Chairman ELLENDER. To put in those modifications to which you referred, will that be done to each of these silos in which you have Minuteman II and Minuteman III?

Secretary SEAMANS. In each missile complex and in some cases each silo.

Chairman ELLENDER. You refer to what you have in the silo?

General RYAN. That is right. You will make a change in the silo, itself, and you will make a change at the launch control facility. This is a hardware change. From then on, you will be able to retarget from the launch control facility.

RESEARCH AND DEVELOPMENT AND OTHER COSTS

Chairman ELLENDER. How much do you have in the budget to make these changes?

Secretary SEAMANS. R. & D. $154.7 million.

Chairman ELLENDER. That is R. & D. I understood General Glasser to say that the actual construction necessary is in another part of the budget.

Secretary SEAMANS. In my table VII, $419 million for Minuteman III procurement and another $273 million for Minuteman force modernization provides for making these kinds of changes. The total Minuteman program acquisition cost in fiscal year 1973 is $857.8 million.

Chairman ELLENDER. That is for all of them?

Secretary SEAMANS. There will be additional funding required in 1974.

Chairman ELLENDER. You say that is for [deleted] missiles.

General CROW. They are included in that total.

Chairman ELLENDER. The money you are talking about now, aggregating almost a billion dollars, is in addition to the original cost of those missiles?

General CROW. We are buying [deleted] new missiles in fiscal year 1973, but we are also doing work across the entire missile force, upgrading it, improving it. It is a process which has continued ever since we put the first Minuteman in the ground.

COST INCREASE SUBSEQUENT TO PLACEMENT OF MINUTEMAN II IN SILOS

Chairman ELLENDER. I understand that. But what I am trying to separate now is the original cost of Minuteman II when you first put it in to replace Minuteman I. It was an improvement. Now you have a Minuteman III that you are putting in to replace Minuteman II in some cases; is that right?

General GLASSER. There will be in later years.

Secretary SEAMANS. There will also be some additional funding required next year for further force modernization; in other words, for doing some more work on the sites, themselves, on the launch complexes.

DEVELOPMENT AND TEST

Chairman ELLENDER. Going back to the original question, on R. & D. you have $154.71 million.

General CROW. That is correct.

Chairman ELLENDER. That is merely to test or improve what you now have.

Secretary SEAMANS. That is right; to develop the improvements.

General RYAN. Develop and test.

Secretary SEAMANS. The actual improvements are made in subsequent years and funded in the procurement account.

PROCUREMENT OF FORCE MODERNIZATION

Chairman ELLENDER. All right; develop and test.

What other items have you in this budget to carry out these improvements that have been discovered, let us say, with the money you spent last year or even the year before?

Secretary SEAMANS. That is where you get the $273.6 million for force modernization.

Chairman ELLENDER. Where does that appear?

Secretary SEAMANS. That appears under procurement.

MISSILE PROCUREMENT AND MODIFICATION

Chairman ELLENDER. You gave me another figure a while ago.

Secretary SEAMANS. The other figure is the purchase of [deleted] missiles which is $419.3 million.

Chairman ELLENDER. You mean new ones?

Secretary SEAMANS. Yes.

Chairman ELLENDER. Those missiles will have these added changes?

General RYAN. They will have some of the changes.

Chairman ELLENDER. That is why I brought up the subject.

Secretary SEAMANS. The missile, itself, is essentially developed. We are not really making substantial changes in the missile. But we are making changes in the ground environment.

Chairman ELLENDER. But you are making changes, though, in the missile, itself, as I understood you.

Secretary SEAMANS. We are making some, hardening it still further against electromagnetic pulses and against impacting [deleted].

Chairman ELLENDER. You are talking about the silo, itself?

Secretary SEAMANS. I was in that instance talking about the missile, itself.

PROCUREMENT AUTHORIZATION REQUISITE

Chairman ELLENDER. Have these [deleted] missiles been contracted for?

General RYAN. No; not yet. We are asking for them in our 1973 budget.

Secretary SEAMANS. We are not contracting for anything until we get authorization and funding.

MODIFICATION

Chairman ELLENDER. Will those new [deleted] be equipped with these new changes that you found in the meantime? That is, since the last order of Minuteman III?

Secretary SEAMANS. They will have whatever changes seem to be appropriate but they will be very minor changes.

Chairman ELLENDER. Minor changes from what, from the Minuteman III you now have?

Secretary SEAMANS. Yes. The Minuteman III that we now have and are testing has proven to be very satisfactory. It has a good long life expectancy.

Chairman ELLENDER. You mean the ones you have installed now?

Secretary SEAMANS. Yes.

Chairman ELLENDER. You are making improvements on that. You have $273.6 million to do what, to add improvements to the ones you have in the silo now?

General RYAN. Yes; partly. The $273.6 million is under force modernization. With this money we will improve the silo as we put the Minuteman III in; we will be increasing the hardness. We will be installing EMP fixes. As for the missile itself, I don't know of anything that we will be doing to it, on the Minuteman III, except for the dust modifications.

Secretary SEAMANS. I wouldn't rule it out but I don't know of any other changes in the missile. I do know that changes are needed in the ground environment.

ITEMIZATION OF MINUTEMAN BUDGET AND NEW MISSILE MODIFICATION COST

Chairman ELLENDER. What I would like you to put in the record, is how much of your budget is for more research on Minuteman III and how much is for such improvements as you may have found necessary, and how much is to buy new ones.

How much more will it cost the Government to put improvements on the [deleted] that you are going to buy?

Secretary SEAMANS. We would like to work that out carefully and submit it for the record.

Chairman ELLENDER. Continuous modification makes this a continuous program.

(The information follows:)

COST FOR IMPROVEMENTS VS. NEW MISSILE PROCUREMENT

The major portion of our FY 1973 request falls into three categories: RDT&E funds ($154.7 million), Minuteman Squadrons ($419.3 million) and Force Modernization ($273.6 million). These funds provide for the development and incorporation of improvements to both the Minuteman II and Minuteman III in the areas of reliability, survivability, and force effectiveness.

The $154.7 million RDT&E funds requested are to continue efforts started with prior year funds, for continued improvement of the Minuteman missile system.

Development efforts on the Minuteman Dust Hardening program are proceeding to a definitive solution which will enable the missile to withstand erosion effects and particle impacts encountered in flying through a nuclear dust cloud ($9.1 million).

The FY 1973 request contains $53.0 million for Silo Electromagnetic Pulse (EMP), blast and shock assessment of Wing V, and development of blast, shock and EMP modification for subsequent wings.

Design effort for Wings III, V, VI and Squadron 20 and contractor testing for Command Data Buffer will continue ($21.0 million).

The remaining $71.6 million are costs associated with test and launch activity ($20.3 million); basic development effort related to computer software development and support, program data management, etc. ($9.9 million); general support activities such as system engineering and technical direction, etc. ($26.3 million); and development of an instrumentation system to provide missile performance measurement at the test range ($15.1 million).

Missile Procurement funds in this year's request amount to $692.9 million exclusive of initial spares. This procures [deleted] missiles and the necessary peculiar support equipment ($419.3 million) to continue the deployment of Minuteman III missiles toward a planned force of 550 Minuteman IIIs by the end of FY 1975. These missiles will be dust hardened. The remainder, $273.6 million, is for the Force Modernization program, which consists of three elements: Basic Force Modernization, Upgrade Silo, and Command Data Buffer.

The Basic Force Modernization converts the weapon system ground equipment from the Minuteman I configuration to the Minuteman II or III configuration and includes the assembly and checkout (A&CO) needed to physically exchange the missile. The $70.0 million requested will provide the necessary funding to convert 100 of the older Minuteman I silos to accept the newer Minuteman III missile.

The Upgrade Silo Program incorporates improvements to counter blast, shock, and nuclear radiation effects to increase pre-launch survivability. These improvements are provided mainly by internal modifications to the launch facility, such as increased shock isolation of the missile, better mounting of equipment, and modifications to the electronics and silo for protection against the effects of Electromagnetic Pulse (EMP) generated by nuclear bursts. The $161.1 million requested will provide these improvements to 150 silos (100 Wing [deleted] and 50 Wing [deleted] and procure the necessary support equipment (training and depot maintenance ground equipment).

The remaining major effort, Command Data Buffer, incorporates improvements to rapidly accommodate changes to the missile operational targeting programs. The $42.5 million included in the FY 1973 request will provide these improvements for 150 silos.

ALLOCATION OF MINUTEMAN RESEARCH AND DEVELOPMENT BUDGET REQUEST

Senator YOUNG. Mr. Chairman, could I ask a question at this point?

Chairman ELLENDER. Yes.

Senator YOUNG. Are you conducting research on the development of a missile beyond Minuteman III?

Secretary SEAMANS. No; we are not. Of the $154.7 million in research and development, over $100 million in work that relates to the ground environment, that is, determining how to take care of dust and debris, determining how to deal with overpressure, dealing with electromagnetic pulse, as well as the electronic problem of retargeting.

Senator YOUNG. Are you working on a new breed of Minuteman III?

Secretary SEAMANS. No. Another $15 million is on what we call the missile performance measurement system which is to provide an instrument that can be used for range measurement, will give us more precision in determining where the missiles go, and $37 million is work on the missile equipment itself, the stuff that is actually in the missile. the guidance and control, the hydraulics and so on that actually go along when the missile is launched, in order to improve its reliability, and to test it to be sure that it will operate over long periods of time.

It is not for the purpose of designing a new missile system. We do, however, have $8.4 million in the budget for improved ICBM technology.

Senator YOUNG. Thank you.

OTHER MISSILES

Chairman ELLENDER. Under missiles, I notice that you are spending in R. & D. $387.4 million. That has nothing to do with the missiles we are talking about now?

Secretary SEAMANS. The $154.7 million is included in the $387.4 million. That is the largest portion in that item.

Chairman ELLENDER. What will the rest of that $387 million be used for?

Secretary SEAMANS. It is to continue work on Maverick and others. General Glass, will you provide specific items and amounts?

General GLASSER. Yes; I can. In addition to the Minuteman we have on Maverick, $8.3 million; on ABRES, $104 million; on the Western Test Range, $62.7 million; on the Hound Dog II, $15 million; on rocket propulsion, $24.5 million; on the Sparrow, $2.7 million; on advanced ICBM technology, $8.4 million. Those are the principal items.

STATUS OF MISSILES

Chairman ELLENDER. All of those missiles you just mentioned are now operational?

General GLASSER. No, sir; not exactly.

On Maverick, we are just completing development at this time. The only thing remaining now is test.

The AIM–7F Sparrow is a missile which is a modification or modernization of an earlier model for use with the F–15.

Hound Dog II is an adaptation of an existing missile to be used as an [deleted].

Chairman ELLENDER. Are you going to take each of these items and discuss it?

Secretary SEAMANS. I was not planning to do so because I believe others will be doing so later. General Glasser will appear before this committee Friday and go into detail.

Chairman ELLENDER. You mean on B–1?

Secretary SEAMANS. I will go into the B–1, the F–15, the A–X and the AWACS. These are the items that are under aircraft, B–1, F–15, and A–X. Under other equipment we list the AWACS. It was my intention to discuss each one of these.

Chairman ELLENDER. All right. Where do you start?

MINUTEMAN MISSILE PROGRAM

Secretary SEAMANS. I am still talking about Minuteman on page 37, partway through the first paragraph.

I say these programs are adequate for making necessary ICBM improvements in the next few years. We must, however, insure that our technology will remain strong enough to provide long-term improvements which may be needed in the 1980's.

That accounts for some of the smaller items that are included in the $387.4 million.

AIRCRAFT DEVELOPMENT

With respect to aircraft development, we are continuing four major programs: the B–1, the F–15, the A–X, and the AWACS. And we have initiated advanced prototype development of a lightweight fighter and a medium STOL transport.

B–1 STRATEGIC BOMBER

The deterrence of strategic war depends on convincing any would-be attacker that effective retaliation would be certain. The United States continues to deter aggression by maintaining three different types of retaliatory forces: land-based missiles, sea-based missiles, and long-range bombers. An enemy might be able to develop ways of neutralizing one or even two of these forces, but it is extremely unlikley that he could find methods of negating all three at the same time.

We are proceeding with the development of the B–1 to be certain that we can maintain the bomber portion of our deterrent capability in the 1980's.

B–52 MISSION CAPABILITY AND MODIFICATION COST

The B–52 was designed in the late 1940's and built in the 1950's and early 1960's. While we have continually upgraded the B–52, we will not be able to maintain the mission capability of this aircraft indefinitely. To date, we have spent about $2.7 billion on B–52 modifications. And even if we were to spend larger sums for beefing up the

B–52 structure and retrofitting it wtih more efficient engines, its ability to survive an enemy attack and penetrate the air defenses expected during the 1980's would be questionable.

FB–111 Aircraft

Of course, the FB–111 is also an important element of our bomber force, but it cannot fulfill the strategic bomber mission by itself. Against typical target systems it would take six times as many FB–111's as B–1's and require six times the tanker support. And due to its relatively small size, there is little growth potential for penetration aids in the FB–111.

B–1 Contracts

As you know, North American Rockwell was selected as the prime contractor for the B–1. And, General Electric won the engine contract. Each is working under a cost plus incentive fee contract in the development phase.

Chairman Ellender. The development of the B–1 would not be for use in conventional wars, would it?

Secretary Seamans. It is to keep on having a strategic deterrent, Mr. Chairman.

Chairman Ellender. Would it be capable of doing something similar to what we are doing in Southeast Asia now?

Secretary Seamans. The B–1 bomber probably would not be used in quite the same way.

Chairman Ellender. It couldn't be employed there, because it will be from 8 to 10 years before it is operational.

Secretary Seamans. It will become operational in 1979, according to our plan.

Research Expenditures

Chairman Ellender. How much have you spent on the B–1 in total?

General Crow. We have spent $365.2 million. Total approved available funds are $689.3 million.

Chairman Ellender. That is for research?

General Crow. Yes, sir; research only.

Secretary Seamans. That is for wind tunnel testing. That is for testing critical structural items, and is for engine testing that we have done and for design of the airframe.

Chairman Ellender. What do you propose to do with the $444.5 million that you are asking for 1973?

Secretary Seamans. We propose to continue with that activity, a development activity: more wind tunnel testing, much more structural testing and much more engine testing, leading to the construction of three prototype aircraft. We anticipate the first flight in April 1974, following which we plan to flight test these aircraft for a year's time, before making a production decision, if one is made.

Development Cost

Chairman Ellender. What do you estimate to be the total cost of producing these three prototypes?

Secretary SEAMANS. The development cost which includes more than just the building of the three prototypes, it includes all the wind tunnel work, everything, is $2.6 billion.

Chairman ELLENDER. When you say $2.6 billion, have you added the inflationary factors?

Secretary SEAMANS. Yes, we have.

Chairman ELLENDER. To what extent?

Secretary SEAMANS. The usual factor which we discussed this morning.

Chairman ELLENDER. You say that you hope to have some of these prototypes ready in 1974.

Secretary SEAMAN. That is correct; a little over 2 years from now, for the first flight.

ESTIMATED UNIT PRODUCTION COST

Chairman ELLENDER. Have you an estimate of what these would cost you if, as and when you decide to construct them?

Secretary SEAMANS. The estimate, it ought to be realized, is still very rough because we haven't the experience of building and flying the airplane, but the present estimate is that the unit procurement cost will be $35 million for these airplanes.

ESTIMATED PROCUREMENT

Chairman ELLENDER. How many do you contemplate ordering to get them at that price?

Secretary SEAMANS. This is assuming that we produce 241 of these aircraft.

Chairman ELLENDER. 241?

Secretary SEAMANS. Yes.

Chairman ELLENDER. That will be how many squadrons?

Secretary SEAMANS. Fourteen squadrons.

ADVANTAGES OVER B–52

Chairman ELLENDER. What is the virtue of the B–1 compared to the B–52?

Secretary SEAMANS. The virtue is that it is designed specifically for low altitude penetration against the most sophisticated defenses and it is designed to carry more payload than the B–52 and to penetrate at higher speed under poor weather conditions, where there is very rough air. It also has the capability of supersonic flight at high altitude.

Chairman ELLENDER. As I recall, last year when I asked that same question, the main virtue of the B–1, compared to the B–52, was the low-altitude capability.

Secretary SEAMANS. Exactly. That is the point I tried to stress.

Chairman ELLENDER. If the enemy has developed some method to strike when you fly high, don't you think he will be able to develop one when you fly low?

Secretary SEAMANS. He obviously is going to be working on that problem. So far, we feel that that is the best way to attack.

General Ryan might wish to add to that.

CONGRESSIONAL OPPOSITION

Chairman ELLENDER. There undoubtedly will be questions about this request, both in committee and on the floor, and there may well be opposition to it. I suggest you make the best case that you can.

General RYAN. As the Secretary has said, we are looking forward to sophisticated defenses because it is never a static situation. That is why we are designing the airplane to go fast at low altitude. We do not feel that we can be successfully precluded from penetrating at low altitude.

We are designing the aircraft so that it can carry the SRAM, so that if we have to, we can break through the defenses [deleted] to get in.

RANGE

Chairman ELLENDER. What is the range of this plane compared to that of the B–52?

General RYAN. With a greater weapons load the B–1 range will be about the same range as our B–52H. In other words, this aircraft will require refueling on an intercontinental mission just like the B–52H does.

Chairman ELLENDER. No difference?

General RYAN. No difference.

PAYLOAD

Chairman ELLENDER. You mentioned another virtue in that it carried a bigger payload.

General RYAN. Yes.

Secretary SEAMANS. To take the numbers here, the maximum internal payload of the B–52 is 31,000 pounds, and the B–1 is being designed for 75,000 pounds. Maximum external payload of 20,000 pounds for the B–52, 40,000 pounds for the B–1. It is an increase of more than 2 to 1.

ANTICIPATED UTILIZATION OF BOMBER

Chairman ELLENDER. In planning for a bomber of that kind, have you in mind the areas in which you expect it might be used?

Secretary SEAMANS. Yes; certainly.

Chairman ELLENDER. Where?

Secretary SEAMANS. Well, it will be based in the United States. It could be targeted against any sites desired anywhere in the world.

Chairman ELLENDER. That is mainly against the Soviet Union, isn't it?

General RYAN. Any potential enemy having the capability.

Chairman ELLENDER. The position of the Department of Defense usually seems to be predicated on retaliation against a possible threat.

General RYAN. It is designed to be used to deter the strategic capability possessed by the Soviet Union and China.

BOMBER ATTITUDE AND SPEED

Senator YOUNG. Mr. Chairman, you have asked most of the questions I wanted to ask, but I have a few more. What will be the altitude and speed capabilities of this plane?

Secretary SEAMANS. For altitude, it will fly at [deleted] to [deleted] feet above the terrain.

Senator YOUNG. How high can it fly and how fast?

Secretary SEAMANS. It can go up to around [deleted] feet.

Senator YOUNG. Is that all?

General RYAN. It is a matter of payload, Senator. With what you would consider a normal payload of 15,000 to 20,000 pounds, you could probably operate it between [deleted] and [deleted] feet. It has that capability at mach 2.

Senator YOUNG. At mach 2?

General RYAN. Right.

POSSIBLE UTILIZATION OF TECHNOLOGICAL ADVANCES RESULTING FROM WORK

Senator YOUNG. Are you able to use any of the new information we acquired in developing the SST, the engine, for example? That was a new type engine. Was any of that research and development useful in the development of the B–1?

Secretary SEAMANS. I am sure some of it was. You have GE involved in both of those programs.

Senator YOUNG. I understood that was an entirely new engine they were developing.

Secretary SEAMANS. It is not the same engine.

I don't want to confuse the issue but I am certain some things were learned; there were some technological advances on the supersonic transport that proved helpful in this program.

Senator YOUNG. What we are learning from the B–1 would be helpful if, for instance, the country wanted to go back to an SST again?

HIGH- AND LOW-ALTITUDE SPEEDS AND STRUCTURAL COMPOSITION

Secretary SEAMANS. That is right; in my estimation.

You were asking about the speed.

The low-altitude speed is 390 knots for the B–52; [deleted] for the B–1. High altitude is 550 knots for the B–52 and [deleted] for the B–1.

Senator YOUNG. How many engines does the B–1 have?

Secretary SEAMANS. Four. The B–52 has eight engines.

Senator YOUNG. This would be an aluminum plane?

Secretary SEAMANS. It would have some titanium but we purposely picked a speed at altitudes such as we would use predominantly aluminum in order to save money and not get into a completely titanium airplane.

Senator YOUNG. If, later, you wanted more speed by giving it more power and using a titanium skin, could you obtain more speed in that way?

Secretary SEAMANS. I would say if you wanted a mach 3 airplane, it would probably require a new design.

Senator YOUNG. That is all.

1974 FUNDING INCREASE AND SUBSEQUENT REDUCTION

Chairman ELLENDER. Since you indicate that the prototypes may be ready for flight in 1974 and you also say that the cost of these proto-

types will be $2.6 billion and up to now you have a total of about $700 million for fiscal year 1973, the future requests will be considerably higher than your present request, will they not?

Secretary SEAMANS. The estimate now for fiscal year 1974 is [deleted] million. That is another [deleted] million over fiscal year 1973. And then subsequent years would be reduced amounts.

Remember now, this development includes all the testing we are going to do all the way through the program. So, there will be testing going on right through the decade. But the peak year is in fiscal year 1974 as far as development is concerned.

PREPRODUCTION AND PRODUCTION MODIFICATIONS

Chairman ELLENDER. If you should be able to fly this plane in 1974, thereafter you would continue to improve it, I assume.

Secretary SEAMANS. Yes. Undoubtedly, as a result of the test program, there will be modifications that will have to be made to the airplane before going into production. There will be continuing structural testing, for example, of that airplane for many years.

Chairman ELLENDER. You mean before you go into production?

Secretary SEAMANS. Even after you go into production, you still have to run tests on aircraft.

ESTIMATED TOTAL COST

Chairman ELLENDER. You stated in answer to a previous question that the cost per plane would be $35 million.

Secretary SEAMANS. That is correct.

Chairman ELLENDER. If you acquire 241 production models.

Secretary SEAMANS. 241 production, three R. & D.; 244 total.

Chairman ELLENDER. 244 total?

Secretary SEAMANS. Yes. That is what we have planned at this time. I should say the cost estimates are based on this size procurement.

Chairman ELLENDER. You have added to your estimate the additional cost that results from inflation?

Secretary SEAMANS. Yes. In the program, we have built in an estimate of inflation.

General CROW. In this program we included a development inflation factor of just under 3 percent which may turn out to be low.

ESTIMATED DATE OF FIRST PRODUCTION

Chairman ELLENDER. Do you have any idea when this aircraft will be sufficiently tested in order to satisfy yourselevs that it is ready for production?

Secretary SEAMANS. The plan would be to fly the test aircraft for at least 1 year before making the production go ahead and that the delivery of the first production aircraft would be in October 1977. That is 2½ years after go-ahead. We will have the plane operational 2 years after that; that is, in November 1979.

NONCOMPATABILITY OF B–52

Chairman ELLENDER. Except for the low flying capability of this plane, would it be possible to utilize the B–52 for the mission you contemplate?

Secretary SEAMANS. It could not come close to meeting these requirements. Its speed is less by nearly a factor of two. Its bomb load is less by a factor of two. On top of that, it is a plane which has been flying for a long time and all planes have a limit to their life expectancy. These planes have been used, as you know, very extensively, and fatigue will catch up with them in another 10 years or so.

Chairman ELLENDER. I did not intend that the same planes that we now have be utilized. After all, the research has been done on that. It has been in use for many years.

What I was trying to find out is whether or not we could not improve the B–52 by constructing new ones and thus save a good deal of money. As I have said, merely to construct these three prototypes calls for an expenditure of $2.6 billion, and thereafter, when you obtain a contract to produce 241, the additional cost will be $35 million apiece, totaling over $10 billion.

As I have said, I have heard a great deal of opposition to this.

SUGGESTED ADDITIONAL JUSTIFICATION

As Chairman of the committee, I intend to study it closely so as to be able to defend it, if I can. So I would suggest that you put everything in this record that you think will be necessary.

Secretary SEAMANS. We will be happy to add more in the record.

(The information follows:)

B–1 JUSTIFICATION VERSUS IMPROVING B–52

It has been estimated that if we were to start to build B–52s at this time the procurement unit cost would be about $26.0M, in terms of 1970 dollars. This compares to the estimated procurement unit cost of $30.0M for the B–1, also in terms of 1970 dollars. Thus, we would have a new B–52 of the late 1940s-early 1950s technology at a cost almost equal to that of the B–1.

It has also been suggested that the Air Force improve the later model B–52s by refitting them with currently avaliable, high performance engines. The Air Force has studied that option in the past and has recently re-evaluated it. Re-engining would not improve the pre-launch survivability of B–52's against postulated Soviet sub-launched ballistic missile threats nor would re-engining alone improve the penetration effectiveness of the B–52 against Soviet fighter interceptors or surface-to-air missiles. Lastly, we are continuing to improve the B–52 to sustain its operation and to improve its effectiveness in keeping with the changes we foresee in the Soviet threat later in this decade. Toward this end, the Air Force has consistently opted for improvements such as the SCAD, electro-visual sensors and better electronic countermeasures which analyses have shown would result in increased mission effectiveness.

In summary, if we elected to use the current B–52 or a modified B–52, we still would enter the 1980s with an aircraft based primarily in the technology of the late 1940s-early 1950s. And, even more important, we would enter the 1980s with an aircraft which would be distinctly less capable than the B–1 against the threat postulated for that period.

RUNWAY LENGTH REQUIREMENT AND REFLECTING SIGNAL

Secretary SEAMANS. There are other features of the airplanes that are important that we have not gotten into, such as the shorter runway length than required for the B–52, such as the reflecting signal that a radar gets from the airplane. It will not appear as soon on a radar scope as the B–52.

Chairman ELLENDER. Does that result from a low flight capability?

Secretary SEAMANS. No; it is because the airplane has been designed

to reduce the cross sectional area of the plane down so that it does not present as big a radar target.

Crew Requirement

Chairman Ellender. What is the number of people in the crew? Will that number differ from those manning the B–52?

General Ryan. We will have four people aboard this aircraft. On our normal B–52, we have six.

Chairman Ellender. There would not be any increase?

General Ryan. No, sir.

Chairman Ellender. Proceed.

Development Progress

Secretary Seamans. I have on page 39 some additional information on the B–1. I think it might be well to run through it.

Although the B–1 contracts have been in effect for less than 2 years, we are encouraged by the progress we have made to date. The preliminary design review, the first major milestone, was completed on schedule last July. The mockup review, considered the second milestone, was completed on schedule in October. Also, over 9,300 wind tunnel test hours for design validation have been completed. And we are well along with engine tests necessary for preliminary flight rating. Present B–1 contracts call for design and fabrication of three development aircraft, plus 27 flight rated engines.

Avionics Contract Release

In September, the request for proposal for the B–1 avionics contract was released. We plan to make maximum use of existing components and proven technology. Newly developed components will be used only where needed to meet the basic requirement.

Completion of Design Validation and Critical Design Review

Our fiscal year 1973 request of $444.5 million for the B–1 program will help us complete design validation and critical design review. These steps, coupled with the completion of engine inlet wind tunnel tests, will enable us to make full release of engineering drawings and specifications. Also, we expect to have the first aircraft in final assembly during fiscal year 1973.

First Flight Date

Our goal for first flight of the B–1 is April 1974. We will then test the system for a full year before making the production decision. If we decide to go ahead with production, an initial operational capability could be reached in the late 1970's.

Strategic Bomber Force Requirement

Chairman Ellender. Mr. Secretary, are you prompted to promote the construction of this bomber because of new programs initiated by our potential enemies?

Secretary SEAMANS. We are prompted to go ahead with this because we feel that it is essential to have a strategic bomber force. We made the decision in 1969 that we would not go ahead and procure additional FB–111's beyond the 77 that we already had underway. Instead we decided to initiate the design of a really new modern aircraft and that is what the B–1 is. That is the decision we made then and I think the decision was a sound one.

BUILDUP OF SOVIET AIR DEFENSES

Of course, we are prompted to do this by the buildup in the Soviet air defenses, the feeling that if we are going to have a bomber capability looking ahead into the 1980's that we will have to have the capabilities that we have been describing here this afternoon in this airplane.

ASSURED REACTION CAPABILITY IN THE EVENT OF ATTACK

Chairman ELLENDER. That is the reason I question the expenditure of so much money.

Secretary SEAMANS. Our strategic deterrent depends on our having assurance that we can react if we are attacked. My own view is that a bomber is essential for this deterrent.

Chairman ELLENDER. In a missile age?

Secretary SEAMANS. In a missile age. It has missiles, too. It is missile-carrying.

The reason for the development is not that the Soviets are coming along with a new bomber. It is that Soviet defenses are building up. So, if we are going to be able to penetrate their defenses in the future, we must have this airplane.

ECONOMIC DISASTER OF MAINTAINING NUCLEAR AND CONVENTIONAL CAPABILITIES

Chairman ELLENDER. I was a member of this committee when we started building missiles years ago. I stated then, and I repeat now, that the cost of doing both will be too much for our economy to absorb. I think I will be proved right. I do not see how we can continue to spend all that we are now contemplating in building our missiles bases—which are really, in my estimation, the real deterrent, and have been in the past—and then also prepare for conventional warfare, which is what you are doing. I do not see how you can do both and sustain our economy.

I look upon this program in large part as an attempt to assist our allies. But if we continue to spend at the present rate for both nuclear and conventional warfare, we may well find ourselves in a position in which we can neither help our friends nor ourselves, for our economy may totter.

Secretary SEAMANS. I am well aware of the concern about the budget. I am a taxpayer, myself. I am concerned about the national budget. It is for that reason that we laid this program out the way we did.

PROGRAM DECISION AND SALT TALKS

We are going to allow ample time not only to test the airplane but also to test the international situation to see where we stand [deleted] before making a production decision.

Chairman ELLENDER. Do you actually believe such actions as we have been discussing will assist us in the SALT talks? It would appear to me that it would be more inclined to further the arms race, which in itself would have the opposite effect on the SALT talks.

Secretary SEAMANS. I don't know how the [deleted] come out.

Chairman ELLENDER. They will never succeed if we continue to build as we are now doing. That is the point I was making.

Secretary SEAMANS. [Deleted.]

I do not think that this is going to make it more difficult. [Deleted.]

Chairman ELLENDER. That is your belief.

Secretary SEAMANS. That is my belief; yes.

Chairman ELLENDER. It seems to be based on the assumption that, if we continue to improve our military strength, this will improve our chances of reaching an arms limitation agreement.

Secretary SEAMANS. [Deleted.] This is a development program.

Chairman ELLENDER. You know you are going to build that airplane if you develop it. You have never failed yet.

Secretary SEAMANS. This is not the concept we are discussing here. The concept is to——

Chairman ELLENDER. Ready them for production.

Secretary SEAMANS. To build them if required.

Chairman ELLENDER. If required?

Secretary SEAMAN. Yes.

Chairman ELLENDER. Are there any further questions on the B–1?

Senator CASE. Excuse me, Mr. Chairman.

There is a bill on the floor that I am author of and which I have to support. I will be back in 15 minutes, if I may. I have a couple of questions that I would like to ask.

Will you still be here?

Secretary SEAMANS. I believe I will.

Senator CASE. I will be back here before quarter of four.

Chairman ELLENDER. We have not heard from the General yet.

Senator CASE. Then there is plenty of time.

Chairman ELLENDER. I hope to continue until both witnesses have completed their testimony.

Senator CASE. I don't want to inconvenience anyone.

Senator ALLOTT. May I ask those questions for you?

Senator CASE. Yes; you can.

SPACE SHUTTLE

Since I have interrupted, Mr. Secretary, you do deal in a general way with the shuttle business?

Secretary SEAMANS. Yes.

Senator CASE. I wish you would develop the military applications for the record.

Secretary SEAMANS. We have made our potential needs available to NASA so that if they go ahead with it, it will be designed so that we could use it.

Senator CASE. I think it would be helpful for our record if we develop that.

(The information follows:)

SPACE SHUTTLE/MILITARY APPLICATIONS

If the shuttle is developed with the proper operational and cost advantages, it is expected that it would be used to orbit the majority of the DOD payloads. When developed, it could replace the present expendable launch vehicles. The DOD Mission Model that has been developed for the 1980–1990 time period when the shuttle would be operational includes satellites in the communication, early warning, surveillance, meteorological, navigation, inspection and support areas. Systems to improve capabilities in these areas have been included where appropriate for the time period.

The shuttle offers the potential of improving mission flexibility and capability by on-orbit checkout of payloads, recovery of malfunctioning satellites for repair and reuse, or resupply of payloads on orbit thus extending their lifetime. Payloads could be retrieved and refurbished for reuse and improved sensors could be installed during refurbishment for added capability.

The proposed NASA shuttle configuration with a 15 foot diameter by 60 foot long payload bay and a payload weight capability to low earth orbit of 40,000 pounds polar (65,000 pounds east) meets the DOD needs forecast in our Mission Model. A better insight into the systems and operational capabilities such as survivability, vehicle autonomy, on-board checkout, reliability, and vehicle turn-around-time, will be gained after vehicle system detail design, which is to be accomplished by NASA during the next phase of shuttle development, is completed. The Air Force is continuing to work closely with NASA to insure that DOD needs are refined and considered and to assess the utility of the evolving system design to meet DOD needs.

F–15 AIR-TO-AIR FIGHTER

Secretary SEAMANS. The F–15 is being developed to provide all weather air-to-air combat capability during the post-1975 time frame. McDonnell Douglas was awarded the prime contract for the F–15 and Pratt & Whitney won the engine contract. Hughes was selected to build the attack radar system after a flyoff competition.

We have made careful studies to weigh the relative performance and cost tradeoffs. For example, a simplified structural design was selected and we deleted those avionics requirements which did not specifically contribute to the aircraft's air-to-air capability. Also, the AIM–82 missile was canceled in favor of a much simpler advanced Sidewinder. All of these adjustments were made to achieve the desired degree of capability within the limits of technology and acceptable costs.

We are using cost plus incentive fee contracts for the development portion of the program and a fixed price with successive targets for the production phase. This program was the first to implement the demonstration milestone concept in system acquisition, and we are pleased at the progress we have achieved to date.

The first four milestones have been met on time or ahead of schedule: Preliminary design review in 1970 and the last three—the radar contractor selection, the critical design review of engine and airframe, and the avionics equipment development review—during the past year. Also, approximately 95 percent of the contracts for components and subsystems development have been released.

As part of the F–15 structural integrity program, McDonnell-Douglas has completed 16,000 hours of fatigue tests of the stabilator, which is the rotating elevator back on the tail. These tests would amount to four operational lifetimes of the production article. This was followed by static testing of the same stabilator to 200 percent of design load without failure. In November, however, after 4,000 hours of fatigue testing, we experienced a failure in the outboard wing section of the wing subsystem test article. We have identified

the cause and have taken corrective measures. Component testing confirmed that the failure was due to a peculiar test overload condition which resulted in repeated buckling of the shear webbs. We are increasing the thickness of the shear webb.

The purpose of these thoroughgoing structural tests early in the program is to identify weaknesses in the design and to make corrections before extensive retrofitting is required. The first flight is scheduled for mid-1972.

I might say the first one is going together at McDonnell-Douglas. Out there you can actually see the airplane in its configuration. It will be flying this summer

Land-Based Single Place Aircraft

Chairman Ellender. How does this differ from the F–14?

Secretary Seamans. It is designed to be land-based and to provide air superiority over a battlefield, say, in Europe, to take on whatever Soviet airplanes may be there.

Chairman Ellender. These are fighter planes.

Secretary Seamans. These are fighter planes. This plane has one pilot. There is no navigator aboard. It is a single place airplane.

Chairman Ellender. What do we have in inventory today?

Secretary Seamans. F–4's.

Chairman Ellender. This is an improvement on the F–4?

Secretary Seamans. Yes; a substantial improvement over the F–4.

Speed and Altitude

Senator Young. What is the top speed and altitude?

Secretary Seamans. The top speed is mach [deleted] and [deleted] feet.

Senator Young. That is a little higher than the F–14, I believe.

Secretary Seamans. Someone will have to help me on that.

This plane is built for maneuverability. It is built to get in and dog-fight. It will have guns, as well as missiles.

F–14 Interceptor and Russian Foxbat Comparisons

The F–14 is somewhat more of an interceptor type designed to go out with a long-range missile and intercept an airplane attacking a fleet.

Senator Young. The Russian Foxbat flies higher and faster.

Secretary Seamans. Yes, sir; the Foxbat is a faster plane above about 52,000 feet, but below that the F–15 is faster. We believe when it comes to air superiority, that this plane can protect the battle area. The Foxbat, even though it is faster at higher altitudes cannot knock the F–15 out.

Expenditures and Development Cost

Chairman Ellender. What is the total amount you have spent to date on this aircraft excluding what you are presently asking for?

Secretary Seamans. As of the 31st of December, we had spent $635 million.

Chairman Ellender. For what purpose?

General Ryan. Could I get something straight here?

You want to know what we have expended or what we have had in the budget?

Chairman ELLENDER. I said expended to date. In 1971 you were provided $349.5 million. In 1972 you have $419.9 million funded, according to the figures I have before me.

Secretary SEAMANS. That is correct.

Chairman ELLENDER. I believe that is not the total.

Secretary SEAMANS. There is some money in fiscal year 1972.

General RYAN. Up to date, through fiscal year 1972, Mr. Chairman, we will have spent $1.022 billion.

Secretary SEAMANS. That is the amount which has been appropriated to date through 1972. We have not expended all that money because we are still in fiscal year 1972.

Chairman ELLENDER. You are still in the development stage.

Secretary SEAMANS. Yes, we are.

Chairman ELLENDER. How much more do you think will be required prior to production?

Secretary SEAMANS. The total development program is estimated at $1.75 billion.

Chairman ELLENDER. That is before you get into production?

Secretary SEAMANS. Most of which is before you get into production. You see, in fiscal year 1973 we are requesting $454 million. In 1974 we show [deleted] million, which nearly completes the development phase. We are also requesting in this budget $421 million for the first buy of production aircraft.

Chairman ELLENDER. Of this particular aircraft?

Secretary SEAMANS. Of this particular aircraft we are requesting funds to go ahead and buy 30 aircraft.

SUFFICIENCY OF TESTING PRIOR TO PRODUCTION

Chairman ELLENDER. Is it your opinion that this aircraft has been sufficiently developed so that you can request funds to put it into production?

Secretary SEAMANS. Now it is not. But by the time we are in the middle of fiscal year 1973 the answer is yes. We will be flying this airplane this summer. We are asking for authority to go ahead and initiate long lead items in October and then initiate production in I believe it is February of next year.

General RYAN. That is right.

Chairman ELLENDER. Now are you satisfied that there has been enough research done in order to warrant you to ask for money to construct it?

Secretary SEAMANS. As I indicated in my statement, this program has met our milestone schedule. So, projecting that performance, the answer is yes. However, if we miss any of the milestones, the way the contract is written we would not go ahead with the production and we would not suffer a loss in the process. We have that option built into our program.

Chairman ELLENDER. Does that meet your new "fly before buy" policy?

Secretary SEAMANS. "Fly before buy" is a colloquialism to be sure, you test it sufficiently before going ahead and procuring it.

Chairman ELLENDER. The development then will cost you $1.7 billion?

Secretary SEAMANS. That is correct.

Chairman ELLENDER. You plan to contract for 30 production aircraft, which would include further testing?

THIRTY PRODUCTION AIRCRAFT TEST

Secretary SEAMANS. Well, there are already test aircraft in this $1.7 billion, 20 test aircraft. Then in addition we are saying that we will be ready in a year to go ahead with the first production of the aircraft. We are recommending that the first lot be 30 aircraft.

Chairman ELLENDER. What will be the cost of these aircraft?

Secretary SEAMANS. For those 30 aircraft it will be $421 million.

Chairman ELLENDER. That is how much apiece?

Secretary SEAMANS. That is about $14 million each, total weapons cost. The flyway cost is $11.7 million.

Chairman ELLENDER. You are satisfied that you are safe in buying the 30, that they will fly?

Secretary SEAMANS. That is correct.

Chairman ELLENDER. What are your future plans?

Secretary SEAMANS. Our future plan is to buy [deleted] production aircraft.

Chairman ELLENDER. What is the cost?

Secretary SEAMANS. The total program acquisition cost for that buy, which is actually [deleted] if you include all the test aircraft, comes out to be [deleted] million a copy. That is everything, all the R. & D. spares, all testing.

Chairman ELLENDER. [Deleted] million apiece?

Secretary SEAMANS. That is correct, [deleted] is the estimate. The actual flyaway cost is [deleted] million. The procurement cost, if you include the R. & D., and I think you should, comes out to be [deleted] million.

Chairman ELLENDER. Proceed.

ENGINE DEVELOPMENT PROGRAM

Secretary SEAMANS. There is one item here that needs discussion. That is on page 42. It is a question of cost of the engine development program. Increases have resulted in part from the Navy's decision not to exercise its initial production option and followon requirements for the F–14B engine. This decision and other factors increased the Air Force F–15 R.D.T. & E. costs by $26.3 million in order to absorb overhead and tooling costs that would have been charged to the Navy. Our fiscal year 1973 budget request includes $20.6 million of this increase with the remainder to be included in fiscal year 1974 funds. We estimate that the total increase in the engine program cost to the Air Force, including procurement, will be somewhat over $500 million.

Senator YOUNG. The Navy's F–14B is the one with the higher powered engine?

Secretary SEAMANS. That is right.

Our fiscal year 1973 budget request includes $454.5 million for the F–15 development program plus $421.6 million for procurement of

the first 30 production aircraft. The ultimate cost for our planned buy is expected to be about [deleted] million per aircraft.

BUDGET REQUEST

Chairman ELLENDER. Are you asking for the full amount of $421 million?

Secretary SEAMANS. Yes; we are. We are requesting a total of $910 million for the F–15. That is $454 million development, $421.6 million procurement, and $34.3 million for initial spares.

PRODUCTION SCHEDULE

In fiscal year 1973 we will acquire actual flight test experience on the category I test aircraft. After 7 months of testing, we expect to be ready for a production decision in February 1973. And if a go-ahead is given we could have an initial operational capability for the first squadron in the mid-1970's.

A–X CLOSE AIR SUPPORT AIRCRAFT

Development work on two competitive prototype close air support aircraft is progressing toward our goal of first flight in June. Fairchild Industries and Northrop Corp., were chosen to develop two prototype aircraft each under fixed price contracts. We hope to begin a competitive flyoff in October of this year. During these tests the Air Force plans to fly about 120 hours on each of the two competitive systems. After complete evaluation of the performance characteristics of the aircraft and a detailed review and appraisal of each contractor's development and production proposals and cost estimates, we will decide which prototype is the best and whether to initiate the full scale development program.

Our objective is to develop an aircraft that will be: (1) optimized to perform close air support with high survivability; (2) relatively inexpensive; and (3) easy to maintain in an austere environment. To minimize development and procurement costs, we are using current technology and available equipment wherever possible.

The design specifications call for the A–X to provide improved closein support under low ceilings and poor visibility conditions—where our present higher performance aircraft are less effective. The A–X will also be designed with a 1,000 foot takeoff capability and will be able to loiter in the battle area for longer periods of time when necessary.

For high survivability, this aircraft will have redundant systems, self sealing fuel tanks which contain foam to suppress fire or explosions and armor plating for the cockpit and other critical areas. To insure maintainability and low operating costs, we are emphasizing simplicity throughout the entire system.

The fiscal year 1973 request of $48.1 million will be used to complete the flyoff competition and, if the decision is made to go ahead, to initiate full-scale development and production in early 1973. We could then have an initial operating capability in the mid-1970's.

That is all I propose to say on the A–X.

Chairman ELLENDER. You did not discuss the Cheyenne.

Secretary SEAMANS. No; because that is something the Army will be discussing with you, Mr. Chairman.

Chairman ELLENDER. As I understood the discussion, you admitted this morning that a decision will be made as to whether to choose the Cheyenne or the A–X.

Secretary SEAMANS. That is the reason we put it in here and whether to initiate the full-scale development program. That decision will hinge on whether to go ahead with the Cheyenne, buy more A–7's or to pick one of the two A–X contractors to build the A–X. Of course, there is a possibility of having a mix of A–7s and A–Xs if the A–X is selected.

Chairman ELLENDER. That is the understanding we have.

Secretary SEAMANS. That is the understanding that we have in the Department of Defense.

Chairman ELLENDER. That was done last year, as I recall, by Mr. Packard.

Secretary SEAMANS. This is 100 percent consistent with what he said last year.

AIRBORNE WARNING AND CONTROL SYSTEM (AWACS)

In the air defense area, our most important program is the Airborne Warning and Control System (AWACS). Our present ground based systems are vulnerable to enemy missile attack, and they have a limited capability to detect low-altitude bomber penetrations. Also, they are costly to operate.

The AWACS will be relatively invulnerable to enemy attacks, and it will be able to remain airborne on station from 7 to 9 hours, at 1,000 miles from its operating base. It will have a radar look-down capability for detecting low-altitude penetrations.

The AWACS will also provide an improved command and control capability for our tactical forces.

The Boeing Co. was selected as the prime contractor for AWACS. The development phase is under a cost-plus incentive contract while production will be on a fixed price basis. Boeing will use the commercial 707 as the basic airframe. For the radars, Hughes and Westinghouse are participating in a competitive prototype development program.

Two 707's have been modified as testbed aircraft and the prototype radars are presently being tested in ground facilities. In late March we will begin extensive competitive radar flight testing. Based on these test results, the Air Force will select the winning radar which will be used in the second phase of the program when the total system will be developed.

Most of the $160 million research and development funds requested for fiscal year 1973 will be used to complete the prototype flight test programs and for follow-on engineering development of the avionic subsystems. After the flight test program, we will decide whether to proceed with full design and engineering development. The $309.9 million in the fiscal year 1973 procurement budget will be used to buy three test aircraft and AWACS peculiar operational and maintenance support equipment required for the test phase. These aircraft and support equipment would eventually enter the operational inventory.

Our current goal is to achieve an initial operational capability during 1977.

Chairman ELLENDER. Am I to understand that the type aircraft you propose to use is already in operation?

Secretary SEAMANS. We are basing this on the use of the 707. These are two aircraft that have just been rolled out, are conventional 707's, but with what is called the rotodome on top. We will be commencing a flight test with a Hughes system in one and a Westinghouse system in the other. We are then going, according to this plan, to an airframe that is essentially the same but with different engines that gives the plane more endurance. This will be an eight-engine plane rather than a four-engine plane. We would like to buy the first three of those airplanes with our fiscal year 1973 funds. That is our request.

PROGRAM EXPENDITURES AND OBLIGATIONS

Chairman ELLENDER. How much have you spent for that program to date, excluding 1973?

General CROW. $318.2 million is available for the program of which we have spent $198.5 million.

Chairman ELLENDER. What became of the rest of it?

Secretary SEAMANS. It is on hand. Most of it has been obligated. Not all of it, however.

Chairman ELLENDER. Then you expect to use, as I understood you to say a moment ago, the $160 million to purchase——

Secretary SEAMANS. $160 million will be to continue with the so-called brassboard development, or testing of these airplanes that have been rolled out.

Chairman ELLENDER. You will have to purchase those?

Secertary SEAMANS. We have done that. There is an additional $309.9 million which is to purchase three airplanes that will first be used for development but are reflected in the procurement account because they are eventually going to end up in the operational inventory. The total we are requesting for this program for this year is $469.9 million.

Chairman ELLENDER. Does the other appear in procurement?

Secretary SEAMANS. Yes, it does.

Chairman ELLENDER. What will those planes cost you apiece?

Secretary SEAMANS. The total program unit acquisition cost is $63 million. This will be 42 aircraft.

Chairman ELLENDER. $63.4 million.

Secretary SEAMANS. $63.4 million. The reason that it is so high——

Chairman ELLENDER. That is $63.4 million apiece?

Secretary SEAMANS. Apiece. The total program cost is $2.6 billion. You will end up with 42 aircraft.

Chairman ELLENDER. Those will be merely to fly——

DEVELOPMENT OF AIRCRAFT

Secretary SEAMANS. Those 42 will be available for strategic air defense as well as for general purpose forces.

Chairman ELLENDER. I thought they were to be used to detect enemy action.

Secretary SEAMANS. They are. These will be deployed to provide detection, warning, surveillance and command control around the perimeter of the United States.

REPLACEMENT OF OBSOLESCENT EARLY WARNING SYSTEMS

Chairman ELLENDER. Will that do away with the DEW line?

Secretary SEAMANS. Yes, coupled with a northern looking over-the-horizon radar, AWACS will do away with the DEW line.

Chairman ELLENDER. This new program is to take the place of——

Secretary SEAMANS. The existing ground radars that are used for Conus air defense. The feature of this system——

Chairman ELLENDER. The obsolete programs have cost us a great deal.

Secretary SEAMANS. Yes; I agree with that. This system will permit you to track aircraft that are right down on the deck, flying at low altitude.

Chairman ELLENDER. Of what use was the present facility? Have you ever detected anything of value?

Secretary SEAMANS. Yes, we have.

Chairman ELLENDER. What, for instance?

RUSSIAN FLIGHTS OFF ICELAND AND ALASKA

General RYAN. We see Russian Bears off Iceland nearly weekly, and Alaska.

Chairman ELLENDER. For what purpose do they fly there?

General RYAN. Evidently they are on routine navigation flights coming down the gap between Iceland and England. We don't know until we go out and intercept them. They go on by and we come back.

Chairman ELLENDER. When you say "intercept them," is there any action of any kind taken?

General RYAN. None whatsoever. We take pictures of them.

Secretary SEAMANS. And they take pictures. They know we are there.

Chairman ELLENDER. Do you know what their mission is?

General RYAN. No, sir; I think you can speculate. Many times they have intercepted our naval forces out in the Atlantic. I imagine it is training missions on their part.

Chairman ELLENDER. I am hopeful that the suspicion and fear that exists between us and Russia will be dispelled soon.

AIR DEFENSE AND TACTICAL AIR CONTROL ROLE

General RYAN. I will make a point on the AWACS. The Secretary mentioned it. It appears to me that one of the primary purposes we will utilize this aircraft for is support of our Tactical Air Force. For instance, in North Vietnam, where their Migs are operating in their own GCI environment, our aircraft lack such radar support. Using an AWACS aircraft to support our fighters by vectoring our fighters into their fighters, we would remove the advantage they gain from having GCI support.

Chairman ELLENDER. Will we do away with all our radar bases in both Canada and the United States?

General RYAN. I would say eventually. If AWACS works out; it, together with the over-the-horizon radar, will enable us to reduce other

coverage to the bare minimum. As a result of the reduction in our air defense, there are many gaps at low altitude in our radar coverage even in our northern areas.

Chairman ELLENDER. Which radar sites will we abandon first, those in Canada or those in the United States, or both concurrently?

General RYAN. Canada, probably.

Chairman ELLENDER. Do you think this will improve our situation?

General RYAN. Definitely, Mr. Chairman. In both the air defense role and in the tactical air control role.

Chairman ELLENDER. I can't fully understand the tactical air role.

General RYAN. Mr. Chairman, in North Vietnam where their aircraft are under their GCI control we are at a disadvantage. Their ground radar can look up and see their aircraft and see our aircraft and then vector their aircraft into the optimum position to attack our aircraft. With the AWACS with a look-down capability we can see both our aircraft and their aircraft. Then we are not at a disadvantage, as we have been.

Chairman ELLENDER. This program is being constructed so as to watch Russian moves?

General RYAN. To watch wherever we are.

Chairman ELLENDER. Russia?

General RYAN. NATO or elsewhere where our tactical air force may be required to operate.

Chairman ELLENDER. That is what is causing us to prepare as we are?

General RYAN. That is right. Our potential adversaries have that capability and we have to be prepared to take care of it.

Chairman ELLENDER. That is the reason. We are preparing primarily because of our fear of a Russian attack. Is that true?

General RYAN. Well, from my position, Mr. Chairman, I look at what his capabilities are and I am supposed to come up with a recommendation which will thwart his capabilities. This is the program that we are trying to present here today.

Chairman ELLENDER. How do you determine their capabilities?

General RYAN. Through our intelligence.

B–1 BOMBER CONSTRUCTION

Chairman ELLENDER. The same kind that prompted you to recommend the B–1.

General RYAN. We are not recommending a B–1 because he is building a bomber. We are recommending a B–1 because I personally think, and the Joint Chiefs agree with me, that it is an integral part of our Triad, our land based missiles, sea based missiles and bombers. We need the B–1 because the sophisticated air defense which he has developed make the penetrability of our B–52 questionable in the 1980's.

B–52 BOMBER SURVIVABILITY

Chairman ELLENDER. What is it that they have constructed to your knowledge that would make the B–52 noneffective?

General RYAN. The growth of radars, the growth of surface-to-air missile. The B–52 cannot get down on the deck. It does not have the

capability of getting down on the deck. The B–52 is slow. It is less survivable than the B–1. The B–52, today, can penetrate. But there is no way in the world that we can get that big airplane, regardless of the engines we put on it, up to the speed that we can with the B–1 at low altitude.

Chairman ELLENDER. Proceed.

ADVANCED PROTOTYPES

Secretary SEAMANS. In other areas, we are pursuing advanced prototype work as encouraged by former Secretary Packard. We believe that selected prototype projects are warranted to obtain better information on costs and operational suitability before beginning new weapon development and procurement programs. This will help assure that we have an adequate base of demonstrated technology and a sufficient number of alternative approaches for meeting requirements.

The Air Force is proceeding with two aircraft projects. These prototypes will be "bare bones" models, without the subsystems necessary for a fully operational system.

Congress has approved $12 million for fiscal year 1972 development work on demonstration prototypes for the lightweight fighter and the medium STOL transport, and the fiscal year 1972 supplemental includes an additional $5.8 million. In fiscal year 1973 we are requesting $92 million to continue these two projects.

In the lightweight fighter prototype our objective is to achieve extremely high maneuverability and good control. It will incorporate design ideas which we were unable to use in past development programs due to high technical risk.

Our goal in the advanced STOL transport prototype is to provide data on the cost and design features associated with short field performance in an aircraft with an operational weight of around 150,000 pounds, about the same as the C–130.

The expanded use of prototype development will help in selecting and managing the technology used in weapon systems. What we are trying to do is put ourselves into a position where we have data to make sounder decisions. Prototyping will provide demonstrated technology options from which we can select programs to go into engineering development.

Chairman ELLENDER. What is the purpose of those two aircraft projects?

Secretary SEAMANS. The lightweight fighters?

Chairman ELLENDER. Is that in addition to the F–15 you talked about?

Secretary SEAMANS. The $92 million will be split, $46 million each for those two programs: $46 million for the lightweight fighter program, $46 million for the advanced short takeoff and landing transport.

LIGHTWEIGHT FIGHTER AND FREEDOM FIGHTER

Senator YOUNG. What is the difference between the lightweight fighter and the Freedom fighter?

Secretary SEAMANS. The Freedom fighter is a plane that is being tailored specifically for our allies such as the South Vietnamese. The

lightweight fighter is a plane that we, ourselves, might conceivably want some time in the future. It is a much higher performance airplane, much more highly maneuverable, much higher speed.

It is being developed around the concept of a day fighter. It would not have the avionics in it that, say, the F–15 has. It could be used in conjunction with the F–15.

Senator YOUNG. Do we really need both of them? Do you put a higher priority on this lightweight fighter than on the others?

Secretary SEAMANS. I am not recommending that we go ahead with the lightweight fighter in the same sense as the F–15, but we think there is sufficient possibility that we might want such a plane or that possibly some of the NATO countries might want such a plane that it is worth investigating. The way to investigate is to pick two contractors according to our plan and each one of them will build two prototypes.

MEDIUM STOL TRANSPORT

That is also true of the STOL transport aircraft. Two contractors and each one will make two prototypes.

Chairman ELLENDER. How large a plane is contemplated?

Secretary SEAMANS. It is a 150,000-pound airplane.

Chairman ELLENDER. What is its mission?

Secretary SEAMANS. That is to carry cargo up in the forward zone of a military engagement, getting into runways of a couple thousand feet, 2,500-foot runways.

Chairman ELLENDER. When did you decide to initiate that program?

Secretary SEAMANS. This was discussed I believe with the Congress last year. We initiated the program several weeks ago. By initiated, I mean we have gone out with a request for proposal. We have not received the proposals back as yet.

Chairman ELLENDER. How much money have you already spent on that program?

Secretary SEAMANS. Very minimal.

General CROW. Very little has been spent. The total funding prior to 1973 is contemplated at $11.8 million.

Chairman ELLENDER. How much are you asking for in this request, $46 million?

Secretary SEAMANS. $46 million for this program and $46 million for the lightweight fighter.

PROTOTYPE AUTHORIZATION

Senator YOUNG. Are these aircraft authorized?

Secretary SEAMANS. The initiation was authorized.

General CROW. A portion of the prior year money was authorized last year—$6 million. We have a request for $5.8 million in the 1972 supplemental.

Senator YOUNG. For the Lightweight Fighter?

Secretary SEAMANS. No; this is for the advanced STOL transport.

ESTIMATED COST

Chairman ELLENDER. You gave the figures of $11.8 million and $46 million. What will the advanced medium STOL transport program cost us before it is completed?

Secretary SEAMANS. It is currently estimated at $270 million.

Chairman ELLENDER. That is to provide how many prototypes?

Secretary SEAMANS. In each program there will be four aircraft, two by each contractor.

Chairman ELLENDER. You mean for the Lightweight Fighter?

Secretary SEAMANS. Yes. In each case the plan is to select two contractors and each contractor build two aircraft. Each program has four aircraft total.

Chairman ELLENDER. How much have you spent or will spend for the Lightweight Fighter.

Secretary SEAMANS. We have not made a source selection yet. The proposals are coming in tomorrow on that airplane.

General CROW. It is contemplated that in 1972 there will be a total of about $10 million available for the Lightweight Fighter, $6 million for the airframe, $4 million for the engine. In terms of money being expended, none has been expended.

Chairman ELLENDER. These are two new programs?

Secretary SEAMANS. These are new programs, both of which were discussed with the authorizing committees last year by Mr. Packard.

Chairman ELLENDER. Can you furnish for the record what the estimated cost of both of these prototypes programs will be?

Secretary SEAMANS. Yes, we can.

(The information follows:)

TWO PROTOTYPE PROGRAMS/COST

The following cost estimates are submitted for the Advanced Medium STOL Transport and the Lightweight Fighter:

[In millions of dollars]

	Fiscal year 1972	Fiscal year 1973	Additional to completion	Total estimated cost
Advanced medium STOL transport	11.8	47	212.2	[1] 270
Lightweight fighter	[2] 6.0	46	65.0	[2] 117

[1] $4,000,000 of fiscal year 1972 emergency funds have been requested for the advanced turbofan engine (advanced medium STOL transport) and are not included above.

[2] $4,000,000 of fiscal year 1972 emergency funds have been requested for the turbine engine prototype (lightweight fighter) and are not included above.

ASTRONAUTICS

Chairman ELLENDER. Very well.

Secretary SEAMANS. On page 48—Astronautics, we are requesting $345.7 million for our space research and development programs.

In the field of early warning satellites, the system has progressed during the last year. The sensor fields of these satellites will encompass almost [deleted] the surface of the earth. These systems are for the purpose of detecting ICBM and SLBM launches and to report atmospheric nuclear explosions.

There is not much in here in this unclassified version about this program. It is the so-called [deleted] program. We have [deleted].

Chairman ELLENDER. Is that in addition to the AWACS?

General RYAN. Yes, Mr. Chairman. It is a warning system. When it is developed, we will probably undoubtedly be able to replace many of our present——

Chairman ELLENDER. That will make the third warning system you have.

Secretary SEAMANS. This is for missiles, whereas the other one we are talking about is for aircraft.

Chairman ELLENDER. You already have the ballistic missile system.

Secretary SEAMANS. Yes, we have the ballistic missile early warning system or BMEWS.

Chairman ELLENDER. The subcommittee will recess while we go to vote.

(Brief recess.)

ENHANCEMENT OF NATIONAL DEFENSE BY SATELLITES

Chairman ELLENDER. You may proceed.

Secretary SEAMANS. In the future we would like more flexibility and eventually lower costs in our space programs. The high cost of space operations, however, still prevents us from developing a space capability in all the areas where we think satellites could enhance our national defense. Therefore, we are very interested in the space transportation system concept now being developed by NASA. We are working closely with NASA to assure that the configuration of the space transportation system will also satisfy DOD needs.

INSTALLATION AND LOGISTICS

Now, let me comment on our efforts to improve Air Force logistics operations and military construction. Last year I mentioned the development of an advanced logistics system to streamline the management of Air Force wholesale logistics. This system will result in a considerable savings in manpower and dollars and will be operational on schedule in 1973.

In another area, we are concerned with the increasing costs of supporting our weapons systems over their entire life cycle. Not only have these costs increased due to the age of many of our aircraft, but the per-flying-hour cost of supporting new weapons continues to rise. Because of this, we are involved in a concerted effort to improve the reliability and maintainability of both new and existing systems. This means keeping them simple, among other things.

During development and production of new systems, we are placing more emphasis on system reliability and its impact on O. & M. costs. For example, in the A–X program we are requiring mandatory use of life cycle cost formulas as an aid to making design decisions and as a factor in source selection.

On older systems, our revised worldwide maintenance data collection system gives us detailed information on each specific system. We can then focus our efforts to reduce operating costs on the high cost systems first. For example, recent investment in modifications to improve reliability show us we can gain a return many times over within a few years.

MILITARY CONSTRUCTION

In 1973 we will begin to realize the benefits of our long-range depot modernization program. For fiscal year 1972, the Congress approved

$52.5 million for military construction and $22.1 million for equipment as the first phase of this program. These funds are providing for the replacement of outdated or inefficient maintenance and distribution tools and facilities. This year we are requesting $41 million under military construction and $25.8 million for procurement of equipment to continue this effort. This will allow us to improve quality and worker productivity. Our objective is to insure that our depots maintain the capability to provide responsive and economical support for our latest weapons systems.

The fiscal year 1973 military construction program will also help us improve career incentives by providing a better living and working environment for our people. We know that the provision of adequate, modern structures can make a very substantial contribution to the retention of our personnel. Therefore, we are requesting $98 million in fiscal year 1973 for bachelor housing, dependent schools, medical construction, and related community facilities.

With respect to family housing the 200-unit industrialized housing demonstration project at George AFB, which I described to you last year, has been successfully completed. Our airmen who occupy this housing are well satisfied. Moreover, the entire project was accepted, without deficiency, in October of last year and was completed within the original cost estimate.

In the fiscal year 1972 construction program, we have 12 family housing projects totaling 3,600 units. Of these, 2,900 units at nine locations will be industrially manufactured and relocatable.

The fiscal year 1973 program includes 3,168 units at 11 locations and the large majority of these also will employ the industrialized concept. The civilian construction industry has shown increasing interest in this approach, and we hope that our experience will be of direct benefit in helping to solve domestic housing problems.

SUMMARY

We believe the Air Force has made significant progress during the last year. I have discussed four major management areas: Organization and personnel policy, weapons procurement, research and development, and installations and logistics.

We are improving our organization and planning to provide more effective use of manpower and better career opportunities. We are also stressing policies and programs which will make professional careers in the Air Force more appealing through such incentives as better housing and expanded educational opportunities. Most important, we are emphasizing the need for improvement in human relations, including the need to provide equal opportunity.

With respect to procurement, we are pursuing programs which will achieve incremental modernization of our forces at what we believe to be the least possible cost. And when evaluating the need for new weapon systems, we are making careful assessments of our own capabilities, and those of our allies and are ruling out capabilities that are not essential to performance of assigned missions.

In our research and development programs, we are providing as much hardware competition and evaluation as feasible so that a determination of operational suitability can be made before making a full

development and production commitment. We are also expanding our use of the prototype technique to give us sound technological options, as well as analyses of cost and operational data, prior to initiating new development programs.

In order to hold down our operational support costs, we are streamlining our logistics system to provide responsive support and reduce expensive inventories of spares and supplies.

These steps should help us to meet our primary objective of providing essential and ready forces at the minimum possible expenditures of our Nation's resources.

In conclusion, I believe that the request we have presented to you is the lowest which can get the job done. It represents a balanced effort to meet the present and future challenge to our national security.

Thank you.

CONSULTATION WITH ALLIES ON PROPOSALS INCLUDED IN BUDGET REQUEST

Chairman ELLENDER. I notice you have just stated that you are making a careful assessment of our own capabilities and those of our allies, and are ruling out capabilities that are not essential to performance of assigned missions. To what extent have you consulted with our allies in the proposals that you have presented to this committee?

Secretary SEAMANS. Dr. Foster is best able to answer that question. He has been working to share development, if you will, with our NATO allies so that we do not both expend money but, rather, that we can share certain developments with the other. This, to my mind, does not carry through, however, to sharing programs like AWACS, the B–1, or our major weapon systems efforts.

It is much more in the area of making use of a new gun development, of a new weapon of that sort.

Chairman ELLENDER. Just in research primarily.

Secretary SEAMANS. Yes; I would say that is correct. Also, on this point, I would say that in making a selection for South Vietnam of a fighter aircraft when we finally selected the F–5 it was on the basis that we wanted an airplane that would have the minimum cost consistent with being able to hold off a Mig-21. We could have gone ahead and developed an off-shoot of the F–4 or some other airplane but it would have been more expensive. We took into account the capability of the South Vietnamese to maintain a plane as sophisticated as the F–5 but felt that it was not appropriate to give them a more complex aircraft.

Chairman ELLENDER. You consider this program, I presume, to be necessary not only for our own protection but for that of our allies?

Secretary SEAMANS. Yes; I do. That is the basis on which it was put together.

PARTICIPATION BY ALLIES IN EXPENSES OF PROGRAMS

Chairman ELLENDER. To what extent have you requested that they participate in any of the expenses for these new programs?

Secretary SEAMANS. This is an area in which I, myself, am not involved, discussions with the NATO countries. This is a type question that you had better review with Mr. Laird.

Chairman ELLENDER. I have discussed this with him before and all I got from him was a promise of a billion dollars over a period of 5 years, that our NATO allies will spend to construct airfields and the like in Western Europe. You don't know of your own knowledge of any moneys that are being provided by our allies to assist in the construction of any of these programs you are now contemplating?

Secretary SEAMANS. No; I don't.

Chairman ELLENDER. Very well.

Are there questions?

Senator ALLOTT. I have none.

I wonder about Senator Case before we leave Secretary Seamans.

SPACE SHUTTLE

Senator CASE. I have just a couple of questions, if I may, Mr. Chairman.

Chairman ELLENDER. You may proceed.

Senator CASE. On this question of the shuttle, I would like, Mr. Chairman, if I could, to include in the record at this point a Baltimore Sun story, headed, "Pentagon Plans a Greater Role in Space Shuttle." It appeared in the February 16 issue of that paper. My question is based upon that in a statement by Colonel Albert, who is quoted as saying, "The Defense Department certainly will make a sizable funding contribution at the proper time."

Have you any idea what the proper time will be and what "sizable" means, Mr. Secretary?

Secretary SEAMANS. I judge what he means——

Senator CASE. Would you like to look at this?

Secretary SEAMANS. I don't think I need to, thank you.

My own view of it is that the development is a NASA responsibility, that we should only at this time involve ourselves in studies of the possible use of the shuttle. We have been running these studies at a level of, I think, $3 million or $4 million annually. This is just to maximize the potential utility of the shuttle so that they can take care of a variety of DOD missions in the future if the program goes ahead and is successful.

At the time that the shuttle is developed, assuming that it is, then its operational use by the DOD would have to be funded by the Department of Defense. How that would be done is not clear at this time. It is premature to think of the operational use of the shuttle too far in the future, in my view. But we will have to pay for that equipment that we, ourselves, use.

Senator CASE. In this article Colonel Albert is quoted as saying that "The Defense Department is putting its faith in the shuttle and as a result we are not developing any other space vehicle beyond Titan III. We intend to use the shuttle for all military space operations."

Secretary SEAMANS. That is to say, if the shuttle is successful. It is also true, Senator Case, that we are not funding any booster development beyond the Titan III. In that sense, we are relying on the shuttle. However, I should make it clear that the Titan III is working very satisfactorily at this time.

Senator CASE. I, obviously, was interested in whatever contribution you wanted to make to the discussion that we will have about whether we will have a shuttle or not. How important do you imagine it to be? This is the kind of thing I wanted to give you a chance to indicate. You have been very frank in not overstating it so far, certainly.

Secretary SEAMANS. I was on the President's Space Task Force, as Mr. Laird's representative, when the Vice President and the then Administrator of NASA, the President's Science Adviser, and Director of the Budget, and myself, reviewed what our objectives should be in space. One of the recommendations to the President was that NASA should go ahead with the space shuttle. I participated in that. I think that is a good decision.

I am glad that NASA is going ahead.

UTILIZATION OF SHUTTLE

Senator CASE. I appreciate that. I am very glad, I know we all are, to have your judgment. But what is your opinion as a representative of the military as to its usefulness?

Secretary SEAMANS. As I said in my own statement, if it is successful along the line that it is now being developed, it would provide more flexibility for space missions. For example, today's recovery is directly down from an orbit; there is no maneuverabiity available today. We have to pick up anything that comes back from space in a sort of air-drop mode.

Whatever it is that is coming back has to come down in a parachute, and we have to go out and pick it up, air-snatch it. The shuttle will be able to come back from space much like an airplane, landing on a landing strip, and have considerably more maneuverability so there would be much more flexibility in bringing a package back from space at any time desired.

Senator CASE. I wanted you to say anything you wished about the military application.

Secretary SEAMANS. I appreciate the opportunity. If I think of some other ideas that I would like to put in perhaps I can have that freedom to put it in.

Senator CASE. With the Chairman's permission.

Chairman ELLENDER. Yes.

(The article and comments follow:)

DOD FUNDING OF SPACE SHUTTLE

[From the Baltimore Sun, Mar. 16, 1971]

PENTAGON PLANS A GREATER ROLE IN SPACE SHUTTLE

PHOENIX, ARIZ., March 15, 1971.—An Air Force colonel reported today that the Defense Department intends to use a reuseable rocket plane for all its military space missions in the 1980's and plans a sizable money contribution to its development.

Until now, financing and the presentation of the program to Congress has been handled by the National Aeronautics and Space Administration.

Charles J. Donlan, of the NASA Office of Manned Space Flight, told several hundred persons attending a space shuttle conference here that present plans call for unmanned testing of the rocket plane beginning in 1976 and manned tests in 1977. A fully operational vehicle ready in 1979, he said.

MEN AND SUPPLIES

The shuttle will be designed to make repeated space flights. It will deliver men and supplies to orbiting space stations, place satellites in orbit, and repair others already there or bring them home for overhaul.

Col. John G. Albert, director of space operations for the Air Force, told the conference: "The Defense Department is putting its faith in the shuttle and as a result we are not developing any other space rocket beyond the present Titan 3. We intend to use the shuttle for all military space operations."

He said this includes tasks now being done by unmanned satellites: communications, navigation, weather-watching and surveillance.

The manned shuttle will mainly place military satellites in orbit, but it can perform specialized missions in orbit for periods up to seven days.

"SIZABLE . . . CONTRIBUTION"

Colonel Albert told a news conference the Defense Department "certainly will make a sizable funding contribution at the proper time."

This will help the space agency, which has had budget difficulties with Congress the past couple of years. Cuts in the space budget have resulted in a two-year delay in the shuttle program.

NASA also is seeking money from several foreign nations, particularly in Europe, to finance the project, which will cost about $8 billion to go into service.

Colonel Albert said that to be useful to the military, the rocket plane must be able to operate like a jet airliner, with quick turnaround after it has landed on a runway like a conventional plane.

"Unless we can achieve an airplane-type operation," he said, "we haven't achieved our goal. The shuttle is not a missile or a winged Saturn rocket. We must get away from the great complications of rocket ground operations. We must maximize the number of flights and flying time like an airliner."

The shuttle will be in two stages and will take off vertically. The first stage, manned by two pilots, will push the upper stage into space and release it and then turn around and fly back to a landing on earth.

The second stage, with two pilots, up to 12 passengers and cargo, will continue on to the space station.

A week or so later it will return to earth with passengers, experiments and items manufactured in the station.

Mr. Donlan, of NASA, reported that initial plans call for three shuttle boosters to be built, each the size of a Boeing 747 jetliner, and four orbital sections, each as large as a Boeing 707. They will make up to 75 trips a year into space and will have a useful lifetime of at least 10 years.

SPACE SHUTTLE/MILITARY APPLICATION/ADDED COMMENTS

The Shuttle could make possible new ways to use the space medium to augment our defense mission and deterrent posture. For instance, the Shuttle would permit the quick return of physical data for assessment which has been collected during a single orbit mission. This capability is possible because the Shuttle orbiter would be capable of a crossrange maneuver and would be able to land like an airplane. Also, the Shuttle could be used as an on-orbit test bed to conduct development and qualification testing of new space systems and subsystems. In this way we could be more responsive in countering technological surprise and the on-orbit testing would be more credible because it is conducted in space. The Shuttle would allow the engineers to refine designs while in the prototype stage based on data from a realistic operating environment. Recovery, refurbishment and reuse of payloads offer the potential for substantive cost benefits in this area and by being able to better diagnose the causes of malfunctions that occur in the space environment we can improve the design of our spacecraft. There may also be a desire to temporarily deploy additional space systems during a time of impending crisis and to recover them if and when they are no longer needed. The Shuttle could provide this capability. Designed properly, the Shuttle pre-launch checkout time can be significantly reduced over the time required to ready current launch vehicles. A rapid response capability which could be of immense benefit during certain crisis situations would thereby be available. These are a few of the potential benefits the Shuttle could offer over our existing expendable systems.

B–1 TECHNOLOGY

Senator CASE. One other point, Mr. Chairman.

Last May General Nelson was quoted as saying the [deleted] for the B–1. Does that remain a very promising possibility?

General GLASSER. Yes, sir; the [deleted] program for large [deleted] is very much of an advanced technology program. We have looked at the size of the weapons bays in the B–1 against the potential size we see for large [deleted]. It is quite conceivable that at some future date a [deleted] could be incorporated into the B–1.

Senator CASE. It is true that a [deleted] was it not, a couple years ago?

General GLASSER. I don't believe that is correct.

General RYAN. I don't believe so.

Secretary SEAMANS. We still have quite a ways to go in [deleted] before we get any really effective range out of an active [deleted].

Senator CASE. Would you check that for me? In 1969 at [deleted] Air Base, whether it happened or not?

Secretary SEAMANS. Certainly.

Senator CASE. If the staff would let me know when the information comes up, I would appreciate it.

(The information follows:)

VERIFY [DELETED]

[Deleted]. It is completely false. The article has been picked up by other news media from time to time and given further distribution. [Deleted.]

Senator CASE. My point is this: I don't want to spend any money unnecessarily, but I want to spend all the money we need and for all purposes necessary.

Is this B–1 going to be vulnerable to a [deleted]? If it can carry [deleted], will it be vulnerable to a [deleted]? Are we developing something at enormous cost that is not going to be of great value because of its vulnerability?

Secretary SEAMANS. At this time we are still very much in the research phase. Even making pretty close extrapolations it is hard for me to see this kind of system in a fighter for a considerable period of time.

Even then, the range is going to be quite limited. It seems to me it is going to have much more of an application for [deleted].

Of course, I could not rule that out.

B–1 BOMBER DEFENSE

General GLASSER. Senator Case, what the B–1 application contemplates is defense of the B–1, itself.

Senator CASE. Against other aircraft?

General GLASSER. Against aircraft coming in toward it and more primarily against missiles because the big threat is [deleted]. So that potential for bomber defense does exist in the near term.

Senator CASE. This is a missile from the ground?

General GLASSER. Primarily from another aircraft, fighter aircraft attempting to attack a bomber. It will thwart his missiles as they approach the bomber.

Senator CASE. How does it work?

General GLASSER. It is a [deleted].

Senator CASE. It goes to the [deleted].

General GLASSER. It can. In other applications, the [deleted]. That may be what you are referring to at [deleted].

General RYAN. [Deleted.]

Secretary SEAMANS. That was the application I was talking about, actually [deleted].

STATEMENT OF GENERAL RYAN

FORCE STRUCTURE AND BUDGET REQUEST

Chairman ELLENDER. General, you may proceed, sir.

General RYAN. Mr. Chairman, Members of the committee:

I am pleased to appear before this committee to discuss our current force structure and the proposed Air Force budget for fiscal year 1973. We are continuing our efforts to provide this Nation more defense for the dollar. In so doing we are determined to assume a posture based on "first things first" that will support the national strategy of realistic deterrence and its central new concept of total force planning. First of all, we must maintain a strong strategic deterrent force. Then we must have relevant power that under the total force concept will contribute to the deterrence of war at lower levels where U.S. national interests are involved. This requires clear priorities to achieve the greatest yield from shrinking but ever more costly military assets.

In the face of steadily declining budgets in terms of real purchasing power and with the winding down of operations in Southeast Asia, the Air Force has successively reduced its active resources each year since the end of fiscal year 1968. The cumulative reductions through fiscal year 1973 are:

Military personnel	187,549
Civilian personnel	41,588
Strategic bombers	125
Tactical fighter/attack aircraft	545
Interceptors	368
Reconnaissance aircraft	198
Airlift aircraft	399
Other aircraft	1,592
Major installations	39

In making these reductions, we have followed three basic policies:

1. To preserve an adequate and credible strategic capability.

2. To preserve adequate general-purpose forces.

3. To provide near- and long-term modernization. And in response to the dynamic world situation we have adjusted our force levels to provide a continuing capability to underwrite our national strategy of deterrence.

Despite our best efforts to preserve forces and to provide modernization we must recognize that we have a smaller Air Force with less capability in certain areas. We must also recognize that our possible adversaries have been increasing their capabilities.

STRATEGIC FORCES

The Soviet Union continues to improve its strategic forces. Admiral Moorer will discuss that overall picture and Secretary Laird will make

his assessment when they appear before this committee. Let me just say that we must remain strong militarily to insure our national survival.

Now, with respect to our strategic forces. We continue to emphasize the TRIAD concept—a mix of land- and sea-based missiles and manned bombers. This concept provides insurance against technological breakthroughs that would neutralize any one of our offensive systems; it poses a major defense problem to the aggressor; it severely complicates enemy planning for any contemplated disarming attack; and it offers a great variety of options and unique capabilities for responses to full scale or limited nuclear attacks, nuclear blackmail, or major conventional attacks.

Our principal ICBM system is the Minuteman. As the Secretary has described, we are continuing to modernize our Minuteman force—to improve it qualitatively.

With a basic force of 1,054 missiles our approach over the years has been to improve the 1,000 Minuteman force, both offensively and defensively—replacing the older missiles with the newer ones. Thus, we are now replacing all of the Minuteman I's with II's and III's toward a fiscal year 1975 objective of 450 Minuteman II's and 550 Minuteman III's.

The principal items supported by the fiscal year 1973 budget are:

Additional Minuteman III missiles, force modernization, and initial spares support at a 1973 cost of $703.1 million.

The force modernization program includes:

Increased silo hardness for both Minuteman II's and Minuteman III's which will enhance prelaunch survivability.

An improved command and control system—command data buffer—which will permit the targeting data stored in each missile to be changed more quickly and efficiently.

An improved instrumentation system—"Missile Performance Measurement System"—for determining precisely how well Minuteman performs during flight tests.

Testing Operational Missiles

I might say right here that we have fired 13 Minuteman III's from Vandenberg. These missiles were emplaced in their silo at the operational wing, were then pulled out of the silo, taken to Vandenberg and fired.

Chairman Ellender. You mean you pulled them out of the hole?

General Ryan. Out of the hole; the question that Senator Young was asking this morning. Of those 13, [deleted] were completely successful.

Senator Allott. Does Senator Young know this?

General Ryan. No, we will have it in the record.

Secretary Seamans. We were not sure of this ourselves this morning, to be quite frank. We checked this during the lunch hour. When we picked these missiles for operational test they were picked at random. We know they are operational. They are launched by operational crews.

Minuteman II and III: Vulnerability

Chairman Ellender. Under your TRIAD concept, what period of time do you think these thousand or so Minuteman missiles, II's and III's, will be usable?

General RYAN. I think they will be usable for a long time to come. While you hear a great deal today about the vulnerability of Minuteman, the Minuteman is not vulnerable today. It depends upon the capability of the Russian, on what missiles they have—as to how long Minuteman missiles will remain survivable.

If you get the accuracy and the yield, nothing is going to stay alive underneath it. However, you have a counter to that. You have hard point defense. If they attain that accuracy and that yield, a hard point defense taking care of his incoming warhead will still preserve Minuteman.

ABM PROTECTION

Chairman ELLENDER. Do you think, if you have these installed as you envision, that the use of the ABM is necessary?

General RYAN. ABM offers a protection to the Minuteman force.

Chairman ELLENDER. I thought you said it was not vulnerable.

General RYAN. Anything is vulnerable, Mr. Chairman, if a nuclear warhead hits close enough to it. We have hardened our silos to take care of the CEP which the Russians are capable of obtaining today.

Chairman ELLENDER. That is what I thought was the answer. We are spending a lot of money on the ABM.

General RYAN. That is correct. We do not have the ABM today.

Chairman ELLENDER. No, but you are spending a lot of money in procuring it. There is a great deal of money in this budget for it.

General RYAN. Yes, sir.

Chairman ELLENDER. I am wondering whether or not all that is necessary. What is your candid opinion?

General RYAN. It is difficult to make absolute judgments, Mr. Chairman, because it depends on what he does. If he gets greater throw weight with greater accuracy, we must harden our silos.

Chairman ELLENDER. If he has the accuracy and shoots in the midst of all your Minuteman III's——

General RYAN. Then your ABM defense comes into play very strongly. In projecting what he might be able to do, the combination of hardening and of ABM defense assures that Minuteman survivability.

RUSSIAN SS–9 AND SS–11 MISSILES

Senator ALLOTT. Mr. Chairman, may I ask a question?

There appears to be an inconsistency, although I am not sure there is one, that in looking at your hardening now the SS–9 is capable of carrying a 25-megaton load. The SS–11—how much?

General RYAN. [Deleted.]

Senator ALLOTT. If you take a CEP of a half-mile on an SS–9, do you think it is possible to harden the site to protect against it?

General RYAN. I think it is possible, but I don't think it very probable, Senator. A 25-megaton at a half-mile would take out a pretty good chunk.

Senator ALLOTT. I don't know what kind of pressures are involved, and I am not a physicist, but I know you are talking about pressures that are beyond anything we have today.

General RYAN. That is right.

Senator ALLOTT. It takes a whale of a lot of concrete and a lot of steel, for example, to protect against a [deleted] pound overpressure, and I don't think that would even begin to measure up to that kind of explosion. Would it?

General RYAN. I would say that a 25 megaton at a half mile would put greater pressure than [deleted] pounds.

PROTECTION AGAINST MISSILE STRIKES

Senator ALLOTT. Yes. So that really there are a lot of other factors entering into this. If you actually saw a flight of missiles approaching the United States, there would probably have to be a very quick decision made by somebody as to whether or not to press the button. I know if I were there making the decision, I don't think I would wait for all those missiles to land before I pressed the button. The ABM conceivably could protect us for a second strike, but this is where you get into a position where no man living can make a firm and fast judgment now as to what one does then. You just project it as best you can and push your protection capability as far as you can.

General RYAN. That is right. When I said the Minuteman was not vulnerable, I was talking about the total Minuteman. They have about 290 SS–9's, roughly. If all his weapons functioned perfectly, he would knock out 290. Taking into account the realities of the situation, such as less than perfect reliability and accuracy, we would expect him to do less.

Senator ALLOTT. He has over 500 SS–11's, as I recall.

General RYAN. Yes, sir.

Senator ALLOTT. The accuracy of that is probably not as great as that of the SS–9.

General RYAN. That is correct. They gave him an accuracy of about [deleted]. It would take a large number of missiles to give you a 90 percent confidence factor.

U.S. SECOND STRIKE CAPABILITY

Senator ALLOTT. This statement is made based on a consideration of the total SS–9's and SS–11's together, aimed at our Minuteman sites, and with the resultant inaccuracies, our Minuteman complex would still have a response.

General RYAN. I think they would. For instance, in our computation with the SS–11 in order to get a 90 percent damage expectancy on the Minuteman silo it would take [deleted] of his SS–11's, with his CEP and yield.

Senator ALLOTT. All right. I won't go into it further at this time, but I appreciate your answer.

Chairman ELLENDER. Proceed.

General RYAN. I am pleased to report that our missile force is trained and ready. Our overall readiness rate is almost 100 percent of the force. Our crews have a tough job to do under trying conditions. Their hard core job is tedious, very demanding, and requires a high degree of dedication and professionalism. Our crews are doing this job well, and we are proud of them.

BOMBER FORCES

We have a force of 397 B–52's and 66 FB–111's and are in the early stages of developing a new bomber.

The B–52 represents our principal strategic bomber through the 1970's. We are continuing to improve its capabilities.

MAJOR ITEMS: 1973

The major items supported in the 1973 budget are:

The short range attack missile (SRAM).
The electro-optical viewing system.
Additional ECM capability.
Additional satellite basing.
Subsonic cruise armed decoy (SCAD).

SRAM

The SRAM encountered difficulties in the early stages of development which proved costly and delayed the program. These difficulties have now been overcome and as the Secretary reported, our first SRAM equipped B–52 and FB–111 squadrons will soon be ready. The SRAM will also be a primary weapon of the B–1. The SRAM improves the penetration capability of our bombers by allowing them to strike terminal defenses and primary targets at low level from outside the terminal defense envelope. It represents a truly impressive added capability.

ELECTRO-OPTICAL VIEWING SYSTEM (EVS)

The electro-optical viewing system (EVS) consists of low light level television and forward looking infrared sensors. It will allow aircraft to penetrate enemy defense at lower altitudes and operate in a closed curtain environment. Crews will be able to accurately assess target damage prior to weapon release point. They can withhold weapons from targets previously destroyed and can circumnavigate nuclear high temperature areas. Installation will begin in the near future.

ELECTRONIC COUNTERMEASURES (ECM)

The additional electronic countermeasures (ECM) modification will provide increased capability for detection and jamming of interceptors and missiles. Flight testing is complete.

RUSSIAN SEA-LAUNCHED BALLISTIC MISSILES

Soviet sea launched ballistic missiles pose a potential problem to our bombers' prelaunch survivability. The Soviets are building "Y" class submarines (Polaris type). Indications are that by 1974, 40 or more of these submarines will be operational. To counter this we are doing several things. First, we are improving our ability to detect both ICBM and SLBM launches in their boost phase with early warning satellites. This will give bomber crews on alert almost immediate warning of SLBM launches. Second, we are in the process of deploying our bombers and tankers on day to day alert to an ex-

panded base complex. By the end of fiscal year 1973, we plan a total of 19 satellite bases. We can then deploy alert forces to 47 bases. With this dispersal and the programed modifications to reduce reaction time, we will be able to launch the vast majority of our strategic alert aircraft prior to impact of the first enemy warheads.

SUBSONIC CRUISE ARMED DECOY (SCAD)

The subsonic cruise armed decoy (SCAD) is being developed for the B–52 to replace the quail decoy and will be adapted to the B–1 in the future. The SCAD will use radar cross-section augmentors and jamming devices to more effectively simulate the bombers' electronic signature characteristics and help dilute enemy defenses during penetration. This will cause the defense to commit resources against the SCAD that would otherwise be concentrated against the bombers.

While the SCAD development effort is now directed toward producing a system that can provide an improved B–52 decoy capability at the earliest practicable date, the development plan prescribes a modular vehicle with provisions for the later incorporation of a nuclear warhead and associated guidance.

MINUTEMAN CREWS

Chairman ELLENDER. How many people are required for each Minuteman?

General RYAN. The crew on a Minuteman II and III is two men. We will have roughly nine crews per launch control facility. We have 15 launch control facilities in a wing and 150 missiles. So, we are running roughly 135 crews per Minuteman wing. These are the launch crews.

FB–111

The FB–111's have all been delivered to the Strategic Air Command units. The FB–111 is a versatile weapon system with sophisticated avionics for very low altitude, all-weather penetration and weapon delivery. It possesses a high degree of reliability in getting to the target; however, it has a limited range and growth potential as a bomber.

Like our missile force our strategic bomber force is trained and ready. Since World War II, SAC has been widely acknowledged as the most experienced and best trained force of its kind in the world. This reputation has been well earned. The ease and efficiency with which our bomber crews turned to their task of conventional bombing in Southeast Asia attests to their highly skilled professional ability.

B–52/FB–111

While we are doing what we can to improve the B–52/FB–111 force, we must face the reality that their technology was rooted in the fifties and sixties—and that they are approaching obsolescence in the rapidly moving world of technology.

B–1 BOMBER

We must continue to push the B–1. As Secretary Seamans has pointed out, it is on schedule and on cost. We must keep it that way. It is not just a replacement for B–52's. It provides a whole new set of capabilities. Its lower radar cross-section, lower infrared emission, faster speed at all altitudes, longer range at low altitudes, and greater payload capacity give it penetration and attack capabilities far superior to the B–52. And, it has designed growth potential for adding more penetration aids as the need develops, thus keeping it at a viable deterrent well into the future.

AIR FORCE AIR DEFENSE

I will limit my discussion of strategic defense to Air Force air defense. I want to express my real concern with our situation and that it be fully understood.

Recognizing that our air defense was becoming obsolescent we began reducing it years ago to provide resources for modernization. However, aside from AWACS we are doing little to modernize air defense. There are large segments of our perimeter, especially in the southeastern United States where a foreign aircraft could approach undetected and unchallenged. And the process of reducing our air defense capability without the needed modernization is continuing. The 1973 budget reflects the following:

1. Transfer of regular F–106 squadrons to the Air National Guard.
2. The elimination of some squadrons.
3. The phaseout of several BUICS,

That is backup interceptor control system.

4. A reduced alert commitment.
5. A 13-percent reduction in flying hours.

RADAR DEFICIENCY

We are now engaged in assessing these changes which were made late in the budget cycle. We may have to review the alert commitment, especially in certain areas. Again, I would like to repeat that significant areas of our perimeter lack air defense radars, command and control in adequate depth, and weapons necessary to detect and intercept aircraft challenging our air sovereignty.

Chairman ELLENDER. Are you referring to this plane that came from Cuba?

General RYAN. Yes, sir.

Chairman ELLENDER. Wasn't that a passenger plane?

General RYAN. Yes, sir. A year before that we had a MIG land at Homestead in southern Florida.

Chairman ELLENDER. What do you propose?

General RYAN. I don't think that Cuba poses the threat to us that, say, Russia does. Cuba doesn't have the capability. So with our limited air defense resources, we are placing the majority of our air defense capability up in the North and Northeast rather than in the Southeast. The Southeast is wide open.

Chairman ELLENDER. And the Southwest, too?

General RYAN. We have pretty good coverage down as far as Los Angeles.

Senator ALLOTT. You do have a strategic situation in the Southwest. It would be more difficult to attack as far as aircraft are concerned.

General RYAN. Of course. That is why I say we have kept our limited air defenses up in the northern tier.

In the strategic area, we understand the nature of the threat and in response to this threat, we have adjusted our force posture within the fiscal constraints which have been imposed. We have attempted to capitalize upon our strengths as well as the weaknesses of our potential enemies. Our war fighting capabilities—in essence, our ability to deter major aggression by these enemies—continue to portend awesome consequences for any potential aggressor.

GENERAL PURPOSE FORCES

The Soviets have always stressed tactical aviation. They have a large inventory of aircraft in this category, compared to our 1,566 active and almost 700 Air National Guard and Air Reserve fighters. A conflict in Europe under current circumstances would place NATO forces at a distinct numerical disadvantage.

Various studies have suggested that our qualitative advantages can offset their numerical superiority. We cannot be sure. Our objective is to do the best we can with the resources made available to us.

As Secretary Seamans has pointed out we are bringing in the A–7 and F–111, which with the F–4, will give us a balanced 21-wing force. Two-thirds of the force will be the versatile F–4's—universally considered the most capable multipurpose fighter in the world. Three wings of A–7's will give us a greatly improved interdiction and close air support capability. The four wings of F–111's with their sophisticated all-weather interdiction capability round out this force.

In discussing our strategic forces, I emphasized the ability of our crews. Our tactical crews are also topnotch. Our most senior officers have had experience in three wars—our wing commanders in two wars—and most of our junior- and middle-grade officers have had Vietnam experience. We consequently have the most able, experienced, aircrews in our history.

ENHANCEMENT OF TACTICAL FORCES CAPABILITY

To enhance the capability of our tactical forces for the near and long term we are—

1. Introducing the Maverick missile.
2. Improving our penetration capability.
3. Improving force mobility.
4. Developing the A–X.
5. Developing the F–15.

Secretary Seamans has described our successful test program for the Maverick. It should prove to be a valuable addition to our tactical force and is scheduled to enter the operational inventory in the near future.

The Vietnam war highlighted the need for improved penetration aids. Electronic countermeasures (ECM) pods for the self-protection

of our fighter/attack aircraft from SAM's represent our primary capability. To counter early warning and acquisition radars, we are examining a multiweapon electronic countermeasure force. We envision the use of manned aircraft and unmanned drones to improve our capabilities in this area. Our principal effort supported in the 1973 budget provides $25 million in R. & D. funds with $15 million of it for a tactical jamming system in the F–4D aircraft.

To further increase our flexibility and mobility, the air transportable bare-base equipment as discussed last year, has been field tested and proven viable under austere conditions. This equipment provides us with the capability to deploy and initiate sustained operations from austere bases while avoiding an investment in permanent overseas facilities.

Secretary Seamans described in detail the A–X program. Let me just add that I consider it to be the cheapest and most effective way for us to provide the additional capability needed for close air support.

In discussing the strategic forces, I emphasized the need for a new aircraft—the B–1. Likewise, in tactical aviation, we have a pressing need for a new aircraft—the F–15. As the Secretary described, the program is well underway—with every indication of successful development. I will just add that this aircraft is very much needed to counter the new and improved Soviet fighters in the battle for air superiority.

Chairman ELLENDER. I presume you are going to have some say in deciding whether the Cheyenne or the A–X should be built?

General RYAN. I would hope so, Mr. Chairman.

Chairman ELLENDER. I understand you have already made up your mind?

General RYAN. I have pretty strong convictions; yes, sir.

Chairman ELLENDER. That the A–X is the plane to procure?

General RYAN. Yes, sir.

Chairman ELLENDER. Is that to be used by the Army?

General RYAN. No. The Air Force is performing this role for the Army. One of the roles of the Air Force is to provide close air support.

Chairman ELLENDER. The Army wants the Cheyenne, and you say you want the A–X. Who prevails?

General RYAN. I guess we will have to wait and see, Mr. Chairman.

Chairman ELLENDER. Proceed.

WING FORCE CAPABILITY

General RYAN. Although total force size is less than desired, on balance, in tactical aviation we are in a reasonably good posture. We have, or will have shortly, a well balanced 21 wing force capable of reacting anywhere in the world. We are enhancing its capability by developing improved penetration aids, by developing and procuring bare-base equipment—and by providing for modernization with the A–X and F–15. Above all we have experienced, able, and dedicated crews. The highest priority for U.S. general-purpose forces continues to be the deterrence of external aggression in areas where the most significant U.S. national interests are at stake, and where U.S. commitments are specific. We are striving to maintain the type and level of forces which we contribute most directly to those national objectives.

AIRLIFT

The C–130 remains the workhorse of tactical airlift and the C–141 the workhorse of strategic airlift. Both are performing admirably.

To improve and modernize tactical airlift we are proceeding with the STOL program. Requests for proposals have been sent out to industry, and we expect to proceed with competitive prototypes.

The C–5 is beginning to make a contribution to strategic airlift. Our contingency plans incorporate its use for rapid movement of Army units and their outsized cargo. In view of its difficulties, we are bringing the C–5 into the inventory at less than previously projected peacetime utilization rates. Some 54 aircraft have now been produced, with deliveries projected at about two per month.

COMMAND AND CONTROL

The need for controlled response through the spectrum of warfare has made command and control a key element of national defense. An important part of the overall command and control system is the airborne command post.

With the existing EC–135 aircraft, we have a highly survivable system which provides assurance that execution orders will be passed to the bulk of the strategic forces. This system, however, has serious limitations. The EC–135's, equivalent in size to the commercial 707, have reached their limit in payload and floorspace. The small battle staff of 18 personnel can support only the highest priority functions associated with execution of the strategic forces during a nuclear war. They cannot evaluate the attack nor maintain an up-to-date status of available forces.

The national command authorities and CINCSAC need a larger aircraft which will provide space for a full battle staff and associated equipment. This will substantially aid them in assessing the source, size, and nature of a nuclear attack on the United States, determine the effectiveness of the attack on the deterrent forces, and select a response reasonably matched to the provocation. This advanced airborne command post will significantly improve our chances for national survival.

We have initiated action on a phased approach to acquire an advanced capability for an airborne command post as rapidly as possible. A request for fiscal year 1972 supplemental funds was submitted for the procurement of three Boeing 747's for modification with existing equipment, and one 747 for testing of advanced equipment. The latter will become the first operational aircraft upon test completion. Additional funding will be required in fiscal year 1973 and fiscal year 1974 to complete the procurement and modification of seven aircraft for the NCA and CINCSAC.

RESEARCH, DEVELOPMENT, TEST, AND EVALUATION

Secretary Seamans has described our major research and development programs in some detail, and General Glasser will appear before you later to review the entire R.D.T. & E. budget. I would just like to emphasize a few points. Although R.D.T. & E. is receiving a larger percentage of the total Air Force budget, reversing the trend of the

past several years, only through continued effort to improve our management and selection of research projects can we hope to sustain a research and development program sufficient to meet our needs in the 1980's.

As Secretary Seamans pointed out, we must do everything we can to eliminate goldplating. I fully support this concept as it is one practical means of holding down the costs of the ever more expensive weapon systems needed to perform our combat missions. Each of our program managers is charged to eliminate any item of equipment not essential to mission performance.

In the area of operational test and evaluation (O.T. & E.), we are taking steps to comply further with congressional wishes to incorporate more operational testing into our systems prior to full-scale production. Our new test and evaluation program specifies more active participation by operating and supporting commands during the development process. This concept calls for a close working relationship between the developing and using commands to better determine operational effectiveness and suitability before we commit production funds.

In support of the prototype program described to you by Secretary Seamans, we are seeking new ideas from industry, the public, and any other sources that may provide a more economical or better way to do our job. We have established a New Initiatives Office in Air Force Headquarters to provide a forum for industry representatives and the public to present their ideas and to obtain a clear understanding of our problems and areas of concern. The purpose of this office is to give any one with a new idea an opportunity to express his views to us at Headquarters' level and guidance from us on the value of their ideas relative to our needs.

AIR RESERVE FORCES

With the reduction of the Active Forces, greater reliance is being placed on our Reserve Forces, both for national emergencies, and for peacetime operations. The Reserve Forces are contributing significantly to such missions as strategic and tactical airlift, air defense, and rescue. The Reserve participates in the associate program with Military Airlift Command (MAC), flying the C–141 on day-to-day missions of MAC. The Guard performs air defense alert in F–101's, F–102's, and F–104's, and in the near future in F–106's. It contributes 59 percent of the total air defense interceptors, and in 1973 will contribute some 70 percent. Both the Guard and Reserve are heavily involved in converting to more modern equipment.

Modernization of the Air Reserve Forces has continued with transfer of additional assets from the active forces, including F–105, F–100, A–37, RF–4, C–130, C–123, and C–7 aircraft. The first F–4 aircraft are programed for transfer to the Air National Guard by the end of fiscal year 1972. Overall, the Air Reserve Forces currently constitute 31 percent of our total general purpose force.

This heavy conversion is degrading current readiness. We are working closely with both the Reserve and Guard to gain full readiness in all converted units as quickly as possible. We have no serious deficiencies—but we do have a tough job, and we are continuing our effective inspection program to assure that it is done right.

Chairman ELLENDER. The cost to maintain the Reserves and Guard in all categories is in excess of $4 billion altogether. Unless you can find use for all of them, something ought to be done to cut back to the number that we can use and not maintain such a large force.

General RYAN. I believe in the Air Force we are getting good utilization from both our Guard and our Reserve personnel. We are looking for ways to increase it because we are never perfect.

SOUTH VIETNAM CALLUP

Chairman ELLENDER. In what field outside of transportation do you find the Guard and Reserves doing practical work in the Air Force now?

General RYAN. Tactical air forces. They are equipped with F–100's. They do a very good job in our tactical air forces.

Chairman ELLENDER. Have they been used?

General RYAN. Yes.

Chairman ELLENDER. Where?

General RYAN. In South Vietnam.

Chairman ELLENDER. Lately?

General RYAN. They were called up in 1967 and stayed on a little over a year.

Chairman ELLENDER. What happened since?

General RYAN. They came back to the States.

Chairman ELLENDER. Nothing has been done with them since?

MANNING ALERT AIRCRAFT

General RYAN. They participate in our exercises here in the United States and keep up their training. The Guard are manning air defense, the alert aircraft every day, 7 days a week.

Chairman ELLENDER. Define the term "alert aircraft".

General RYAN. We have a certain number of aircraft on the alert. Air defense interceptors, 24 hours a day, 7 days a week, Mr. Chairman.

Chairman ELLENDER. To protect us in case——

General RYAN. To maintain the sovereignty of our air space.

Chairman ELLENDER. I wonder why they didn't pursue the Cuban plane.

General RYAN. Because there was no radar coverage down there. There was no way for them to even know there was a plane coming.

Chairman ELLENDER. I am very hopeful that we can make more use of them, because the cost, as I have said, is considerable.

I complained about that last year, and in answer to the complaint, Mr. Laird, as I recall, indicated that he would find more use for them. I was in hope that that could be done.

General RYAN. Yes, sir.

Chairman ELLENDER. Of course, if we continue to maintain protection for the whole free world, I might agree with you. But, left to me, I would have had our troops returned from Europe a long time ago. Here we are holding an umbrella of military protection over people who are well able to take care of themselves. They are as prosperous as we are, maybe more so now.

What concerns me is that if we continue to maintain the defense of the whole free world, as we are now, I predict that our economy will go to pieces. It is something that we can't afford to do.

WITHDRAWAL OF U.S. FORCES FROM EUROPE AND ASIA

Some of us have been advocating for an appreciable time that our troops in Western Europe should be returned to where they could be a part of our contingency Reserve Force. In that case, we may not need as many of the Reserves as we now have. That is one way by which we could save money, by bringing them home.

There is, for instance, a little over a division in Japan. They are on Okinawa. They are also located in many other areas of the world.

If we had followed through with the Nixon doctrine, and furnished materials instead of men—because that is what it amounts to, as I understand—certainly the forces that we would have to maintain in our own country could well take care of the threats that you mentioned.

Proceed, unless you want to comment on that.

General RYAN. No comment, Mr. Chairman.

PERSONNEL

In commenting on personnel, Secretary Seamans indicated that I would discuss our personnel plan. In addition, I will also emphasize a few other points.

The composition of our forces has been greatly influenced by large numbers entering at the same time—during World War II, during the Korean war, and, to a lesser extent, during Vietnam. This has created very uneven groupings of personnel on an even, systematic basis needed to achieve an ideal configuration.

Given the uneven structure, we began several years ago to develop a USAF personnel plan designed to provide a more even structure with balanced grades, giving due consideration to the various key factors involved, such as force requirements and career progression. We developed simulation techniques to give us a tool for determining the type and numbers of officers and airmen we need to bring into the force each year. For example, we know how many pilots, navigators, officers in other career areas, and enlisted personnel we need to procure each year to maintain career force requirements. Through careful management by year group we can improve career progression. We can give our officers and airmen more insight into their futures and more individual consideration of their personal desires. We will—given a force stability—be able to smooth out the peaks and valleys that prevent best use of our people.

We should be able to maintain or increase our effectiveness at less relative cost. For instance, we now have 72.7 percent of enlisted grade authorizations in the top six. With the even flow inherent in our personnel plan we can reduce this percentage to 65 percent by fiscal year 1977.

COST OF TRAINING TECHNICIANS

Senator ALLOTT. Could I interrupt at this point?

In a fighter or bomber squadron or a group, you require a considerable number of highly skilled technicians. Do you have any overall figures on the cost of training those technicians? I am thinking in terms of the discussion this morning with relation to the raise in pay.

General RYAN. I do not have those figures with me, but I can cer-

tainly supply them for the record. For instance, our computer programers, our radar technicians, our weapons system technicians, they do receive expensive training. I will supply that for the record.

Senator ALLOTT. I wish you would.

(The information follows:)

COST OF TRAINING TECHNICIANS

Cost of training for selected Air Force airmen specialties—Estimated fiscal year 1972 data

Air force specialty code and title:	Cost
30372: Aircraft control and warning radar technician	$22,978
32570: Automatic flight control systems technician	17,519
43270: Jet engine maintenance technician	7,426
68770: Computer programing technician	6,403

[1] Fiscal year 1971 costs have been adjusted to reflect estimated fiscal year 1972 dollars and are a composite of individual costs related to initial acquisition and formal training necessary to qualify the individual airman to the specialist/technician proficiency level.

MILITARY AND CIVILIAN STRENGTHS

General RYAN. When our personnel witnesses appear before your committee, later, they will be prepared to discuss our overall personnel plan in detail.

There are a few additional specific personnel matters which I will address.

Recognizing the increasing costs of personnel, we have reduced personnel requirements wherever we could. We currently have an assigned military strength of some 753,000 and civilian strength of 313,000. By the end of June we plan to reduce to 730,352 military and 301,962 civilians—with further reductions by the end of fiscal year 1973 to 717,210 military and 299,466 civilians. This will be the fifth successive year of significant reductions.

Chairman ELLENDER. I think the Secretary pointed out that despite those reductions, because of the increase in pay, there will be no decrease in cost.

General RYAN. That is true, Mr. Chairman.

MILITARY

We will make the reductions as orderly as possible. Our personnel plan gives us a useful tool in the military area. However, we will have problems. We will try to balance "early out" programs with reduced accessions. In the officer area, we will direct our voluntary early release program toward those "year groups" with too many people. If we must use RIF actions, they will also be directed toward year groups with excess personnel.

In the airmen area, we experienced a shortfall of almost 2,000 enlistees during the period just prior to the recent temporary expiration of draft legislation. The quality of the personnel who did enlist also declined sharply. The number in the highest mental category declined approximately 50 percent, and the high school graduate rate fell from an average of 93 percent in 1970 to 86 percent as of August 1971.

The percentage of high school graduates who are enlisting has continued downward and stood at about 80 percent as of the end of December. There has, however, been a reversal in the decline in men-

tal category I people enlisting, but we have only regained about half of the ground lost. Enlistment goals were met in September, October and November, but we fell nearly 400 short of the nonprior service quota in December. Everything possible is being done to enlist the best people available in the numbers required.

Civilian

With respect to civilian reductions, we are basically following a policy of achieving reductions by attrition. However, we are under direction to reduce average grades. Since most attrition takes place in the lower grades it tends to raise average grades. Thus, to achieve the objective of lower grades, as well as to recognize some program changes, we may have to take some RIF actions.

Officer Grade Structure

Let me underscore the Secretary's emphasis on the need for a permanent solution to our officer grade structure problem. We should not have to deal with it on an expediency basis. We badly need a permanent solution, and we ask your help.

Facing Up to Problems

Finally, and most importantly, we will continue to stress leadership in our officer and NCO ranks. We are well aware of the problems of the day—of drug abuse, of equal opportunity, of integrity. We have faced up to them. We take immediate corrective actions when deficiencies are identified, and we do our best to correct them in the incipient stage before they become problems. Our aim is to have an Air Force that we are proud to be a part of—and that the Nation can be proud of.

SOUTHEAST ASIA

While the war in Southeast Asia is winding down, we still have a difficult job to do. Before addressing that, however, I would like to review briefly our record in Vietnam. In terms of our responding to the tasks assigned to us, it is a record we are proud of.

During each successive phase of the build up our units were in place, on time, and performed well.

Tactical Aviation

In tactical aviation, Air Force units have provided close air support better than it has ever been done before. Working with FAC O–1's, O–2's, and OV–10's, they have rewritten the close air support textbooks—and have won accolades from the ground force commanders.

These same tactical forces have performed interdiction missions around the clock, reducing the flow of enemy supplies—often at crucial times.

Our B–52's, using large payloads of conventional munitions, proved to be a most effective weapon. They have performed with clock-like precision—rarely failing to produce schedule sorties or to be on target.

Personnel

Our personnel have proved to be hardworking, able, professional, imaginative, and innovative. From their efforts and the efforts of the U.S. R. & D. community has come the gunship, the ECM pods, the special sensors, the guided bombs, improved tactics, and a great variety of improvement to the capability of airpower to deal with conventional warfare.

Airlift and Rescue Service

Airlift has proved itself in innumerable ways. We have maintained a high order of combat effectiveness at the end of a 7,500 mile logistic pipeline from California. It moved men and material halfway around the world in hours and days—not weeks and months, and it gave troops a mobility never before experienced.

A special tribute has been earned by the rescue service. Its exploits have become legend. The "Jolly Greens" and "Sandys" have saved 3401 personnel of all services from death or capture.

The job remaining to be done is difficult. Its size and timing has not been precisely defined, but its nature is clear. As tasked, we will continue interdiction with tactical aviation, gunships, and B–52's. We will continue air defense. We are budgeting to perform reduced monthly sorties during fiscal year 1973.

Aircraft Sorties

Chairman Ellender. How does that compare——

General Ryan. 6,700 sorties a month in fiscal year 1972. [Deleted] sorties a month in fiscal year 1973.

Secretary Seamans. 18,000, I believe, in 1968.

Chairman Ellender. Will that mean that you will be able to return to this continent a substantial number of B–52's?

General Ryan. The B–52's are budgeted at [deleted] sorties a month, which is [deleted] they were flying prior to the recent buildup which we discussed this morning.

Chairman Ellender. I had in mind that by the reduction of sorties——

General Ryan. Tactical air units will come home.

Chairman Ellender. The Navy also is represented.

General Ryan. This is the Air Force sortie level I was talking about, Mr. Chairman.

Chairman Ellender. What is the budgeted level of sorties?

General Ryan. We are budgeted for [deleted] sorties per month in fiscal year 1973.

Chairman Ellender. And what about the B–52?

General Ryan. That is for the tactical air and [deleted] sorties a month for the B–52's.

Chairman Ellender. I am glad you made the distinction.

General Ryan. We, of course, recognize that the unfolding of events will ultimately determine just what we do in fiscal year 1973. In the meantime, the budget projections appear reasonable.

TACTICAL FORCE

Chairman ELLENDER. Are these tactical squadrons in South Vietnam and Thailand?

General RYAN. We have four tactical squadrons remaining in South Vietnam. We have some 10 or 11 in Thailand.

Chairman ELLENDER. To what extent will you turn over to the South Vietnamese the equipment that you have in South Vietnam?

General RYAN. Mr. Chairman, we have turned over to them some units and some aircraft. The AC–47, AC–119, C–7's, F–5's, A–1's, and A–37's. We have already turned these aircraft over to them. The helicopters in the Vietnam armed forces are in the Air Force rather than in the Army. As was discussed here this morning, they have somewhere around 480 helicopters at the present time which they are manning and operating.

Chairman ELLENDER. When the President says there will be so many soldiers left in Southeast Asia I presume he refers to logistical support.

General RYAN. I would imagine; yes, sir.

Chairman ELLENDER. Will there be any tactical Air Force remaining in South Vietnam that you know of?

General RYAN. In fiscal year 1973?

Chairman ELLENDER. Yes.

General RYAN. The plan has not been promulgated yet. We know what our force level is down through the first of May 1972.

PRISONER OF WAR AND MISSING IN ACTION PERSONNEL

It has been some 7 years since the first Air Force personnel were reported as missing in action or prisoners of war in Southeast Asia. We are deeply concerned about these men and the welfare of their families. I want to reassure this committee that we are continuing to do everything possible to assist the families of our men in this status.

We are diligently planning for the speedy processing and rehabilitation of the prisoners of war upon their release. Our goal is to quickly reunite these men with their families and return them to their chosen careers.

Senator ALLOTT. Could I ask a question there?

General RYAN. Certainly.

Senator ALLOTT. We have all heard a great deal from the families of the POW's. What are you doing to keep in touch with all of your people to let them know that you are still interested and that the Government is doing everything it can?

General RYAN. We have an organized effort throughout the Air Force. In other words, we have an officer at each of our Air Force installations who knows all of the POW families in his immediate areas.

Senator ALLOTT. And the MIA?

General RYAN. And the MIA. He contacts them. They receive a monthly letter. In fact, when he talks to them, they say, "He is my dad."

I have not encountered one, and I have met many of them, who has not been complimentary about the treatment they have received. There is a man at each Air Force base who knows the missing in action and POW dependents around that base.

SUMMARY

In summary, I hope I have been able to add to what Secretary Seamans has presented in attempting to give proper perspective to his Air Force programs as supported by the fiscal year 1973 budget.

As the Air Force has reduced in response to the winding down in Southeast Asia, budget constraints, and changing policies, we have set our clear objectives to contribute effectively to the national strategy of realistic deterrence by preserving an adequate and credible strategic capability, by preserving adequate other combat forces, and by providing near and long-term modernization.

As I stated earlier, we must recognize that we do have a smaller Air Force with less overall capability and that our potential adversaries have been steadily increasing their capabilities. But I also want to make it clear that our present aerospace forces are formidable and will give pause to any potential aggressor.

As for the possibility of nuclear attack or nuclear blackmail today, the risk is certainly low—our capability and resolve are quite clear. We must keep it that way.

Lower level conflicts, where an aggressor may have less to lose, present a somewhat higher level of risk. For now the risks appear manageable; however, should we reduce our deterrent forces further without a reciprocal response by our potential adversaries, the risk will unquestionably arise.

The needs I have outlined for you today are those which we believe must be met to allow our national leadership to continue to convince allies as well as potential adversaries of our capability and our resolve to protect our national interests.

Thank you, Mr. Chairman.

NAVAL CARRIER FORCE

Chairman ELLENDER. General, what is your position with respect to the number of aircraft carriers we need? As I recall we are now operating 14 attack carriers and three of the smaller ASW carriers for a total of 17.

It has been brought to my attention that there are some who believe we should maintain a force of only 12 carriers. This being the case, the question arises as to the need for the construction of the proposed CVAN–70—the third nuclear powered carrier of the *Nimitz* class. We have 8 of the *Forrestal* Class carriers, the *Midway* which has been modernized, the nuclear powered *Enterprise*, and the *Nimitz* and the *Eisenhower* are under construction, which gives us a total of 12.

This proposed new carrier will cost approximately $1 billion. I am just not convinced that we need to spend this money.

General RYAN. The Air Force and Army have supported a 16-carrier force, sir.

Chairman ELLENDER. Sixteen carriers?

General RYAN. That is right.

Chairman ELLENDER. We have 17 at present. Sixteen will be sufficient?

General RYAN. Sixteen dual-purpose carriers. The Navy at present is carying out a program of putting an antisub capability on their attack carriers.

Chairman ELLENDER. As I said, that is going to be quite a large sum to be spent over the years.

ULMS PROGRAM

We also have a fiscal year 1973 request of about $950 million for the acceleration of the development of the Navy's ULMS—the underwater long-range missile system. Earlier today, we discussed your plans for the B–1 bomber. This new carrier, the ULMS, and the B–1 will cost around $25 billion if they are all developed and produced. The committee will have to take a hard look at all requests of this nature.

General, do you support the proposed acceleration of the ULMS program?

General RYAN. I am for the development of ULMS; yes, sir.

Chairman ELLENDER. I refer to acceleration. I am for the development of it; certainly. But the reference to acceleration means providing funds to produce it. That is a mighty big program. The Lord only knows what it will cost.

There is some doubt in my mind about going ahead at the requested rate for the new carrier, the B–1 bomber and the ULMS acceleration. I had hoped that we could delay one or more of these systems. I was hopeful of getting your reaction on this.

SOVIET MILITARY CAPABILITY

General RYAN. I think, Mr. Chairman, what you have to take a look at is the capability that the Soviets have. They have more land-based missiles than we have.

Chairman ELLENDER. That is why I have never objected to missile bases. That is the thing that I would emphasize, if it were left to me. They fear the missiles. I am sure of that.

AIRCRAFT CAPABILITY

General RYAN. Mr. Chairman, the missiles and the aircraft complement each other. There are certain things that the aircraft can do that the missiles cannot do. There are certain things that the missiles can do that the aircraft cannot do.

Chairman ELLENDER. The aircraft is so vulnerable. That is one of the chief objections.

General RYAN. That is why we want the B–1, to reduce that vulnerability and to make it more survivable.

Chairman ELLENDER. How will you do that?

General RYAN. By developing in the capability of flying at low level and at high speed.

NEED FOR NEW WEAPONS SYSTEMS

Chairman ELLENDER. General, I have difficulty in understanding just how you and the other members of the Joint Chiefs reach these decisions on these proposed new weapons.

UNITED STATES VIS-A-VIS SOVIET MILITARY CAPABILITY

General RYAN. I merely look at his capabilities. My job is to come up with what can we have to thwart his capability.

Chairman ELLENDER. From the information that we obtained recently their bomber capability is not to be compared with ours, even with the B–52's. We are ahead of them in bombers.

General RYAN. As our missiles came in, Mr. Chairman, if you will recall, our bomber force decreased. In 1962, we had something like 650 B–52's and something like 1,400 B–47's. As the missile force came in, we reduced our bomber force so that today we have 450 bombers.

Chairman ELLENDER. The point I am trying to make relates to the line we built across Canada to detect bombers that may come from Russia. I objected to that, because the evidence was that Russia had few bombers and wasn't planning to build any others at that time. Now we have evidence that they are planning to build bombers, but nothing like B–52's nor the B–1 that you propose.

RUSSIAN BACKFIRE BOMBER

General RYAN. The Backfire bomber is certainly a better bomber than the B–52, Mr. Chairman. That bomber is twice the size of our FB–111 and our FB–111 is a pretty good bomber.

Chairman ELLENDER. The bombers they have on hand seem designed more to strike Europe than the United States.

General RYAN. I do not know why they would build refueling capability in their new bomber if they wanted to just strike Europe. They do not need a refueling capability to strike Europe.

Chairman ELLENDER. It would be one-way bombing, I guess.

General RYAN. I believe the estimated range of Backfire today with air refueling would cover a two-way mission.

Chairman ELLENDER. That is your information?

General RYAN. Yes, sir.

Chairman ELLENDER. We will look into that further.

General RYAN. Admiral Moorer will cover the entire threat for you, Mr. Chairman.

Chairman ELLENDER. Admiral Zumwalt, too.

Is there anything else you want to add? Thank you.

QUESTIONS BY SENATOR THURMOND

Chairman ELLENDER. Senator Thurmond was unable to be here today but has asked that responses to questions he has supplied will be answered for the record. The questions and answers will appear at this point in the record.

(The questions and answers follow:)

SOURCES OF SPARES FUNDS

Question. Secretary Seamans, the FY 1973 Air Force budget request includes $465.6 million for aircraft modification and $504.1 million for aircraft spares and repair parts. As you know, when we buy a new plane we also buy spares at that time. I think the Committee would like to know more about these accounts. For instance, in the Spares Account for FY 1970 and 1971 some $100 million and $60 million respectively were taken out for other programs.

What were the funds taken out for and why did the Air Force overestimate so much?

Secretary Seamans, how much of the FY 1971 and FY 1972 funds in these two accounts has been used in reprogramming actions?

Answer. The FY 1970 and FY 1971 programs for Aircraft Spares and Repair Parts have decreased from the appropriated amounts by $134.6 million and $97.5 million respectively for a total decrease of $232.1 million.

The FY 1970 spares program was prepared late in 1968 and based on force and flying hour programs for FY 1971. The FY 1971 spares program was prepared a year later (late 1969) and based on the force and flying hour programs for FY 1972. The requirements were valid for the planning information then available. Subsequent decisions at the highest national level reduced the FY 1971 and FY 1972 force and activity rate and therefore aircraft procurement programs largely associated with reduced combat activity in Southeast Asia and associated training. The result was that a portion of the funds programmed for the FY 1970 and FY 1971 initial and replenishment spares buy programs were not required. The availability of these funds was reported to the Congress in periodic reports and were reprogrammed to support essential requirements as authorized and approved by the cognizant committees of the Congress either by notification or prior approval as prescribed.

For the aircraft modification account, no FY 1971 funds were reprogrammed out of the account. In fact, urgent SEA requirements dictated the reprogramming of an additional $4.9 million to this account. No FY 1972 funds have been reprogrammed from the modification account; however, there is currently a request being processed for your approval to realign funds within the FY 1972 modification program. This is required to accommodate changes in execution of the program.

EXPENDITURES MODIFICATION ACCOUNT

Question. How much money in the FY 1970, 1971 and 1972 modification accounts remains unspent at the present time? Why have these funds not been expended?

Answer. The aircraft modification account as of 31 January 1972 has $119.7 million unexpended in FY 1970, $319.2 million in FY 1971, and $552.6 million in FY 1972. The reason that these funds have not yet been expended is that the equipment being procured is in various stages of production. The Air Force policy is to fund aircraft modifications lead time away from installation on the aircraft weapon system. The typical production lead time for aircraft modification hardware is between 12 and 18 months. The funds are not finally expended (disbursed) until deliveries are made by the contractor and accepted by the Air Force.

EXPECTED FY 73 MODIFICATION EXPENDITURE RATE

Question. Does this excess represent any surplus which could reduce the FY 1973 request?

Answer. These unexpended funds cannot be considered excess. They are committed to meet approved FY 1970, 1971 and 1972 modification programs and will be needed to pay for deliveries and work completed based on those commitments.

AIRCRAFT SPARES AND MODIFICATIONS ACCOUNT/ITEMIZED PROGRAMS

Question. Mr. Secretary, please itemize for the record the exact programs for which the nearly $1 billion in these two accounts will be used in FY 73.

(The information follows:)

Aircraft modification, fiscal year 1973

Aircraft and description of modification:	*Cost in millions*
A–7:	
Armament system changes	$5.0
Improved egress	.2
Total A–7	5.2
B–52:	
SRAM capability	94.5
Phase VI ECM	48.3
AEW ECM	8.4
Electro-optical viewing system	42.4
Quick start	10.3
Satellite communication terminals	.6
Modify airframe structures, B–52F	1.4
Modify primary/secondary structures, B–52D	2.5
Modify bomb support rack	2.3
Total B–52	210.7

Aircraft and description of modification—Continued	*Cost in millions*
FB–111: Update program	$4.4
C–5:	
Flight data recorders	3.0
Fuel tank inerting	7.4
Total C–5	10.4
C–130:	
Adverse weather aerial delivery	2.7
Improved cargo handling	3.2
Total C–130	5.9
C–135:	
Quick start	11.6
Satellite communication terminals	1.0
Heat controlled Mesaglass	1.6
5th stage update	3.1
Spiral wrap chafe guard on hydraulic lines	1.1
Total C/EC/KC/RC/WC–135	18.4
F/RF–4:	
Leading edge slats	43.2
Refaired lower nose	1.6
Smoke abatement	7.3
Identification friend or foe	4.0
Electrical system reliability	8.8
Structural improvement	4.2
Leg restraint—egress seat	2.6
Improved inertial reel-egress seat	1.6
Weapon delivery system	1.0
Total F/RF–4	74.3
F–106: Power upgrade program	3.9
F–111:	
Update program	26.4
Replace ECM coaxial cables	2.3
Improved flap/slat	.5
Correct M–61 gun vibration	.7
Total F–111	29.9
A/T–37: Improve egress	7.1
T–38: Improve egress	5.4
Other aircraft	(11.0)
VC–137: 4-channel independent sideband	.5
F–100:	
Modify center wing	1.1
Replace wing attachment fitting	.3
F–105: Extended strong-back fuselage	1.0
QU–22: Modify main wing fuel tanks and fuel feed system	.4
T–33: Improve egress system	.8
OV–10: Improve egress system	.3
UH–1: Torque measuring system for main drive shaft	1.3
C/HH–3: Improve heater and duct system	.4
Engines: J–57 modify No. 4½ bearing/seal TF–39 5,000 TBO upgrade progress	3.0
Various:	
Rivet King	1.0
Operational necessity	40.0
Classified projects	31.4
Support of allies	(7.6)

Aircraft and description of modification—Continued	*Cost in millions*
T–28: Convert A/B to D configuration	$3.4
F/RF–5 AIM–9E capability	.1
C–47: Convert C's to RC configuration	.5
UH–1H:	
Install AN/ASC–10	.6
Provide XM–93 armament system	2.3
C/AC–119: Improved propeller reverse system	.4
A–1: Improved jettison egress	.1
A–37/F–5: Sensor dispenser capability	.2
Total fiscal year 1973 aircraft modification	465.6

Aircraft spares

[In millions of dollars]

Aircraft modification spares: To support $465,600,000 modification program	49.0
Common AGE spares: To support $50,900,000 of total ground equipment program	2.2
Weapon system initial spares: To provide initial spares in support of 251 aircraft in current procurement program	55.1
Replenishment spares: Spares required to support 61 different weapon systems. Replenishment is required to replace condemned items, support increased inventory for new weapon systems and war readiness requirements	397.8
Total	504.1

APPROVAL OF PLANNED A–X WINGS

Q. Mr. Secretary, when will the Air Force seek approval of the planned [deleted] A–X wings as an addition to the 21-wing Tactical Air Force structure?

A. If a decision is made to procure the A–X, only [deleted] of the [deleted] planned Active Force A–X wings would be additive to the 21 fighter wing force structure as currently programmed. As the first A–X wing enters the force structure in FY [deleted] and [deleted], the aircraft from [deleted] programmed for transfer to the Air Reserve Forces. The additional [deleted] A–X wings would result in a [deleted] wing force by FY 1979. This program as currently reflected in the Five Year Defense Program (FYDP) has OSD approval through FY 1977 at this time. The program is reviewed on an annual basis. Accordingly, the 21 wing force structure is planned to increase to [deleted] in FY 1979. The Air Force will continue to seek approval for this force structure in the budget submissions for those years.

Q. Mr. Secretary, how much delay will the A–X program experience because of the engine explosion on the Northrop version of the A–X? (6–18 months.)

A. Two of the engines tested by Lycoming experienced internal failures of the compressor. However, as a result of extensive testing, Lycoming identified the cause of the failures. Lycoming has taken a satisfactory approach to resolving the problem. Before the failures, Lycoming was several months ahead of schedule; now they are on schedule. We have no reason to expect any delay in the A–X program, since Lycoming expects to deliver the flight engines on time to Northrop.

Q. How will the delay impact on program costs?

A. Our contracts for the A–X program are of a firm-fixed-price type with Northrop and Fairchild. The program cost would not be affected by Lycoming delays, if any were to exist.

Q. How will this delay impact on the competitive flyoff with the Fairchild version of the A–X?

A. Since we anticipate no delay, there would be no impact on the Fairchild effort.

AWACS/CONCURRENCY OF R&D AND PROCUREMENT

Q. General Ryan, the first three Airborne Warning and Control System (AWACS) aircraft in the current budget cost $309.9 million. Yet only 36% of the

total R&D effort on AWACS has been provided through FY 1972. Do you not see real danger in this high degree of concurrency in such a high cost and technically complex program?

A. No, sir. Procurement of the three aircraft in FY 73 does not commit the government to full production. These aircraft are part of a total of five pre-production prototype aircraft, the last two of which will be procured in FY 74. The five aircraft will be used for extensive operational and suitability testing to assure that the AWACS will meet the user's operational requirements. Since most of the testing will be initial and full operational testing and because these five aircraft will be a part of the operational fleet after testing is completed, we are requesting procurement (3010) funds to buy them. The full production decision for AWACS is presently scheduled for FY 75.

The entire AWACS program has been carefully structured using the milestone approach which requires successful demonstration of specific milestone events before authorization is granted to proceed to the next phase of the program. This milestone concept is specifically designed to minimize program investment and to address major technical risks in a systematic manner. The look-down surveillance radar, designed to detect and track low flying aircraft against earth background or at any altitude is clearly the highest risk item. The technology for this system has already been demonstrated and procurement of the first three prototype aircraft will be approved only after successful demonstration and selection of a brassboard radar which has been built by two competing contractors. The remaining milestones provide firm step-by-step control over program advancement and rate of expenditure to assure testing and demonstration of technical risk items.

F–15/Concurrency of R&D and Procurement

Q. General Ryan, first production funds of $455.9 million are requested for 30 F–15s in FY 1973, while in the same budget an R&D request of $454 million is included. Should production begin although such large sums of R&D are still required?

A. The production rate was determined by three factors: the first being the decision to produce at a very low rate until considerable ground test and flight experience was achieved; the second being efficient and full utilization of the initial set of production tooling; and the third, the initial operating capability goal. The delivery rate for the first six F–15 R&D test aircraft, starting in July 1972, averages one each two months; the rate then increases to approximately one per month until all 20 R&D test aircraft are produced. Delivery of the first 30 production aircraft commences in November 1974 at the rate of one per month, steps to two per month in December and to three per month in January for the remainder of the FY 73 buy.

The government is protected by the contractual demonstration milestones. If these milestones are not achieved to the satisfaction of the government, the government has the unilateral right to adjust the production rate (down to zero, if appropriate) until such time as the deficiency is corrected.

The production decision point was established in a very conservative manner in order to take advantage of the philosophy of "test before you fly" and "fly before you buy."

Key test accomplishments that will be attained prior to a production buy are as follows:

1. Over two (2) years of radar flight test in a B–66.
2. A complete static and fatigue test program for tail, wing, and fuel tank sub-assemblies.
3. One full flight lifetime test on the full-scale fatigue article.
4. Two critical conditions tested on the full-scale static test article.
5. Full-scale inlet/engine running in wind tunnels.
6. Engine fully qualified to production configuration.
7. Complete integration of avionics.
8. Seven months of flight test.

It should be understood that the first of the production aircraft to be ordered 1 March 1973 will not be delivered until November 1974. The last airplane of this lot of 30 aircraft will be delivered in September 1975. This type of a conservative program allows us to test our development systems, determine deficiencies, make the necessary fixes as part of initial production and minimize retrofit requirements.

Prior to the long lead release on 1 November 1972, the aircraft will have been flown at an altitude of 45,000 feet, a Mach number of 2.0, and 80 percent of the

design limit load. The engine to be used is the prototype of the F–100 production engine, designated YF–100. The YF–100 engine will have 95 percent static sea level thrust compared to the production engine. The 95 percent value is sufficient to complete the F–15 aircraft testing planned prior to the availability of F–100 engines. This is a normal type of engine development program. It should be noted that 15 of our 20 F–15 test aircraft will have F–100 engines and only the first five test F–15 aircraft will have YF–100 engines.

F–15/First Scheduled Flight

Q. General Ryan, when is the "first flight" of the F–15 scheduled?
A. "First Flight" of the F–15 will be in July 1972.

F–15/Meeting Fly Before Buy Policy

Q. Does the F–15 schedule truly meet the present DOD "fly-before-buy" policy?
A. The Air Force is convinced that the F–15 program meets the present Department of Defense "fly-before-buy" policy. Secretary Packard defined his interpretation of "fly-before-buy" as having reached an acceptable level of confidence in each phase of a program prior to moving to the next. Within this definition the Air Force has proceeded conservatively and deliberately toward the development and acquisition of the F–15. The heart of the program is the requirement that critical demonstration milestones be successfully accomplished prior to reaching key program decisions. As an example, prior to the release of long lead production funds in October, ten specific milestones must be met. Further conformance with the "fly-before-buy" concept has been achieved through competitive development of program high risk items such as the engine, radar and 25mm gun. In addition, the F–15 program maintains a low production rate throughout the early flight test program. Specifically, the 20 test aircraft are being initially built at a rate of one every other month, reaching a rate of one per month 21 months after first flight. The production delivery rate will increase to three per month 30 months after first flight and will reach the maximum planned rate of 12 per month four years after first flight.

F–15/Testing and Evaluation Status at First Production Commitment

Q. *What point in testing and evaluation will be reached on the F–15 prior to the first production commitment?*

A. Prior to the release of long lead production funds ($15M) in October 1972, the F–15 program must have completed the following milestones:

Radar Contractor Selected	September 1970
Preliminary Design Review	September 1970
Critical Design Review (Airframe)	April 1971
Avionics Equipment Development Review	June 1971
Engine Preliminary Flight Rating Test	February 1972
Engine/Inlet Compatibility Test	March 1972
Structural Test—Major Subassemblies	June 1972
First Flight	July 1972
Bench Avionics Integration	September 1972
Initial Aircraft Performance Demonstration	September 1972

In addition to the milestones listed above the first F–15 will be used to evaluate flying qualities and will have better than three months of flight test experience. The second aircraft will have flown for one full month and will be used to evaluate the propulsion system. Thus, prior to the release of long lead production funds, both the first and second aircraft will have accrued flight test experience.

Test Firing of ICBM

Q. General Ryan, how long has it been since the Air Force has test fired an ICBM from a site?
A. Senator, there are two testing concepts involved here. First, we have our operational test launches from operationally configured silos at Vandenberg AFB. This is a continual testing program. Our last Vandenberg launch was on February 9, 1972. The other concept involves launching from an operational base silo. Data from this type testing is used to supplement information gained from Vandenberg launches. Our testing method at the operational bases has

undergone an evolutionary change. Our first method was the "seven-second launch" program. The missiles in this program were inert except for seven seconds of propellant in stage one. The last test was in August 1968. It was a failure. However, the program was valuable because we pinpointed a problem in the launch circuitry which we subsequently corrected. Since that time we have developed a different method of testing at the operational bases. This program is called "Modified Operational Missiles (MOMs) Test Program." It tests the complete launch circuitry up to stage one ignition. MOMs tests do not test actual ignition of the first stage propellant or egress of the missile. However, these events are not areas of concern as we have never had a launch failure once a launch sequence has progressed up through the point checked by MOMs tests. Additionally, we can do MOMs tests cheaper than the "seven-second launches" and can test a complete flight of ten missiles at once. Our last MOMs test was in December 1971. This program has been very successful; however, we expect to replace MOMs tests in the future with an even better and less expensive electronic launch test. Our planning for a full range Operational Base Launch has continued. Currently, we have approval to fly some Minuteman II test missiles from Vandenberg using the self contained range safety equipment that will be used on full range operational base launches, when that program is approved.

Confidence Level for Firing ICBM

Q. What degree of confidence do you have that a high percent of our ICBM's could be fired successfully if necessary?

A. Senator Thurmond, we have very high confidence in the reliability of our ICBM force. The reliability varies slightly from system to system, but overall we would expect [deleted] percent of our entire force to launch and fly to the target point successfully. These factors have been derived through an extensive on-going ground and flight test program. These tests include daily electronic launch sequence tests, maintenance inspections, alert missile inspections by special evaluation teams, operational readiness inspections, depot level reliability and aging surveillance programs, Modified Operational Missiles (MOMs) tests, and flight tests. For example, we have data from over 40,000 daily tests of Minuteman I which indicate a [deleted] percent ready to launch success rate. Similarly, over 20,000 Minutemen II tests indicate a [deleted] percent ready to launch rate. In the more comprehensive MOMs tests program, we have tested 30 missiles and experienced only one failure. The cause of the one failure has been identified and corrected to preclude recurrence. We have also launched 240 Minuteman missiles in the Vandenberg Operational Test program to maintain our high confidence in the reliability of Minuteman.

Advanced Configuration of Minuteman III

Q. Why are we not converting all of our Minuteman missiles to the more advanced configuration?

A. In structuring the Minuteman program we have stressed survivability improvements that will enhance the pre-launch and inflight survivability of the entire Minuteman force, while concurrently replacing our oldest and least capable missiles with Minuteman III at a modest rate. The approved modernization program would terminate upon deployment of a total of 550 Minuteman III missiles; however, the Air Force is evaluating alternatives which include continued modernization of the Minuteman force with Minuteman III.

Mark II/Program Status

Q. General Ryan, what is the status of the Mark II avionics program?

A. We hope that our long standing technical difficulties with the Mark II Avionics are pretty much behind us now. The very tough state-of-the-art problems have been resolved. The system works. Production sets are being delivered and we are now beginning to form the F–111D tactical wing at Cannon AFB, New Mexico. There are seven Mark II equipped F–111Ds flying training missions there now, and we are scheduled to finish equipping the wing in [deleted].

F–111D's Built by General Dynamics

Q. How many F–111D's has General Dynamics built?

A. A total of ten F–111D's have been delivered, three of which are in test. In addition, 78 airframes are factory complete, but will not be contractually ac-

cepted by the Air Force until the Mark II Avionics are installed and checked out in accordance with contractual requirements.

F–111D's Flying With Mark II

Q. How many of the F–111D's have the Mark II and are flying?

A. Nine are equipped with Mark II and flying either training or test missions. The tenth F–111D is being used for other test purposes and does not yet have the Mark II avionics installed.

Mark II Program Schedule

Q. Is the Mark II program on schedule?

A. The adjusted program is on schedule. The original schedule, however, was not met. While we hope our problems are largely behind us, there may still be some manufacturing and quality control problems.

Total Cost of Mark II Program

Q. What is the total cost of this program?

A. The Mark II R&D and production costs are currently estimated to total $893 million at program completion.

Cost of Mark II Per Aircraft

Q. How much has been spent per plane on the Mark II avionics package?

A. The average production flyaway cost of the Mark II per aircraft is estimated to be $4.4 million.

Avionics in F–111F

Q. What avionics is in the F–111?

A. The F–111F avionics were chosen so as to retain some of the trouble free high performance components of the Mark II while eliminating those high cost items experiencing technical problems. As a result, the F–111F combined those Mark II avionics with the radar and other avionics found in the FB–111. For example, the Mark II digital computers and inertial navigation system are in the F–111F along with the FB–111 radar, cockpit displays, and terrain following radar. The end result is that the F–111F avionics is less costly than the Mark II and while less capable than the Mark II, it is very much improved over the avionics systems in the F–111A and E.

Cost of Mark I Versus Mark II and Differences Between

Q. How much did it cost and what is the difference between it and the Mark II?

A. The production flyaway cost of the Mark II portion of the F–111F avionics is about $1.1 million. The differences between the F–111D Mark II and F–111F avionics are very significant in terms of mission capability and technical make-up. Let me describe it this way: The requirement for the Mark II avionics was to provide our tactical air forces with the capability to conduct the classic tactical air-to-ground mission in any weather, day or night. Since this requires the attack of comparatively small targets, advanced avionics technology had to be drawn upon to enable the development of a system which could detect these difficult targets. This the Mark II does. In addition, a tactical unit that has been deployed to some trouble spot has to protect itself from enemy air attack. Therefore, it is highly advantageous to provide to some degree a secondary avionics capability in the ground attack aircraft to intercept, in any weather, approaching enemy bombers. Certainly, the air superiority dogfight mission with the enemy fighters would have to be performed by other aircraft, but the Mark II avionics is intended to allow a radar controlled type of intercept of bombers.

Because of these characteristics the F–111D has by far the best interdiction capability and possesses some secondary capability in these other areas. In contrast, the other F–111 tactical model avionics, including the F–111F, provide a somewhat lesser interdiction capability but with none of the secondary uses. That is, the other F–111s can be used for the all weather, day or night attack of large targets that are more easily detected on radar. Bridges, rail yards, and airfields are typical of these. Further, the air intercept capability of these avionics is very limited to non-existent.

In summary, then, the Mark II avionics is designed to detect much smaller targets by a factor of about three. The F–111D can also detect and attack moving targets, such as a truck convoy, while the F–111F cannot. The Mark II avionics radar has a capability to detect and intercept attacking bombers, the F–111F has only a very limited capability in this regard. The Mark II can deliver weapons more accurately, even on the large, more prominent radar targets, and much more accurately on the smaller tactical targets difficult to detect with the F–111F system. Finally, the avionics displays in the cockpit of the F–111D are very advanced over those of the F–111F, enabling the crew more time to concentrate on performing their tasks with precision which, in the final analysis, is what determines whether the target is detected, attacked with accuracy, and destroyed.

COST OF F–111F

Q. Moving to the F–111F, General Ryan, how much does it cost?

A. The average unit flyaway cost of the F–111F's procured in fiscal years 71 and 72, and as estimated for FY 73, is $12.58 million. This figure is based on the actual negotiated cost of $134M for the FY 72 procurement which included the use of $22M in available assets in addition to the $112M appropriation.

F–111/CAUSE FOR LEARNER'S CURVE GO UP

Q. The cost of the F–111 should go down based on the learner's curve but it has apparently gone up. Would you comment on this point?

A. Yes. The F–111 manufacturing learning curve has declined steadily, reaching its low point and leveling off with the fiscal year 1972 procurement. However, it is important to note that the learning curve factor is but one of several that influence the unit procurement cost. For example, the effects of inflation, production rate, overhead, and the need for additional support equipment and spares all effect the amount of the appropriation request. In the particular instance of the F–111 FY 73 procurement, these other factors combine to offset the cost advantages resulting from the learning curve.

FISCAL HIGHLIGHTS OF THE 1973 BUDGET

Chairman ELLENDER. General De Luca has a statement on the "Fiscal Highlights of the Fiscal Year 1973 Budget" which will appear in the record at this point.

(The statement follows:)

FISCAL HIGHLIGHTS OF THE FISCAL YEAR 1973 BUDGET

Statement of Major General Joseph R. De Luca

Director of Budget, Headquarters, USAF

MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE:

It is a privilege for me to present the Fiscal Highlights of the FY 1973 Budget to your Committee. The Secretary, the Chief of Staff, and other Air Force witnesses have discussed the missions, programs and requirements in the FY 1973 Air Force Budget. I will show the financing requirements and other fiscal data for the Fiscal Year 1972 and 1973 programs.

FY 1972 Programs and Financing

The FY 1972 Total Obligation Authority approved by the Congress in December 1972 was $22,904.7 million. The FY 1972 program in the FY 1973 Budget now before the Congress is $23,808.7 million or a $904.0 million increase. Of this $904.0 million increase, $653.3 million is for military and civilian pay increases in FY 1972 and the remainder is for the Advanced Airborne Command Post Aircraft, RDT&E, increases in Permanent Change of Station costs, subsistence, health benefits, medical care, and for currency revaluation. This TOA increase of $904.0 million is financed by a FY 1972 Supplemental Request of $806.0 million and by transfers from other appropriations of $98.0 million. Table I summarizes the TOA approved by Congress by appropriation, the FY 1972 TOA in the FY 1973 Budget, the resulting increase and how it is to be financed.

TABLE I

DEPARTMENT OF THE AIR FORCE
FISCAL YEAR 1972 TOA APPROVED BY CONGRESS COMPARED
TO FISCAL YEAR 1972 TOA IN THE FY 1973 BUDGET

Appn	FY 72 TOA Appr By Congress	FY 72 TOA In FY 73 Budget	Increases TOA	Financed By	
				FY 72 Supp	Transfers
Mil Pers, AF	6470.3	7028.2	557.9	530.4	27.5
Res Pers, AF	101.8	112.4	10.6	6.4	4.2
ANG Pers	134.6	149.9	15.3	15.3	
O&M, AF	6224.9	6372.1	147.2	81.6	65.6
O&M, ANG	413.4	424.4	11.0	11.0	
Acft Proc	3082.7	3196.5	113.8	113.8	
Msl Proc	1683.7	1683.7			
Other Proc	1574.0	1574.0			
RDT&E	2912.9	2960.4	47.5	47.5	
Mil Con, AF	289.2	289.9	.7		.7
Mil Con, AFR	6.6	6.6			
Mil Con, ANG	10.6	10.6			
Total	22904.7	23808.7	904.0	806.0	98.0

Table II shows the appropriations for which the FY 1972 Supplementals are being requested and their purpose.

TABLE II

DEPARTMENT OF THE AIR FORCE
FY 1972 PROPOSED SUPPLEMENTALS
BUDGET AUTHORITY BY APPROPRIATION
(Millions of Dollars)

Appn	Mil Pay Incr 14 Nov 71	Mil Pay Incr 1 Jan 72	Civ Pay Incr 1 Jan 72	Wage Board	Advanced Airborne Command Post Acft	Other RDT&E	TOTAL
Mil Pers, AF	345.8	184.6					530.4
Res Pers, AF	5.3	1.1					6.4
ANG Pers	11.0	4.3					15.3
O&M, AF			42.6	39.0			81.6
O&M, ANG			2.9	8.1			11.0
Acft Proc					113.8		113.8
RDT&E			7.5	1.0	6.0	33.0	47.5
Total	362.1	190.0	53.0	48.1	119.8	33.0	806.0

The FY 1972 Supplemental for the 14 November 1971 Military Pay Increase, for the Advanced Airborne Command Post Aircraft, for Other RDT&E, and for $47.1 million of the $48.1 million of FY 1972 Wage Board increases were sent to the Congress in January 1972. The remainder of the Supplementals will be forwarded at a later date.

FY 1973 Program and Financing

The FY 1973 Total Obligating Authority in the FY 1973 Justification Books and as presented in the Congressional Hearings is $24022.3 million. This includes $473.1 million for the cost in FY 1973 of the 1 January 1972 pay increase. It does not include any dollars for proposed future pay increases. The financing of the $24022.3 million of TOA requires $24012.3

million in new appropriations and $10.0 million of recoupments. The FY 1973 TOA of $24022.3 million is $213.6 million larger than the FY 1972 TOA of $23808.7 million in the FY 1973 Budget. Table III shows the differences by appropriation:

TABLE III

DEPARTMENT OF THE AIR FORCE
FY 1972 TOA IN FY 1973 BUDGET COMPARED
TO FY 1973 TOA
(Millions of Dollars)

Appropriation	FY 1972 TOA in FY 1973 Budget	FY 1973 TOA	Difference
Mil Pers, AF	7028.2	7251.1	+ 222.9
Res Pers, AF	112.4	131.4	+ 19.0
ANG Pers, AF	149.9	169.4	+ 19.5
O&M, AF	6372.1	6202.4	- 169.7
O&M, ANG	424.4	461.7	+ 37.3
Aircraft Proc	3196.5	2612.7	- 583.8
Missile Proc	1683.7	1772.3	+ 88.6
Other Proc	1574.0	1883.3	+ 309.3
RDT&E	2960.4	3193.2	+ 232.8
Mil Con, AF	289.9	327.2	+ 37.3
Mil Con, AFR	6.6	7.0	+ .4
Mil Con, ANG	10.6	10.6	-
TOTAL TOA	23808.7	24022.3	+ 213.6

I will now briefly discuss the financial aspects for each appropriation and fund.

Military Personnel, Air Force

The FY 1973 TOA is $7251.1 million as compared to the FY 1972 TOA of $7028.2 million. The FY 1973 TOA is $222.9 million larger than FY 1972

even though there is a decrease in the year-end strength. The increase is primarily the result of a full year cost in FY 1973 of the 14 Nov 71 and 1 Jan 1972 pay increases. The New Obligating Authority requested in FY 1973 is also $7251.1 million.

Reserve Personnel, Air Force

FY 1973 TOA of $131.4 million is an increase of $19.0 million over the FY 1972 TOA of $112.4 million. This increase is due to the full year cost in FY 1973 of the FY 1972 pay raises, additional units and conversions, and an increase in average strength. The FY 1973 New Obligating Authority requirement is $131.4 million.

Air National Guard Personnel

This appropriation also is increased in FY 1973 by $19.5 million to a TOA and New Obligating Authority requirement of $169.4 million. This increase is also due primarily to the full year cost in FY 1973 of the FY 1972 pay raises and additional basic trainees.

Operation and Maintenance, Air Force

This appropriation has a TOA in FY 1973 of $6202.4 million as compared to $6372.1 million in FY 72. There is an overall net decrease of $169.7 million even though the FY 1973 TOA includes the full year effect of the 1 Jan 1972 pay increase. In addition, there are two activities, the Satellite Control Facility headquartered in California, and the Sandia/ Manzano Base at Albuquerque, New Mexico, which have been transferred to this appropriation for financing in the amount of $37.8 million. The reductions are in the Strategic, General Purpose, Airlift, and Supply and Maintenance programs and include civilian personnel strength reductions as well as decreases in other base operating and support areas. The FY 1973 New Obligating Authority request is $6202.4 million.

Operating and Maintenance, Air National Guard

The FY 1973 TOA and New Obligating Authority is $461.7 million or a $37.3 million increase over FY 1972. This increase is principally due to civilian manyear and pay increases, and unit conversions to new type aircraft.

Aircraft Procurement, Air Force

The TOA and New Obligating Authority requested is $2612.7 million. This is $583.8 million lower than the FY 1972 TOA of $3196.5 million. However, $505.6 million of this decrease is a transfer of a budgeting requirement to the Other Procurement, Air Force, appropriation. Other decreases are primarily in the Airlift and Modification areas.

Missile Procurement, Air Force

This appropriation has a modest increase in FY 1973 TOA of $88.6 million from FY 1972 primarily for various classified projects. The New Obligating Authority (NOA) requirement in FY 1973 is $1772.3 million.

Other Procurement, Air Force

The TOA in FY 1973 of $1883.3 million is $309.3 million larger than the FY 1972 TOA of $1574.0 million. Since there was a transfer of budgeting requirement into this appropriation from the Aircraft Procurement, Air Force, appropriation for $505.6 million, there is actually a program decrease of $196.3 million, principally in the Munitions and Vehicular Equipment programs. The FY 1973 request for New Obligating Authority is $1883.3 million.

Research, Development, Test and Evaluation

This appropriation has an increase of $232.8 million for a FY 1973 TOA of $3193.2 million. This is the result of new systems, such as B-1, Lightweight Fighter Prototype, Advanced STOL Transport, SCAD, F-15, and AWACS,

being initially funded or reaching a state of development requiring a higher level of funding in FY 1973. The FY 1973 New Obligating Authority request is $3193.2 million.

Military Construction, Air Force

The increase of $37.3 million in TOA in FY 1973 to a total of $327.2 million is for personnel facilities, satellite basing facilities for strategic aircraft, and the defense office building to be built at Bolling AFB. The New Obligating Authority request in FY 1973 is $317.2 million since $10.0 million of the TOA requirement is to be financed with prior year recoupments.

Military Construction, Air Force Reserve

This appropriation requires $7.0 million in New Obligating Authority in FY 1973 which is a $0.4 million increase over FY 1972.

Military Construction, Air National Guard

$10.6 million in New Obligating Authority is requested for this appropriation in FY 1973 which is the same as FY 1972.

Industrial Fund, Air Force

In FY 1973, the Air Force Industrial Fund is planning to finance 9 printing plants, 30 laundry and dry cleaning plants, the airlift portion of MAC and 6 depot maintenance activities. In FY 1972 the revenue is estimated at $2331.9 million and the expenses at $2365.1 million. In FY 1973, revenue is estimated to be $2040.3 million while expenses are shown as $2007.2 million. There are no requirements for additional financing in this fund for FY 1972 or FY 1973.

Stock Fund, Air Force

The Air Force Stock Fund includes the following divisions: Aviation Fuels, General Support, Systems Support, Commissary, Clothing, Medical-

Dental, and USAF Academy. The FY 1972 Sales and Obligations are estimated at $2945.0 million and $2798.1 million, respectively. In FY 1973 the comparable amounts are $2923.9 million and $2744.4 million. In FY 1972, $58.7 million is to be transferred to the Aircraft Procurement, Air Force appropriation and $69.0 million is to be transferred into the Air Force Stock Fund from the Defense Supply Agency. There are no proposed transfers for FY 1973.

Summary Tables

Tables IV and V summarize the financing of the FY 1972 and FY 1973 programs and the estimated obligations and outlays for FY 1972 and FY 1973.

TABLE IV
DEPARTMENT OF THE AIR FORCE
FY 1973 BUDGET
FINANCING
(Millions of Dollars)

	Total AF	Mil Per	Res Per	NG Per	O&M AF	O&M ANG	Acft Proc	Msl Proc	Other Proc	RDT&E	MC AF	MC AFR	MC ANG
					FY 1973								
PROGRAM													
Direct Program (TOA)	24,022.3	7,251.1	131.4	169.4	6,202.4	461.7	2,612.7	1,772.3	1,883.3	3,193.2	327.2	7.0	10.6
Reimbursable Program	1,201.1	42.5	.9	.4	481.4	8.0	425.0	5.5	55.0	180.3	2.0		
Total Program	25,223.4	7,293.6	132.3	169.8	6,683.8	469.7	3,037.7	1,777.8	1,938.3	3,373.5	329.2	7.0	10.6
FINANCING													
Appropriation Estimate	24,012.3	7,251.1	131.4	169.4	6,202.4	461.7	2,612.7	1,772.3	1,883.3	3,193.2	317.2	7.0	10.6
Reimbursable Orders:													
Customer Orders	1,201.1	42.5	.9	.4	481.4	8.0	425.0	5.5	55.0	180.3	2.0		
Recoupments	10.0										10.0		
Total Resources	25,223.4	7,293.6	132.3	169.8	6,683.8	469.7	3,037.7	1,777.8	1,938.3	3,373.5	329.2	7.0	10.6
					FY 1972								
PROGRAM													
Direct Program (TOA)	23,808.7	7,028.2	112.4	149.9	6,372.1	424.4	3,196.5	1,683.7	1,574.0	2,960.4	289.9	6.6	10.6
Reimbursable Program	2,022.8	42.3	*	.4	480.2	8.4	1,250.0	1.2	50.0	188.3	2.0		
Total Program	25,831.5	7,070.5	112.4	150.3	6,852.3	432.8	4,446.5	1,684.9	1,624.0	3,148.7	291.9	6.6	10.6
FINANCING													
Appropriation	22,551.0	6,470.3	101.8	134.6	6,224.9	413.4	2,899.0	1,633.7	1,479.0	2,887.9	289.2	6.6	10.6
Proposed Supplementals:													
Military Pay	552.1	530.4	6.4	15.3									
Civilian Pay	53.1				42.7	2.9				7.5			
Wage Board	48.1				39.0	8.1				1.0			
Proc & RDT&E	152.8						113.8			39.0			
Reimbursable Orders:													
Customer Orders	2,022.8	42.3	*	.4	480.2	8.4	1,250.0	1.2	50.0	188.3	2.0		
Service Account	48.8						25.0		23.8				
Transfer (Sec 736)	-	27.5	4.2		65.6				-97.3				
Trans fm AF Stock Fund	58.7						58.7						
Trans fm DOD Stock Fund	50.0						25.0	25.0					
Trans fm DOD Agencies	.7										.7		
Trans fm Prior Years	293.5						75.0	25.0	168.5	25.0			
Total Resources	25,831.5	7,070.5	112.4	150.3	6,852.3	432.8	4,446.5	1,684.9	1,624.0	3,148.7	291.9	6.6	10.6

TABLE V
DEPARTMENT OF THE AIR FORCE
FY 1973 PRESIDENT'S BUDGET
SUMMARY OF OBLIGATIONS & OUTLAYS($ MILLIONS)

Obligations

Appropriation	FY 72 Estimate Gross Oblig	FY 72 Estimate Reimb Oblig	FY 72 Estimate Direct Oblig	FY 73 Estimate Gross Oblig	FY 73 Estimate Reimb Oblig	FY 73 Estimate Direct Oblig
Military Personnel	7,070.5	42.3	7,028.2	7,293.6	42.5	7,251.1
Reserve Personnel	112.4	*	112.4	132.3	.9	131.4
Natl Guard Personnel	150.3	.4	149.9	169.8	.4	169.4
O&M, AF	6,852.3	480.2	6,372.1	6,683.8	481.4	6,202.4
O&M, ANG	432.8	8.4	424.4	469.7	8.0	461.7
Aircraft Procurement	4,496.6	772.4	3,724.2	3,268.5	661.7	2,606.8
Missile Procurement	1,605.2	8.1	1,597.1	1,750.0	3.8	1,746.2
Other Procurement	1,640.1	58.0	1,582.1	1,881.1	49.0	1,832.1
RDT&E	3,248.1	212.0	3,036.1	3,373.5	181.5	3,192.0
Mil Con, AF	301.0	1.5	299.5	318.0	2.1	315.9
Mil Con, AFR	5.6	-	5.6	6.7	-	6.7
Mil Con, ANG	9.8	-	9.8	10.6	-	10.6
TOTAL AIR FORCE	25,924.9	1,583.3	24,341.6	25,357.6	1,431.3	23,926.3

Outlays

Appropriation	1972 Gross Exp	1972 Reimb Colls	1972 Outlays	1973 Gross Exp	1973 Reimb Colls	1973 Outlays
Military Personnel	7,076.3	50.3	7,026.0	7,247.5	42.5	7,205.0
Reserve Personnel	109.0	*	109.0	130.9	.9	130.0
Natl Guard Personnel	147.4	.4	147.0	169.4	.4	169.0
O&M, AF	6,802.7	499.7	6,303.0	6,659.8	479.8	6,180.0
O&M, ANG	426.1	7.5	418.6	466.0	8.0	458.0
Misc Expired Accts	-	-	-	-	-	-
Aircraft Procurement	4,377.7	584.7	3,793.0	3,089.0	764.0	2,325.0
Missile Procurement	1,445.2	12.2	1,433.0	1,518.0	8.0	1,510.0
Other Procurement	1,645.2	102.2	1,543.0	1,999.9	59.9	1,940.0
RDT&E	3,178.8	207.8	2,971.0	3,234.6	187.6	3,047.0
Mil Con, AF	291.7	1.7	290.0	262.7	1.7	261.0
Mil Con, AFR	5.0	-	5.0	5.7	-	5.7
Mil Con, ANG	9.1	-	9.1	10.6	-	10.6
AF Stock Fund	2,858.0	2,945.0	- 87.0	2,780.0	2,925.0	- 145.0
AF Indus Fund	2,360.0	2,342.0	18.0	2,025.9	2,062.4	- 36.5
AF Management Fund	2.0	-	2.0	2.0	-	2.0
Def Prod Guar	*	.2	- .2	*	.1	- .1
Subtotal Outlays	30,734.2	6,753.7	23,980.5	29,602.0	6,540.3	23,061.7
Trust/Receipts			- 52.8			- 22.0
MAP Outlays			**			**
TOTAL OUTLAYS			23,927.7			23,039.7

* Amounts less than $50,000
** MAP Outlays excluded.

Mr. Chairman, this concludes my statement.

SUPPLEMENTAL AND TRANSFERS/BRIEF EXPLANATION OF ITEMS

Senator ELLENDER. In regard to table I of your statement, would you please provide for the record a brief explanation of each of the items contained in the columns marked "Financed by Fiscal Year 1972 Supplemental," and "Financed by Transfers?"

General DE LUCA. I will furnish that for the record.

(The information follows:)

(The column marked "Financed by Fiscal Year 1972 Supplemental" covers the following:)

	Military pay					
	Effective November 1971	Effective Jan. 22	Wage board, 1972	Classified effective, January 1972	Prior and R.D.T. & E.	Total
Military personnel, Air Force	345.8	184.6				530.4
Reserve personnel	5.3	1.1				6.4
ANG personnel	11.0	4.3				15.3
O. & M., Air Force			39.0	42.7		81.7
O. & M., ANG			8.1	2.9		11.0
Aircraft processed					[1] 113.8	113.8
R.D.T. & E.			1.0	7.5	[2] 39.0	47.5
Total	362.1	190.0	48.1	53.0	152.8	806.0

[1] $113,800,000 will purchase 4 Boeing 747 aircraft for the Advanced Airborne Command Post (AABNCP).

[2] $39,000,000 is required for the following items: $6,000,000 AABNCP—To initiate specific actions toward acquiring improved communications package; $5,800,000 advanced STOL prototype development; $10,200,000 to provide for the incorporation of the ALG-99 ECM sybsystem into EF-111A; $8,000,000 advanced ballistic reentry system (ABRES); $9,000,000 electromagnetic pulse simulator (EMP).

The column marked "financed by transfers" covers the following:

Military personnel, Air Force		$27.5
Costs of PCS travel		
Reserve personnel, Air Force		4.2
Costs of ROTC		
Operation and maintenance, Air Force		65.6
Champus (medicare)	47.0	
Currency revaluation	16.0	
Public Law 91-418 (health benefits)	2.6	
Military construction, Air Force		.7
Transfer of Sandia Base from DASA		
Total		98.0

OTHER R.D.T. & E.

Chairman ELLENDER. On table II, to what does the $33 million relate in connection with R.D.T. & E?

General DE LUCA. The $33 million under the heading "Other R.D.T. & E." is for the following programs: Advanced STOL transport, $5.8 million; EF-111A, $10.2 million; advanced ballistic reentry system, $8 million; and $9 million for the electromagnetic pulse simulator which is a project under "Systems survivability."

INCREASES IN TABLE III

Chairman ELLENDER. The right-hand column in table III of your statement indicates the differences in amounts between fiscal years 1972 and 1973. Most of these relate to pay increase, either military or civilian, and to cost increases in procurement, I assume. Can you indicate where any other major increases for other reasons may appear, and what they are?

General DE LUCA. Yes, sir. I will provide that for the record.

(The information follows:)

	(In millions)
Mil Pers, AF:	
Fiscal year 1972 TOA in fiscal year 1973 budget	$7,028.2
Fiscal year 1973 TOA	7,251.1
Difference	+229.9

The Military Personnel appropriation has both increases and decreases. There are pay raises totalling $363 million and increased permanent change of station costs of approximatley $40.0 million. Additional moves required to replace personnel losses, price increases and entitlement changes further increase costs. The increases have been substantially offset by reducing our end strength. The FY 1973 Officer strength is 4,648 less than FY 1972. Enlisted strength will reduce by 8,494.

Res Pers, AF:	
Fiscal year 1972 TOA in fiscal year 1973 budget	112.4
Fiscal year 1973 TOA	131.4
Difference	+19.0

Reserve Personnel, increased $11 million for pay raises, and ROTC subsistance. Approximately $8 million is required for an average strength increase of 1,933 and associated schools and special training for conversions, new units, and increased ROTC requirements.

ANG Pers, AF:	
Fiscal year 1972 TOA in fiscal year 1973 budget	149.9
Fiscal year 1973 TOA	169.4
Difference	+19.5

The Air National Guard Personnel pay increases account for about $12 million with the remainder of the overall increase supporting additional training requirements.

O. & M., AF:	
Fiscal year 1972 TOA in fiscal year 1973 budget	6,372.1
Fiscal year 1973 TOA	6,202.4
Difference	−169.7

There is an overall net decrease in Air Force O&M even though the FY 1973 TOA includes the full year effect of the 1 Jan. 1972 pay increase. In addition, there are two activities, the Satellite Control Facility headquartered in California, and the Sandia/Manzano Base at Albuquerque, New Mexico, which have been transferred to this appropriation for financing in the amount of $37.8 million. The reductions are in the Strategic, General Purpose, Airlift, and Supply and Maintenance programs and include civilian personnel strength reductions as well as decreases in other base operating and support areas.

O. & M., ANG:	
Fiscal year 1972 TOA in fiscal year 1973 budget	424.4
Fiscal year 1973 TOA	461.7
Difference	+37.3

The increase in the Air National Guard O&M is principally due to civilian manyear and pay increases, and unit conversions to new type aircraft.

Aircraft Proc:	
Fiscal year 1972 TOA in fiscal year 1973 budget	3,196.5
Fiscal year 1973 TOA	2,612.7
Difference	−583.8

Included in Aircraft Procurement is a $505.6 million decrease resulting from transfer of a budgeting requirement to the Other Procurement, AF, appropriation. Other decreases are primarily in the Airlift and modification areas.

Missile Proc:	
Fiscal year 1972 TOA in fiscal year 1973 budget	1,683.7
Fiscal year 1973 TOA	1,772.3
Difference	+88.6

The Missile Procurement appropriation increase is due primarily to the initial procurement of SPARROW and SIDEWINDER missiles in FY 1973, as well as increases in the Defense Support Program for revised operational requirements and in Classified programs.

Other Proc:	
Fiscal year 1972 TOA in fiscal year 1973 budget	1,574.0
Fiscal year 1973 TOA	1,883.3
Difference	+309.3

The Other Procurement increase of $309.3 million results from the transfer of the budgeting for a requirement of $505.6 million from the Aircraft Procurement appropriation, which was partially offset by a decrease in the Munitions, Vehicles, first destination transportation, and the Bare Base Support Program of the Other Base Maintenance Support area.

R.D.T. & E.:	
Fiscal year 1972 TOA in fiscal year 1973 budget	2,960.4
Fiscal year 1973 TOA	3,193.2
Difference	+232.8

The R.D.T. & E. increase is the result of new systems such as B-1, Lightweight Fighter Prototype, Advanced STOL Transport, SCAD, F-15, and AWACS being initially funded or reaching a state of development requiring a higher level of funding in FY 1973.

Mil Con, AF:	
Fiscal year 1972 TOA in fiscal year 1973 budget	289.9
Fiscal year 1973 TOA	327.2
Difference	+37.3

The Military Construction, AF, increase is for personnel facilities, satellite basing facilities for strategic aircraft, and the defense office building to be built at Bolling AFB.

Mil Con, AFR:	
Fiscal year 1972 TOA in fiscal year 1973 budget	6.6
Fiscal year 1973 TOA	7.0
Difference	+.4

The slight increase in Military Construction, AFR, in FY 1973 represents continuing efforts to improve Reserve training facilities.

Total TOA:	
Fiscal year 1972 TOA in fiscal year 1973 budget	23,808.7
Fiscal year 1973 TOA	24,022.3
Difference	+213.6

DEFENSE OFFICE BUILDING, BOLLING AFB

Chairman ELLENDER. I note on page 7 reference to a new Defense Office Building at Bolling Air Force Base. I realize those funds will not be requested in the bill before us. However, would you please indicate for the record the pertinent information relative to the construction: the cost, size, number of personnel to be accommodated, purpose, and so forth.

General DELUCA. In the fiscal year 1973 military construction program the Department of Air Force is requesting authorization and funds for the first increment of construction in the amount of $19.4 million for site clearance and preparation, access roads, and other incidental work preparatory to construction of this Defense Office Building. The Department plans to request additional authorization and funding in the fiscal year 1974 program in the amount of $77.3 million, and in the fiscal year 1975 program in the amount of $73.5

million, for a total project cost of $170.2 million. The site, configuration, and architecture for this complex have been approved by the National Capital Planning Commission. There is occupied about 25 million square feet of office space by the Department of Defense in the National Capital region. The present goal of the Department of Defense is to vacate 2 million square feet of office space—substandard or leased—resulting from relocation of some of its activities from Washington to other areas. The total net office space requirement in the National Capital region for the Department of Defense for the future is about 23 million square feet of which about 8.8 million square feet currently are being provided through existing temporary, substandard, and leased space. Against this deficit, the Defense Office Building would provide 1.5 million net square feet of permanent office space to accommodate 10,000 personnel.

INDUSTRIAL FUND, AIR FORCE

Chairman ELLENDER. Also on page 7 in the paragraph on the Air Force's industrial fund I note reference to the financing of nine printing plants, 30 laundry and drycleaning facilities, the airlift portion of MAC, and six depot maintenance activities. Why are these financed under the industrial fund?

General DELUCA. Mr. Chairman, as you recall, the National Security Act Amendments of 1949 authorized the establishment of working capital funds within the DOD. These were established to control and account more effectively for the cost of programs and work performed. The Air Force industrial fund provides working capital for industrial and commercial-type services provided various organizations, and is in turn reimbursed by these customers. We have these activities under the industrial fund because they meet the criteria for such funding established by the Congress. The industrial fund has improved the management and the visibility of the financial operations they encompass. By the application of proven business type accounting methods, funding is matched to operating results. Under the industrial fund concept we make our operating managers fully responsible for a direct accounting of the money they spend, the cost of each job, and the most economical method of accomplishing the work. Likewise, the customer is able to evaluate the exact costs of services provided and thus acts as a monitor for the cost effectiveness of the fund. We believe that this contributes to effective and efficient performance of these tasks.

INDUSTRIAL FUND ITEMS

Chairman ELLENDER. Please provide for the record a description of each of these items as well as the need for them.

General DE LUCA. I will be happy to.

(The information follows:)

Printing plants.—These 9 plants provide area support for the Air Force and other military agencies. Services provided include technical assistance and advice concerning the planning, layout, scheduling and other administrative operations pertaining to printing; preparation of copy for photo offset printing and typographic composition services; printing by photo offset, direct image, or letter press methods; reproduction by use of office duplicating and photographic reproduction equipment; binding and finishing operations, including punching, drilling, folding, trimming, assembling, and stapling; manufacture of decal-

comanio or printing by silk screen process; and packaging, addressing, and mailing of the printed product.

Laundry and Drycleaning facilities.—These 30 facilities, primarily in remote areas, process items of government-owned property, personal clothing of military personnel, and other items of authorized patrons. Services include receiving and shipping; marking and checking; washing and extracting; tumbling and folding; flat work ironing; shirt and garment pressing; sorting and wrapping; cleaning, tumbling, and spotting; and production support.

Airlift service.—The Airlift Service provides air transportation between the United States and overseas areas for the Department of Defense and for other authorized agencies of the U.S. Government. The service includes: (1) established channel scheduled transportation of passengers, cargo and mail; (2) joint service exercises and air-borne training; (3) special assignment missions; (4) international and domestic aeromedical evacuation; and (5) special missions for the President and other U.S. and foreign dignitaries.

The role of the commercial air carriers, in support of defense needs, is to replace strategic airlift capability in routine, non-hazardous operations when the military force is performing its basic airlift mission under emergency and wartime conditions or participating in exercises and tactical training in non-emergency periods. We have been successful in obtaining continuing air carrier participation in the Civil Reserve Air Fleet (CRAF) program with modern aircraft, and this civilian cooperation is forecast to continue. By legislative direction and DOD policy, commercial airlift is used for the movement of DOD passengers and mail, except to locations where use of U.S. commercial air carriers is impractical.

The principal and basic function assigned to MAC is that of maintaining and operating a global military airlift system designed to support an adequate emergency readiness position. This function is the key to the MAC mission of providing airlift services required by the Department of Defense under all conditions. To insure the capability to accelerate immediately to flying rates necessary to perform emergency and wartime missions, the entire military airlift system must be operated and exercised at a rate which will provide adequate training and realistic operational experience. MAC must have in being the necessary military airlift system, which consists of bases, aircraft, air crews, aerial ports, communication systems, supporting personnel, and equipment. The maintenance of high levels of training and readiness produces an airlift capability which, in the interest of economy, should be and is used to minimize DOD airlift and logistics costs. To be prepared for its wartime mission, MAC operates a peacetime airlift service under the Air Force Industrial Fund.

Depot maintenance.—The Depot Maintenance activity provides for organic depot and contract depot maintenance for aircraft repair and modification, missile repair, engine overhaul, overhaul of exchangeable items, area support, local manufacture and other major item repair and modification.

Organic depot maintenance activities provides shop facilities, equipment and personnel of higher technical skill than are normally available at organizational and intermediate maintenance.

The Air Force organic depot level maintenance capability meets only mission essential requirements on a continuing depot level maintenance to sustain operations under emergency or wartime conditions. This means that organic depot maintenance capability is planned to accomplish no more than 70 percent of gross mission essential depot maintenance work-load requirements with a facility capacity loading at a minimum rate of 85 percent, on 40-hour week, one shift basis.

Contract depot maintenance, and that done by other DOD components on an interservice basis, is used to meet all other depot maintenance requirements beyond the defined organic depot maintenance capability.

Requirement.—These activities are all required to support the combat and combat support missions of the Air Force. In addition many are required for training, establishment of a mobilization base, and for military personnel rotation purposes. All also produce a required service which may not be readily or feasibly available from commercial sources.

AIR FORCE STOCK FUND

Chairman ELLENDER. Please indicate the function of each of the items under the Air Force stock fund.

General DeLuca. The Air Force stock fund has seven divisional areas encompassing the following functions:

(*a*) Clothing Store Division responsible for retail sales at base level of uniform clothing items and related materiel (shirts, shoes, socks, trousers, and so forth), comprising approximately 2,400 items.

(*b*) Commissary Division responsible for retail sales/issue at base level of perishable and nonperishable subsistence items (napkins, meats, fruits, and so forth), comprising approximately 4,200 items.

(*c*) Fuels Division responsible for retail sale/issue at base level of aviation and missile fuels and related items (JP–4 jet fuel, liquid oxygen, oils, and so forth), comprising approximately 100 items.

(*d*) Academy Cadet Store Division responsible for sale/issue of all items of necessity and convenience required for the cadets (clothing, athletic supplies, text books, and so forth), comprising approximately 6,500 items.

(*e*) Medical-Dental Division responsible for retail sale/issue of expense-type supplies and equipment items (drugs, bedding, blood, and so forth), comprising approximately 14,000 items.

(*f*) General Support Division responsible for retail sale/issue at base level of decentrally managed expense-type supplies and equipment items including electronic, communications and vehicular repair parts, and base level consumables (hardware, tubes, tires, furniture, and so forth), comprising approximately 874,000 items.

(*g*) Systems Support Division responsible for procurement and sales at base and depot levels of centrally managed aircraft, missile, cryptological, communications, electronic, expense-type items comprising approximately 575,000 items (airframe, electronic, and special equipment repair parts, and so forth).

SUBCOMMITTEE RECESS

Chairman Ellender. The subcommittee will recess until 10 o'clock in the morning when we will hear appropriations testimony "Military Personnel" and "Operation and Maintenance" of the Air Force.

(Whereupon, at 5:15 p.m., Wednesday, February 16, the subcommittee was recessed, to reconvene at 10 a.m., Thursday, February 17.)

DEPARTMENT OF DEFENSE APPROPRIATIONS FOR FISCAL YEAR 1973

THURSDAY, FEBRUARY 17, 1972

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, D.C.

The subcommittee met at 10 a.m., in room S–126, the Capitol, Hon. Allen J. Ellender (chairman) presiding.

Present: Senators Ellender, Pastore, Young, and Allott.

DEPARTMENT OF DEFENSE

DEPARTMENT OF THE AIR FORCE

MILITARY PERSONNEL, AIR FORCE

STATEMENT OF MAJ. GEN. JOHN B. KIDD, DIRECTOR OF PERSONNEL PROGRAMS, DEPUTY CHIEF OF STAFF, PERSONNEL

ACCOMPANIED BY:

MAJ. GEN. JOSEPH R. De LUCA, DIRECTOR OF BUDGET, HEADQUARTERS, U.S. AIR FORCE

MAJ. GEN. WILLIAM W. BERG, DIRECTOR OF MANPOWER AND ORGANIZATION, DEPUTY CHIEF OF STAFF, PROGRAMS AND RESOURCES

COL. RICHARD J. CAREY, CHIEF, POLICY DIVISION, DIRECTORATE OF PERSONNEL PLANS, DEPUTY CHIEF OF STAFF, PERSONNEL

MAJ. GEN. JAMES A. HILL, DIRECTOR OF AEROSPACE PROGRAMS, DEPUTY CHIEF OF STAFF, PROGRAMS AND RESOURCES

BRIG. GEN. JEANNE M. HOLM, DIRECTOR OF WOMEN IN THE AIR FORCE, DIRECTORATE OF MILITARY PERSONNEL

ROBERT HENSHAW, OPERATING APPROPRIATIONS DIVISION, DIRECTORATE OF BUDGET, HEADQUARTERS, U.S. AIR FORCE

BUDGET REQUEST

Chairman ELLENDER The subcommittee will come to order.

This morning we will consider the request for "Military personnel, Air Force" for which the fiscal year 1973 budget estimate is $7,251,075,000. This amount includes $356,375,000 for the January 1, 1972, pay raise.

PROGRAM AND FINANCING

At this point in the record there will appear certain programing and financing information.

(The information follows:)

DEPARTMENT OF DEFENSE—MILITARY

MILITARY PERSONNEL, AIR FORCE

PROGRAM AND FINANCING (IN THOUSANDS OF DOLLARS)

	1971 actual	1972 estimate	1973 estimate
Program by activities:			
Direct program:			
1. Strategic forces	1,398,351	1,516,346	1,593,127
2. General purpose forces	1,776,552	1,863,426	1,849,185
3. Intelligence and communications	803,995	831,897	815,153
4. Airlift and sealift	399,990	423,029	415,105
5. Guard and Reserve	19,569	20,476	23,020
6. Research and development	201,022	206,488	206,708
7. Central supply and maintenance	86,945	102,753	117,047
8. Training, medical, and other general personnel activities	1,621,573	1,824,400	1,952,919
9. Administration and associated activities	202,246	222,580	217,401
10. Support of other nations	13,774	16,777	61,410
Total direct program	6,524,017	7,028,172	7,251,075
Reimbursable (total)	51,227	42,344	42,509
Total obligations	6,575,244	7,070,516	7,293,584
Financing:			
Receipts and reimbursements from—			
Federal funds	−25,355	−16,170	−16,335
Trust funds	−9,851	−5,510	−5,510
Non-Federal sources	−16,021	−20,664	−20,664
Unobligated balance transferred from other accounts		−27,500	
Unobligated balance lapsing	218		
Budget authority	6,524,235	7,000,672	7,251,075
Budget authority:			
Appropriation	6,504,135	6,470,283	6,894,700
Transferred from other accounts	20,100		
Appropriation (adjusted)	6,524,235	6,470,283	6,894,700
Proposed supplemental for Military Pay Act increases		345,817	
January 1972 pay increase supplemental/amendment		184,572	356,375

[1] Reimbursements are derived from sale of meals and clothing to service members (10 U.S.C. 9621).

Note: The amounts shown as January 1972 pay increase supplemental/amendment are not distributed to each individual appropriation in the fiscal year 1973 President's budget, but are reflected as a 1-line defensewide contingency amount. The amounts shown above are estimates, pending final determination of the amounts to be requested when supplemental and amended estimates are formally transmitted.

MANPOWER

Chairman ELLENDER. The principal witness is Maj. Gen. John B. Kidd, director of personnel programs.

You may proceed, General.

General KIDD. Mr. Chairman, and members of the committee, I am privileged to appear before your committee again this year to present the fiscal year 1973 military personnel, Air Force budget estimate which totals $7,251,075,000.

However, before discussing the appropriation request in detail, I want to address the manpower requirements and some of the major programs and influences affecting the Air Force.

Air Force military strengths continue to decline. The fiscal year 1972 and 1973 end strengths will be the lowest since 1950.

MILITARY STRENGTH

The fiscal year 1972 budget presented last year was based on a military manpower program that would decrease from 757,344 at the end of fiscal year 1971 to 752,782 at the end of fiscal year 1972. Those reductions were chiefly associated with reduced activity in Southeast

Asia and some support reductions partially offset by actions to upgrade the readiness of our tactical forces.

The further reduction to the projection for end fiscal year 1972 of 730,352 was due primarily to the transfer of aircraft to the Reserve forces, and reductions in intelligence and headquarters activities.

1973 Military Strength

The fiscal year 1973 programed military strength is 717,210, which represents a 13,142 reduction below the projected end fiscal year 1972 position. These decreases are caused by reductions in crew ratios and utilization rates for tactical and mobility forces, transfer of aircraft to the Air National Guard and Air Force Reserve, and further reductions in intelligence, headquarters, and support activities.

1971, 1972, and 1973 Military and Civilian Strengths

Table I shows the military and civilian strengths for fiscal year 1971, fiscal year 1972, and fiscal year 1973. While this hearing is concerned with military personnel, the civilian manpower strengths are shown in order that the full scope of the manpower reductions may be understood.

(Table I follows:)

TABLE I.—DEPARTMENT OF THE AIR FORCE—TOTAL MILITARY AND CIVILIAN STRENGTHS

	Fiscal year 1971 actual end strength	End fiscal year 1972 projected in fiscal year 1972 budget	Current end fiscal year 1972 projection	End fiscal year 1973 projection
Military:				
Officers	125,726	124,202	121,462	116,814
Airmen	624,980	624,163	604,473	595,979
Cadets	4,401	4,417	4,417	4,417
Total	755,107	752,782	730,352	717,210
Civilians:				
Direct hire	293,137	291,111	279,138	279,138
Indirect hire	19,434	20,970	22,824	20,328
Total	312,571	312,081	301,962	299,466
Aggregate	1,067,678	1,064,863	1,032,314	1,016,676

1972 and 1973 Funding Increases Resulting From Pay Increases

Chairman Ellender. General, with such a reduction, one would imagine that the budget would be lower for military manpower. What is your answer to that?

General Kidd. Well, sir, had it not been for the pay raises which affect both 1972 and 1973, the Air Force military personnel budget would have shown a $123 million reduction in fiscal 1973. It is the pay raise that accounts for the increase in dollars.

Chairman Ellender. How does it differ from last year or the year before?

General Kidd. The end 1972 dollars without a pay raise would have been $6,470 million. With the pay raises, that number becomes $7,028 million.

Chairman Ellender. Although you cut back several thousand men the amount to pay the remaining people in the service is greater?

General KIDD. Yes, sir.

Chairman ELLENDER. By how much? Do you have the figures there to indicate how much more?

General KIDD. Yes, sir.

The difference between 1972 and 1973 with the pay raises is an increase of $223 million.

Chairman ELLENDER. Proceed.

MAJOR PROGRAM MILITARY MANPOWER CHANGE

General KIDD. The military manpower changes to the 10 major programs from fiscal year 1972 to fiscal year 1973 are summarized in table II.

(Table II follows:)

TABLE II.—DEPARTMENT OF THE AIR FORCE—ESTIMATED CHANGES IN THE MILITARY MANPOWER PROGRAM BETWEEN END OF FISCAL YEARS 1972 AND 1973

	Current end fiscal year 1972 projection	End fiscal year 1973 projection	Net change
Strategic forces	173,165	171,495	−1,670
General purpose forces	211,532	197,245	−14,287
Intelligence and communications	91,933	88,370	−3,563
Airlift and sealift	46,884	43,515	−3,369
Guard and Reserve forces	2,118	2,259	+141
Research and development	18,140	17,594	−546
Central supply and maintenance	10,702	10,727	+25
Training, medical, and other personnel support activities	151,866	155,020	+3,154
Administration and associated activities	22,400	19,088	−3,312
Support of other nations	1,612	11,897	+10,285
Total, Air Force	730,352	717,210	−13,142

INCREASE OVER 1972

General KIDD. Including the recent pay raise and other budget amendments, estimated cost of the current fiscal year 1972 program is $7,028,172,000. Estimated cost of fiscal year 1973 is $7,251,075,000. Details are contained in the Justification of Estimates Book which has been provided.

NATIONAL GUARD AND RESERVE INCREASES: BACKUP FOR VOLUNTARY PROGRAM

Chairman ELLENDER. I note in the tabulation on page 8 of the justifications that there is a slight increase in the number of active duty personnel assigned to support the Air National Guard and the Air Reserve. What is this reason for this increase?

General KIDD. Sir, as you are aware, the administration policy is to increase and improve the capabilities of both the National Guard and the Reserve Forces. This reflects retention of that policy wherein we are turning over numbers of Active Airforce aircraft to both these forces.

Chairman ELLENDER. How is this related to the all-volunteer force concept?

General KIDD. I think there is no direct connection with a voluntary force, sir.

Chairman ELLENDER. It seems to me that under the all-volunteer force concept you will have to be satisfied with a smaller active duty Air Force, and one way to compensate for this is to strengthen the Reserve components. It seems that you do not agree.

General KIDD. I would say no, sir; they are not really directly connected. It is a question of what incentives are going to be needed to achieve a voluntary force. In the Air Force, our progress toward a voluntary force is coming along well. I do not see any direct connection.

Chairman ELLENDER. Do you know of any further contemplated reduction?

General KIDD. In strength, sir?

Chairman ELLENDER. Yes.

General KIDD. Besides what I have stated, no, sir; I am not aware of any.

Chairman ELLENDER. What will your end strength be by the end of 1973?

General KIDD. 717,210.

1971, 1972, AND 1973 CIVILIAN PERSONNEL REDUCTIONS

Chairman ELLENDER. Was there any cut in civilian personnel of consequence?

General KIDD. Yes, sir. I can read off the actual end strengths. Civilian strength, 1971, total direct hire and indirect hire is 312,571.

I might say I am reading from table I now.

Our projection for the end of this fiscal year, fiscal 1972, is 301,962.

Our projection for the end of fiscal 1973 is 299,466. That is a reduction of about 13,000.

Chairman ELLENDER. That is from 1971?

General KIDD. From the end of 1971.

REDUCTION PROCEDURES

Chairman ELLENDER. How do you go about reducing civilians as you reduce military personnel? Is there a yardstick by which that is done or is it done arbitrarily?

General KIDD. General Berg is director of manpower. This falls in his area.

General BERG. Mr. Chairman, I think the answer to your question is twofold: First, when we are making up our budget, figuring out how we are going to get our manpower within certain dollar limits, if we decide to eliminate certain units or certain activities, we take out whatever people are in there. If they are all military, we take out all military.

If, as they generally are, they are a combination of military and civilian, we take out whatever authorizations for people are in there at that time.

Separate and distinct from that, from time to time there will be some sort of reduction which will impact solely on civilians.

I think you are familiar with the economic announcement that the President made back in August where we were to reduce 5 percent of our civilian work force. In such a case, we go out to each of our major commands and, in effect, give them some kind of quota so that the aggregate total of that is the same as the reduction we are required to make. This is spread across the Air Force. We take those reductions as best we can.

MILITARY PERSONNEL REDUCTIONS

Chairman ELLENDER. Have you a formula by which you make such reductions?

General BERG. No, sir; we do not have a formula.

We have reduced over 200,000 people in the aggregate from 1968 to the end of 1973. As a general rule, the reduction in military people has been greater percentagewise than has the reduction in civilians. This has occurred, I think, for two reasons:

First, the majority of the reductions we have made have been as we come out of Southeast Asia, which was heavily populated with military people. At the same time, we have reduced what we call the readiness in a lot of our units. The readiness is the crews, where we have a crew ratio that is greater than one, and the associated maintenance that performs the maintenance on the aircraft so that we can fly at a higher utilization rate.

Those activities are heavily populated with military people. So, the places where we have cut, as I described in my first example, have been primarily populated with military people.

The second reason is that at the very same time that we have been coming down we have been following out the policy of the administration and Department of Defense and that is to only have military people where it is absolutely essential to use military people. So we have had programs going on to try to take military people out of certain functions and substitute civilians for them.

At the very same time the total force has been coming down, including civilians, there has been some little build in there of civilians to actually replace military people.

DEACTIVATION OF BASES

Chairman ELLENDER. In your first example in which military personnel were reduced in large numbers, can you be a little more specific?

General BERG. Several years ago, sir, we inactivated several bases. When we did that, let us say for instance that we had 900 military people and 500 civilians, what we reduced was 900 military people and 500 civilians.

Chairman ELLENDER. Do you take into account the number of enlisted men and officers you have?

General BERG. No, sir; there is no ratio correlation.

Chairman ELLENDER. Why is that?

General BERG. We have been directed to reduce a specific number of civilians as a part of the budget process which says your end strength which is now a certain number will be reduced to a lower number.

Chairman ELLENDER. You mean this reduction of 5 percent?

General BERG. That is right.

Effect on Enlisted Personnel of Civilian Reductions

Chairman Ellender. How did that affect your enlisted personnel total?

General Berg. It does not affect them at all. In the first instance, Mr. Chairman, the reduction is actually now taking place. It is taking place between now and the end of this fiscal year. We will not have lost that 5 percent until the end of fiscal year 1972. So we are in the process of doing it now.

Elimination of Actions and Functions

In the second instance, we have actually gone in and taken activities in such commands as the Air Force Logistics Command, the Air Force Systems Command, which are heavily populated with civilians and they are actually cutting out activities and functions and simply won't do them any more.

Chairman Ellender. Such as what?

General Berg. I don't think I could recite one off the top of my head to you.

Schedule of Combat and Noncombat Forces

Chairman Ellender. At this point in the record there will appear a schedule of combat and noncombat forces as it appears in the justifications.

(The information follows:)

SCHEDULE OF COMBAT AND NONCOMBAT FORCES (END STRENGTHS)

	Fiscal year		
	1971 actual	1972 estimate	1973 estimate
A. Mission manpower (combat and direct combat support):			
1. Strategic forces	172,833	173,165	171,495
2. General purpose forces	222,646	211,532	197,245
3. Intelligence and communications	102,023	91,933	88,370
4. Airlift and sealift	49,776	46,884	43,515
5. Guard and Reserve	1,900	2,118	2,259
Subtotal	549,178	525,632	502,884
B. Support manpower:			
6. Research and development	19,998	18,140	17,594
7. Central supply and maintenance	8,872	10,702	10,727
8. Training, medical, and other general personnel activities	152,401	151,866	155,020
9. Administration and associated activities	21,915	21,647	18,420
10. Support of other nations	1,606	1,612	11,897
Subtotal	204,792	203,967	213,658
C. Reimbursable personnel [1]	1,137	753	668
Grand total	755,107	730,352	717,210

[1] Military personnel assigned to agencies outside of Department of Defense on a reimbursable basis under the provisions of 10 United States Code 8230 (Air Force).

Combat and Combat Support

Chairman Ellender. The tabulation depicting the schedule of combat and noncombat forces by end strengths indicates that of a total of 717,210 some 502,884 are mission manpower—combat and direct

combat support. Please define combat, direct combat support and support personnel as used in this tabulation.

General BERG. Yes, sir. The definition of these terms is based on the 10 major program structure which has been used for budget presentation for the past several years. This structure divides all Defense resources into 10 programs as follows:

I. Strategic forces.
II. General purpose forces.
III. Intelligence, communications, weather and rescue.
IV. Strategic airlift.
V. Guard and reserve forces.
VI. Research and development.
VII. Central supply and maintenance.
VIII. Training, medical and individual support.
IX. Administration and associated activities.
X. Support of other nations.

Manpower in programs I through V is essentially force related and is considered mission manpower. Manpower in programs VI through X, may be considered as support. Internally, each major program is divided into program elements which can generally be grouped into force of mission elements, training elements, command elements and base operating elements. Within the force related or mission programs (I–V), the force elements of programs I, II and IV—which include manpower for combat crews, maintenance, munitions, aircraft/missile security, operations staff, command and control, and surveillance activities—plus the military adviser authorizations in counterpart Reserve combat forces are considered combat. The remaining manpower in programs I–V, whch includes base operating personnel directly involved in the daily operation of bases launching and recovering primary mission aircraft—analogous to support personnel on board aircraft carriers or organic to Army/Marine combat divisions—as well as intelligence and communications are considered direct combat support.

SCHEDULE OF COMBAT AND NONCOMBAT FORCES

Chairman ELLENDER. On the tabulation it is indicated that the 171,495 men assigned to strategic forces are in the combat and combat support category. The same is true with respect to the 197,245 assigned to general purpose forces, the 88,370 assigned to intelligence and communications, the 43,515 assigned to airlift and sealift; and the 2,259 assigned to support the Guard and Reserve.

As I indicated to Secretary Seamans and General Ryan I feel all the services have too many people engaged in the various support activities in proportion to the number of men in the actual combat forces—that is the fighting men. This is a matter that I expect to give considerable attention.

I wish you would provide for the record a tabulation for fiscal years 1971, 1972, and 1973 breaking down the mission forces by the numbers assigned to combat and direct combat support.

General BERG. We will provide that information for the record, Mr. Chairman.

(The information follows:)

SCHEDULE OF COMBAT AND NONCOMBAT FORCES

	Fiscal year 1971, actual			Fiscal year 1972, estimate			Fiscal year 1973, estimate		
	Combat	Direct combat support	Total	Combat	Direct combat support	Total	Combat	Direct combat support	Total
1. Strategic forces	103,421	69,412	172,833	103,008	70,157	173,165	100,911	70,584	171,495
2. General purpose forces	99,796	122,850	222,646	96,610	114,922	211,532	88,504	108,741	197,245
3. Intelligence and communications	14,905	87,118	102,023	14,950	76,983	91,933	14,034	74,336	88,370
4. Airlift and sealift	32,024	17,752	49,776	27,887	18,997	46,884	25,522	17,993	43,515
5. Guard and Reserve	771	1,129	1,900	1,023	1,095	2,118	1,210	1,049	2,259
Subtotal	250,917	298,261	549,178	243,478	282,154	525,632	230,181	272,703	502,884
SUPPORT MANPOWER									
6. Research and development			19,998			18,140			17,594
7. Central supply and maintenance			8,872			10,702			10,727
8. Training, medical, and other general personnel activities			152,401			151,866			155,020
9. Administration and associated activities			21,915			21,647			18,420
10. Support of other nations			1,606			1,612			11,897
Reimbursable personnel			1,137			753			668
Subtotal			205,929			204,720			214,326
Total, Air Force			755,107			730,352			717,210

EFFECTIVE, EFFICIENT, WELL TRAINED AND DEDICATED PERSONNEL

General KIDD. Before I cover the details of the appropriations request, I would like to discuss some of the major influences on the personnel program. Our objective is effective, efficient, well trained and dedicated personnel. We are making progress toward this goal. To illustrate, I will first highlight our efforts in addressing social problems and other special-interest areas. Then, I will discuss the USAF personnel plan and its contributions from the standpoint of both the Air Force and the individual.

SOCIAL ACTIONS

We are faced with a wide array of social problems. Among these are drug abuse, concern for insuring equal opportunity and treatment of military personnel, and the maintenance of racial harmony.

We have established a Social Actions organizational structure which extends from base level through our major operating commands and agencies to Headquarters USAF. Each major Air Force installation has a Social Actions officer and NCO assigned; in addition, each installation with a military population of over 500 has a full- or part-time equal opportunity officer assigned. Current plans call for race relations courses to be established at each major Air Force base for the purpose of providing instruction to every Air Force member.

A Social Actions Division has been formed at Headquarters USAF. The division is composed of drug abuse branch, human relations branch, and a traveling Social Actions assistance team. The team disseminates Air Force policy and provides feedback to USAF policymakers. Additionally, members are charged with assessing the extent of local social problems and then making recommendations to the commander concerned.

DRUG ABUSE CONTROL PROGRAM

Significant progress has been made in the Air Force drug abuse control program. A drug abuse rehabilitation program has been implemented to supplement the prevention and education efforts. This program provides for a centralized rehabitation facility to augment base-level programs. Vigorous detection programs within Southeast Asia have resulted in increased ability to identify drug abusers.

Urinalysis testing programs are currently being expanded so that a worldwide testing capability is planned for July 1, 1972. Once identified, drug abusers are detoxified and provided psychiatric evaluation. Efforts are then made to rehabilitate them to become productive members of the Air Force or to return to civilian society. Those remaining in the Air Force are provided follow-on counseling and guidance through the Social Actions Office at each base.

MEASURES BEING TAKEN

Senator YOUNG. I wish you would expand on what you have just said, including an indication as to whether drug abuse is increasing or decreasing, as a result of the measures that have been taken to combat it, and the effectiveness of those measures.

General KIDD. The thrust of the Air Force drug abuse control program has been in three main areas: education, identification, and rehabilitation.

In terms of education, it has been our goal to see that every man and woman in the Air Force knows the dangers of drug abuse, both legal and medical. We have attempted to create a factual and believable program utilizing not only mandatory briefings, films and the like, but also, anonymous telephone counseling, informal seminars, small group counseling sessions, and extensive distribution of educational handbooks, pamphlets, and guides.

In the attempt to identify drug abusers, we have utilized three basic techniques: urinalysis testing, limited privileged communication program—the Air Force exemption program—and increased investigative efforts.

Urinalysis testing began in Southeast Asia on June 21, 1971. By July 1, 1972, worldwide random urinalysis testing will be fully implemented. This program will test Air Force personnel an average of once per year, except in Southeast Asia where the average will be approximately four times a year per man. Additional to the worldwide random testing, all basic trainees will continue to be tested on their first day on active duty. The limited privileged communication program allows an individual to turn himself in for medical treatment without being prosecuted for drug use or possession incident to that use. This program has identified over 2,400 drug abusers since March 8, 1971. The number of drug abuse investigations conducted by the security police and the Office of Special Investigations has increased each year for the past several years.

The Air Force has developed a comprehensive rehabilitation program. Identified drug abusers are detoxified if necessary. This lasts from 5 to 7 days. After detoxification drug abusers are medically evaluated, including psychiatric evaluation and counseling as to the nature of their problem. The next phase of the rehabilitation process is known as behavioral reorientation. During this phase counseling and group therapy is used to meet individual needs. Generally speaking, the goal of this phase is to reorient the values of the individual. Successful completion of behavioral reorientation permits the former drug abuser to enter the final phase of the rehabilitation process; that of 1 year follow-on support. This support consists of periodic counselling sessions, quarterly evaluations by the base Social Actions officer, medical officer, chaplain, and commander, and continued standby support by drug abuse rehabilitation personnel. At the end of the year an individual is considered fully rehabilitated if he remains drug free.

In regard to whether drug abuse is on the increase or decrease, several factors must be considered. First of all, our confirmed positive urinalysis rate in Southeast Asia has been steadily declining and should continue to do so. This fact can primarily be explained by the extreme intensity of our testing program there. Quite simply, there are just so many drug abusers to catch in SEA, and we're catching them.

In terms of other areas of the world and drug substances not detected by urinalysis—that is, marihuana, hashish and hallucinigens—we have some indications which would seem on the surface to indicate that

drug abuse is on the increase. For example, the number of investigations involving drug abuse and the number of people being discharged from the service for drug abuse continue to rise. However, this rise can reasonably be ascribed to an increased awareness and emphasis on the problem as well as to increased drug abuse. The problem in determining whether drug abuse is actually increasing or decreasing is that we have no definitive baseline against which to measure the current level of drug abuse. However, the urinalysis program initiated in June 1971, is going to provide such information. For example, in Southeast Asia the identified drug abuse urinalysis rate has been .5 percent over a 7-month period. June 1972 implementation of the worldwide random urinalysis testing program will over time give us appropriate data upon which to base an objective determination of the drug abuse trend.

The first step in overcoming any problem is to create an awareness that the problem exists. At all levels of command in the Air Force this has been achieved. The second major step is to fully understand the nature and magnitude of the problem. We are making major inroads into this phase of the solution. However, due to the illicit, covert nature of drug abuse and lack of a baseline previously mentioned, it would be extremely premature at this point to estimate whether the problem is still expanding or has turned the corner.

Comparative Service Addictions

Chairman Ellender. General, do all of the services follow the program for the control of drugs, or do you have different programs and controls?

General Kidd. All services are working under the same program in Vietnam. We, as well as the Marines before they pulled out their last troops, have, of course, the compulsory urinalysis in Southeast Asia. So, all the services have parallel programs there.

Chairman Ellender. How does the number of drug users in the Air Force compare to the number in the Army, the Navy, and the Marines?

General Kidd. I am not in a position really to comment on a comparison between the other services. I don't have their statistics at hand. I do have Air Force statistics.

Senator Allott. Mr. Chairman.

Do you mean that you have no figures at hand which would identify the relative percentage of drug addiction detected in South Vietnam as among the services? You don't have figures like that? How do you assess your problem in relation to the total services if you don't have such figures?

Methods of Identifying Drug Abuses

General Kidd. OSD does have comparative figures on the services. The limited figures I do have here are for a first half of calendar year 1971 on the rate of drug abuse investigations. Let me hasten to add that there are direct and indirect means of identifying drug abusers.

The direct means, of course, is urinalysis. An indirect means is a comparison of the number of investigations that are undertaken concerning drug abuse. Not all of these drug abuse investigations end up in a confirmation of drug abuse or possession, but this is one of the indicators used, OSD has computed figures that indicate that the worldwide rate per thousand for the Air Force for calendar 1971 is 6.5.

Chairman ELLENDER. Is that investigations or actual abuses?

General KIDD. The number of investigations which may or may not confirm an abuse.

Senator ALLOTT. 6.5 per thousand?

General KIDD. The worldwide rate per thousand for the Army for the first half of calendar year 1971 is 13.16, and for the Navy 10.52.

Chairman ELLENDER. What was the result of those investigations?

General KIDD. I do not have those statistics, sir.

AIR FORCE POLICY

The Air Force policy is that where there is any suspicion of violation there is an investigation conducted by the Office of Special Investigations. Each case is handled individually on its own merits. The results of that investigation are turned over to that man's commander and the disposition of that case becomes his judgment, whether he is court-martialed, whether he is administratively discharged, whether he is rehabilitated locally on base or whether he is put in the detoxification program. It can be one of several avenues.

REPORT OF HIGH PERCENTAGE ADDICTION BY SERVICEMEN IN VIETNAM

Senator ALLOTT. Mr. Chairman.

The figures you have given us, General, at least to me, are not particularly meaningful. We have had various people go to Vietnam and come back, who, after spending a short time there make statements that would lead us to believe that as much as 50 percent of the people over there in the services were addicted to the use of drugs. They use the word "addiction." That is what I am interested in.

Then we have had statements by the military saying that the estimate was entirely too high.

AIR FORCE ADDICTIONS REVEALED BY VIETNAM URINALYSIS PROGRAM

I am not holding you accountable for the other services, of course, but what figures do you have which give us a real dimension of the drug problem not only in Vietnam but throughout the service?

General KIDD. I think I have some figures here that will put it in proper perspective as far as some of the large numbers you mention.

On June 2, 1971, the urinalysis program was implemented in Southeast Asia for all services. Every individual leaving Southeast Asia went through the urinalysis program a short time before he left the country. From that date until December 31, 1971, the Air Force had 416 confirmed users of drugs.

Senator ALLOTT. 416?

General KIDD. That is right. This turns out to be one-half of 1 percent of the number tested. The total number tested in that period was 79,155.

PERIOD OF ABSTINENCE NECESSARY TO RENDER NEGATIVE REPORT

Senator ALLOTT. Maybe somebody can answer this. How long would a user have had to be off drugs in order to come out clear in the urinalysis?

General KIDD. I do not have a doctor with me here, sir, but it is my understanding that a user of heroin, having been off heroin for 3 days would not show up in the urinalysis.

Senator ALLOTT. Three days?

General KIDD. Three days.

Senator ALLOTT. So that if a person could have laid off, let us say, for 4 days, then one would not turn up any positive results in the one-half-percent figure, would one?

General KIDD. Yes, sir. There is one factor to be considered there. Anyone who is anywhere near addicted to heroin would be undergoing very severe withdrawal symptoms that would be detectable by the end of 72 hours.

Senator ALLOTT. How serious, again related to Southeast Asia, in the Air Force do you consider the drug addiction problem? Does it achieve any kind of major scare factor that we have heard or not?

General KIDD. No, sir. I think the figure that I just provided you, one-half of 1 percent, which is a figure based on actual scientific tests. puts things in proper perspective.

INCREASING PROBLEM AND CONTROL EFFORTS

The Air Force does have a drug problem; it is increasing. We have many, many things under way to reduce it, to bring it under control. I think that figure of one-half of 1 percent does put it in perspective.

ADDICTS SEPARATED FROM SERVICE: SPECIAL TREATMENT CENTER, LACKLAND AIR FORCE BASE

Senator ALLOTT. You say you handle these cases on an individual basis. I presume that is the only way you can do it. What percentage of these people who are identified are separated from service?

General KIDD. I can give you a partial answer to that now. If I may, I would like to complete it for the record.

Senator ALLOTT. All right.

General KIDD. The USAF Special Treatment Center, Lackland Air Force Base, Tex., which was set up last June in response to the President's program on drug abuse, has an extremely fine professional staff. Since its inception, again cutting off at December 31, 1971, we had 575 people put into that facility for treatment. These are people who were identified as drug users. So far, 37 percent of those, or 182, have been returned to duty. About 3 percent were referred to the Veterans' Administration for further treatment. Eighty-two were still under treatment as of December 31, 1971.

There are 46, 9 percent, in another category called other. These are in hospitals or confinement or returned to home base for disposition. Fifty-one percent, or 248, of those treated at Lackland were separated from the service.

PERCENT OF DRUG ADDICTS SEPARATED FROM SERVICE

We also conduct drug abuse rehabilitation in base-level programs for the less serious cases. In 1971, approximately 46 percent of those treated at base level were administratively separated for drug abuse.

REHABILITATION ADEQUATE TO RETURN TO POSTS OF RESPONSIBILITY

Senator ALLOTT. Is it the opinion of your medical section that men who have been addicted to the extent wherein it is necessary to have

them undergo treatment, as at Lackland, can be returned to posts of responsibility?

General KIDD. I am sure there are examples of those who have been addicted who can be returned. Again, as far as statistics go, I don't have any of those.

One of the five phases at Lackland is a psychiatric evaluation by qualified psychiatrists who make determinations as to whether this individual has in fact been rehabilitated and can in fact assume a position of responsibility.

CONDITIONS OF SEPARATIONS

Senator ALLOTT. The 51 percent who were separated, were they separated under conditions other than honorable?

General KIDD. Sir, I don't have that breakout.

Let me add, though, that we have as another part of our program, which is somewhat novel, a program called limited privileged communication program. This involves individuals who are having a problem with drugs. This was set up about a year ago. It invites them to turn themselves in, either to their commander or to the doctor, simply saying, "I have a problem; I need help."

If in fact they are discharged they are discharged under honorable conditions. The total participation in that program to date has been 2,466.

To answer your question directly, sir, I will provide that for the record.

(The information follows:)

The 51 percent were all separated under honorable conditions.

PILOT AND CREW MEMBER ADDICTIONS

Senator ALLOTT. I haven't had much experience with drugs. I have had a little. I happen to have two sons who are involved in the judicial aspect of this to a very great extent.

Of your one-half percent that you talked about a few moments ago, detection by urinalysis, what percentage of these were either pilots or crew members?

General KIDD. Again, I do not have statistics, but I am not aware that there were any.

(The information follows:)

Urinalysis testing has not detected any pilots as drug abusers. The one-half percent mentioned earlier does include two enlisted crew members.

TECHNICIAN ADDICTIONS

Senator ALLOTT. Of course, a technician in the Air Force who is hopped up is just as dangerous as a pilot or crew member who is hopped up, in a real sense, isn't he?

General KIDD. He could be.

Senator ALLOTT. You rely on your radar and on your communications, or whatever sighting equipment you have, and if it doesn't work you are just about as badly off as you would be flying with a pilot who is under addiction.

General KIDD. Yes, sir. This is really why I included this subject in my statement, to show you that the Air Force is very concerned about it and has a very pervasive program in a way to deal with the problem. We are taking it extremely seriously from the Chief of Staff on down.

LIMITED COMMUNICATION PROGRAM; VOLUNTARY TURNINS

Senator ALLOTT. Are the voluntary turn-ins included in the one-half percent?

General KIDD. In SEA we have been giving a urinalysis to those personnel who turn themselves in for help. Of the 416 confirmed positives in SEA, 54 individuals are included in the overall 0.5 percent positive rate for SEA.

EXAGGERATED REPORTS OF PROBLEMS

Senator ALLOTT. I am not trying to bedevil the Air Force, but if your figures are correct, and I am sure they are, they give us a different picture entirely from what has been represented in the current news media including television, radio, and the papers. It would indicate that you have a problem, as far as I am concerned, but it would indicate that the problem was of far less intensity than we have been led to believe through the news media.

General KIDD. It is far less than some of the estimates last spring just before this program was initiated.

Senator ALLOTT. Thank you very much.

COMPARATIVE SERVICE ADDICTIONS

Chairman ELLENDER. I hope that if we can determine that addiction varies widely by service, proper methods can be employed in those services having a high incidence that will reduce the overall addiction.

General KIDD. I will be happy to provide the statistics for the record. There are more statistics published by OSD that are available.

Chairman ELLENDER. Please do that.

We will also hear from the other services and be able to put in the record what the results are as to each service.

(The information follows:)

STATISTICS ON DRUG ADDICTION

The Air Force confirmed positive urinalysis rate in Vietnam for calendar year 1971 was 0.7 percent. The calendar year 1972 rate as of 15 February was 0.4 percent. The total Southeast Asia rate for calendar year 1971 (includes Thailand and Vietnam) was 0.5 percent. This rate is now running at 0.4 percent. The Air Force worldwide urinalysis rate for calendar year 1971 was 0.5 percent. As of 15 February the calendar year 1972 rate is 0.4 percent.

DRUG ABUSE EDUCATION AND TRAINING PROGRAMS

Chairman ELLENDER. You may proceed.

General KIDD. Education and training programs have been expanded to provide drug abuse training for Air Force personnel. Training is provided to initial enlistees during basic training and in all programs leading to a commission. For those already in the service, on-base programs are being expanded and drug abuse training is included in advanced professional schools and leadership training courses.

RACE RELATIONS

The Air Force, like the society from which we draw our people, has racial problems. These problems reflect the contemporary attitudes and social changes taking place in our Nation today. Our personnel—white, black, and others—bring their beliefs and prejudices with them when they enter the Air Force. However, we are making efforts to resolve racial problems—at every level. Programs intended to promote interracial harmony have the highest priorities. We believe the solution of these problems depends in large measure on effective communications plus education and training for all personnel.

Effective communications up and down the chain of command are imperative. Examples of communication efforts are human relations councils, action lines in base newspapers, minority items in AF NOW series and Airman magazine articles, squadron-level rap sessions, and a revised commander's call format.

Education and training in race relations will be given to all personnel when instructors from the new Defense Race Relations Institute at Patrick Air Force Base, Fla., reach the field in significant numbers. In the meantime, extensive efforts to make all Air Force personnel aware of each other's needs are being made at base level throughout the Air Force. All personnel in basic military training, professional military education, and other training courses receive training in race relations.

NUMBER AND NATURE OF RACE DISTURBANCES

Chairman ELLENDER. How many racial disturbances have taken place?

General KIDD. Sir, this past calendar year the Air Force had eight cases of what you might call racial disturbances. That is up two from the previous year.

Chairman ELLENDER. What type of disturbance was involved?

General KIDD. These were disturbances on base, people banding together causing property damage in some cases, causing commotion.

Chairman ELLENDER. Was anyone injured?

General KIDD. In these instances, I believe two firemen were killed. Several were hurt.

Chairman ELLENDER. An enlisted man?

General KIDD. He must have been a civilian fireman.

Chairman ELLENDER. Do you have any information on the details?

General KIDD. Of course, that is hard to generalize. I am sure there are instances of both. It just starts from disharmony. Each disturbance has its own trigger that sets it off. It is these triggers that we are working so hard to understand and prevent before they get going.

INVESTIGATION BY REPRESENTATIVES CHISHOLM AND DELLUMS OF SERVICEMEN RACIAL DISTURBANCES IN EUROPE

Senator ALLOTT. Excuse me, Mr. Chairman; I had to answer a call. I would like to ask a question of General Kidd.

Not too long ago, an article appeared in one of the three news weeklies. I don't recall which one. But it recounted the so-called investigation made by Representatives Chisholm and Dellums in the House

which described the situation in the services in Europe as approaching a rebellion on account of race problems.

I would like to ask you this question. I know that you are doing everything you can to try to provide equal opportunities; I hope you are.

General KIDD. I might say we are; yes, sir.

Senator ALLOTT. How could you describe the situation of your Air Force personnel in Europe? Did you see that article?

General KIDD. No, sir; I did not.

I would say from the evidence in the past 2 years that, as far as the Air Force is concerned, Europe has shown no greater signs and probably fewer signs of racial disharmony than almost any other area. The incidents we have had have been elsewhere. I believe I am correct that there has not been any significant racial disturbance in Europe in the last year.

Senator ALLOTT. I am going to give you a copy of this article. On reading it, I think you will understand my concern.

Frankly, considering the source of the article, the kind of so-called hearings that were held ad hoc, and investigations made by certain staff members of that committee in the House, I would discount it a tremendous amount. Maybe I can provide it before we adjourn so that I can show it to you.

Chairman ELLENDER. We will be sitting this afternoon, Senator.

Senator ALLOTT. Yes; unfortunately, I can't be here part of the afternoon.

SITES OF INCIDENTS

Chairman ELLENDER. If incidents did not take place in Europe, where did those take place that you referred to?

General KIDD. These incidents during the past year occurred at Travis Air Force Base, Chanute Air Force Base, Sheppard and Malmstrom Air Force Bases. There was one at Grand Forks Air Force Base. There were three in the Far East.

Senator YOUNG. How long ago was the incident at the Grand Forks Air Force Base?

General KIDD. That was on May 3, last.

Chairman ELLENDER. Most of them took place in this country?

General KIDD. Yes, sir.

EVIDENCES OF DISSENT

Senator YOUNG. What degree of dissent has the Air Force experienced?

General KIDD. There has been no evidence of significant organized dissent from within the Air Force. Antiwar newspapers directed at Air Force personnel appeared at 19 Air Force bases. These newspapers are characteristically small, mimeographed and rarely have a lifespan beyond two editions. During the year, five GI coffeehouses were established in the vicinity of Air Force bases organized by groups from without the Air Force. In addition to providing underground dissent and protest literature, their activities include legal counseling on how to apply for discharge and how to attain conscientious objector status. Almost all Air Force bases have received telephoned bomb threats in the past 2 years. No explosions have occurred on bases in the United States. Nevertheless, false bomb threats are momentarily disruptive.

None of these efforts can be attributed to a specific group nor has there been any evidence of coordination between militant groups. There has been no significant decrease in dissent and protest activity from without the Air Force during 1971.

Chairman ELLENDER. You may proceed.

EXPANDED USE OF MILITARY WOMEN IN THE AIR FORCE

General KIDD. For several years the Air Force has been expanding the use of women to serve as line military members. Recruiting objectives for both officer and enlisted personnel are being met without difficulty, and women are now enrolling in AFROTC on a coeducational basis.

We continue to examine our personnel policies and programs to assure that women have appropriate career opportunities. Our policies are applicable without regard to sex except in those cases where legal or physiological restrictions dictate otherwise.

VOLUNTEER FORCE

The Air Force concept of the all-volunteer objective envisions the maintenance of a well-trained, highly motivated force in a zero draft environment without degradation of quality. The Congress has taken a significant step toward attaining this goal by providing the recent pay increases for officers and airmen with under 2 years' service; also the January 1972 pay raise for all members. Because of the pay raises and other Project Volunteer programs we are now in a much better position to compete for manpower in the open job market.

ALL-VOLUNTEER FORCE

Chairman ELLENDER. Would you expand on the progress you are making toward a successful completion of the all-volunteer force?

General KIDD. Meaningful progress has been made in moving toward an all-volunteer force during the past year. The substantial pay raises provided for both first-termers and career personnel now make us more competitive in the open job market. While we are continuing to place emphasis upon the goals and values of the individual by providing more opportunity for recognition, innovation, and achievement, we recognize that additional incentives will be required as we move toward zero draft. The incentives which we believe are of particular significance are:

(*a*) Travel entitlements for our first-term airmen so as not to place undue financial hardships upon young families as a direct result of service-directed moves.

(*b*) Optional residency for bachelor officers and airmen currently required to reside in substandard quarters. In that funds are not available for construction of the required quarters, we would like to offer the affected personnel the option of seeking off-base facilities of their choice.

(*c*) Test program of the enlistment bonus concept for long-term enlistments for career fields requiring extensive technical training. By conducting such a test, we could determine the true value of the bonus concept in terms of meeting specific personnel needs.

USAF PERSONNEL PLAN

The long-range objectives of the personnel plan continue as our basic guide in the management and structuring of the total personnel force, setting qualitative and quantitative objectives within the force.

The management of the career force has been improved through the establishment of specific career force sizes for both officers and airmen. The flexible part of the active duty force, the segment which will respond to strength fluctuations, is that portion that has not completed the initial active duty obligation. A key objective is stability, particularly in training and career flow.

A key feature to be implemented in fiscal year 1973 provides equity in the promotion of all career airmen regardless of career field.

The plan also reflects appropriate officer grades as dictated by mission requirements and career flow within the system. These factors are reflected in proposed legislation needed to replace Public Law 89-606 authority which expires on June 30, 1972, as explained by Secretary Seamans in his recent statement to this committee. I will briefly cover some of the main points.

GRADE REQUIREMENTS (OGLA)

The existing law which prescribes current officer grade authorizations for majors, lieutenant colonels, and colonels within the Air Force expires on June 30, 1972. Without legislative action there will be no promotions to major, lieutenant colonel, or colonel; we would also have to demote, retire early, or involuntarily separate in fiscal year 1973 some 3,000 field grade officers whose experience we need.

The Air Force is seeking new grade legislation based upon an improved management system set forth in the USAF personnel plan, which reflects technological change since 1954 and Air Force maturity. The proposed legislation will provide much improved stability in career/promotion flow and insure visibility to young officers. With it, we can attract more good people to an Air Force career in an all-volunteer environment. We earnestly hope that permanent legislation will become law at an early date.

EXPIRATION OF TEMPORARY LEGISLATION AND PROPOSED PERMANENT LEGISLATION

Senator YOUNG. In brief, what would the proposed legislation provide?

General KIDD. Yes, sir.

Ever since 1966, the Air Force has had temporary grade legislation to give it some equity with the other services. This stems back to the OGLA Act of 1954. The Air Force was a rather young, not fully matured service. We didn't have many senior people. Since 1960, we have been operating under temporary legislation which tends to get us up to a par with the other services. The latest temporary legislation expires next June 30. We were advised by the Congress about 2 years ago to come in with a permanent legislative proposal, a permanent solution for our grade problem. That is what I am referring to here. Hope-

fully, in the very near future this legislative proposal will be forwarded to the Congress to provide us this relief we need.

As I indicated, the results will be rather dire if we do not get some relief.

TABLE OF ORGANIZATION: RIGHT OF COMMANDING GENERAL TO ALTER STRUCTURE

Senator ALLOTT. In your table of organization, does the commander in the field have complete control over that table of organization? In other words, if you have a table of organization set up for a squadron of fighters or a group—I am talking about officers—does the commanding general have the right to alter that structure?

The reason I ask about this is that I am thinking of a specific case, such as what MacArthur did in the South Pacific in World War II, where he took all the top grades from the squadrons and groups into his headquarters, and, consequently, commanders in squadrons, commanders in groups and other ranking officers could not get the grades to which they were entitled by the table of organization. Is such a thing possible under your system now?

General KIDD. Let me answer it this way, sir:

The overall grades, of course, are provided for in legislation. Those are allocated out through the force.

For the second part, let me defer to General Berg and ask him to answer that.

UNIT DETAILED LISTING (UDL): CENTRAL CONTROL PURSUANT TO AUTHORIZATION

General BERG. Senator, in the Air Force we don't use a table of organization—but we have in essence what is the same thing; it is called a Manpower Authorization Voucher, then becomes a UDL—unit detailed listing. That is essentially the same as the table of organization. We can control that centrally. In other words, if there is a grade on there and somebody wants to change it, it comes to us before it is authorized to be changed.

Senator ALLOTT. In my personal observation, there is nothing worse for the morale of units than what I just described. I wondered if it were possible under the present system.

General BERG. No, sir. During the war, there were a number of things that they decentralized for expediency. But we have used no such system since the end of the war.

Senator ALLOTT. Thank you.

REDUCTION OF PERSONNEL AND TRAINING

General KIDD. This will be the fifth straight year in which strengths have been reduced. Yet, the cost of people continues to rise. The cost of training people is also increasing. We are constantly seeking ways to offset and reduce these expenditures. Some examples of these efforts follow.

Last year we reorganized and consolidated the USAF survival training schools. We have reduced flying hours in the undergraduate navigator training program from 231 to 186 per trainee. We have

effected reduction of flying hours per trainee in our undergraduate pilot training program from 240 to 208.5.

We have established a centralized aircrew training and pipeline management system which has reduced the number of nonproductive days which our people spend in pipeline status. We are using the systems approach to training (SAT) in structuring training programs. Occupational surveys are reducing the length of technical training courses, with attendant savings.

We have also expanded our use of modern flight simulators with the SAT application and are effecting substantial savings in flight training costs. For example, the first comprehensive use of the latter technique has been applied to the A–7D training course, resulting in a reduction of approximately 52 flying hours per student in the A–7D.

MILITARY PERSONNEL PROGRAM

I will now discuss our military personnel program.

THREE-YEAR COMPARISON OF END STRENGTHS AND MAN-YEARS

Table III compares military end strengths and man-years for the 3 fiscal years.

(Table III follows:)

TABLE III.—DEPARTMENT OF THE AIR FORCE, TOTAL MILITARY STRENGTHS AND MAN-YEARS

Fiscal year 1973 President's budget	Officer	Airmen	Cadets	Total
Fiscal year 1973 estimate:				
End strength	116,814	595,979	4,417	717,210
Man-years	120,703	602,123	4,184	727,010
Fiscal year 1972 estimate:				
End strength	121,462	604,473	4,417	730,352
Man-years	124,464	622,561	4,020	751,045
Fiscal year 1971 actual:				
End strength	125,726	624,980	4,401	755,107
Man-years	128,246	631,930	3,940	764,116

OFFICER PROGRAM

General KIDD. I will now cover individual elements of this request beginning with the Officer Program.

The programed fiscal year 1972 officer end strength is 121,462. This is a reduction of 2,740 from the Preident's fiscal year 1972 Budget. A review of people who will separate on a voluntary basis is now being made. We hope to reach the new 1972 end strengths without resorting to involuntary separations or reductions in force.

1972 RANK REDUCTIONS: VOLUNTARY SEPARATIONS

Chairman ELLENDER. Of the 2,740 reduction in officers, how was that divided among the various grades?

General KIDD. Well, sir, when required to reduce from the Officer Corps a number of officers, our options for selecting people or releasing people from active duty are relatively few.

Our first priority is to allow those people to leave the service who want to leave. Since we are just now getting into the voluntary force concept, there are still a number of people in the Air Force who were draft-induced and it is these people we allow to leave. It turns out

that among our officers most of these people are in the junior grades of lieutenant and captain.

Chairman ELLENDER. Suppose you don't have enough to fill the 2,740; how do you proceed?

General KIDD. I believe, sir, in the case of 1972 we will have enough volunteers. Our estimates are that we will have enough who will voluntarily want to leave the service.

Chairman ELLENDER. Of the 2,740, do you know how many voluntarily have agreed to leave?

General KIDD. We are in the midst of that process now, sir.

The end strength was not established until after the Appropriations Act of December 19, 1971, and also included effects of the budget reviews for fiscal year 1973. So, since early December we have been working with our personnel people in the field asking various categories of people if they would like to leave the service. As of February 15, 617 had indicated they desired to leave the service. We are in the midst of the process of identifying those individuals.

Chairman ELLENDER. Are we to understand that this process will be concluded by June 30?

General KIDD. Yes, sir. Those people will be out of the service by June 30.

1973 REDUCTION: VOLUNTARY SEPARATION

The fiscal year 1973 request provides for an end strength of 116,814, a further reduction of 4,648. In fiscal year 1973, an early release program will be required to meet the end strength.

Chairman ELLENDER. Will you use the same process, discharging those who want to leave first?

General KIDD. Yes, sir; our approach will be identical. The problem is that in reducing the size of the officer force that much in 2 years, over 7,000, that we are going to have to go deeper in the force. We are currently studying that problem but our approach will be identical.

PROCUREMENT

Line officers are procured from three major sources: The Air Force Academy, the Officer Training School, and AFROTC. Medical officers and chaplains receive direct appointments.

The Air Force will commission approximately 750 officers in June. In July 1972, the wing strength is expected to be approximately 4,417. With the graduation of the Class of 1976, our annual production will be about 900, with an estimated 70 percent entering flying training. The size of future classes upon entry will stabilize at approximately 1,500, and maximum cadet strength should only vary slightly from year to year depending on attrition.

COMPARISON OF ACADEMY, OTS, AND ROTC GRADUATES

Chairman ELLENDER. How do the officers who graduate from the Air Force Academy compare with those from the Officer Training School and ROTC?

General KIDD. In what way, sir?

Chairman ELLENDER. In caliber and capability. It is very expensive, you know, to train personnel at the Air Force Academy as compared with those in the ROTC.

General KIDD. Academy graduates, of course, receive an outstanding education for the 4 years they are there. They get baccalaureate degrees-plus and in many cases are well on the way to a master's degree. The number of hours required for a degree, I believe, is 187, which is significantly higher than most colleges. The retention rate of Air Force Academy officers is significantly higher than the other two services.

Chairman ELLENDER. What is the comparison in regard to respective commitments?

General KIDD. There is no commitment on the part of the Air Force Academy graduates to serve longer than 5 years, except where other obligations are incurred. In fact, they do serve longer than other officers in significant numbers.

Senator PASTORE. Isn't it a fact, General, as a rule an Academy graduate desires to make a career of the service?

General KIDD. Yes, sir.

Senator PASTORE. Whereas, an ROTC graduate does it more or less as an obligation because, in many instances, he has to. While he is of high intellectual caliber, the fact remains that his future lies in some other area rather than in the military service and he, therefore, doesn't stay in the service as long.

REGULAR OFFICER STATUS OF ACADEMY GRADUATE AND RESERVE OFFICER STATUS OF OTHER SOURCES

General KIDD. That is quite true. It is generally known and understood that the Air Force Academy is a primary source of officers; the entry qualifications are extremely high. Of course, on graduation they are Regular officers as opposed to the other two sources.

Senator PASTORE. They have a better feel for the service because of their training.

General KIDD. The graduates from the other sources come to us as Reserve officers.

CONSIDERATION OF RESERVE OFFICERS FOR REGULAR COMMISSIONS

Senator ALLOTT. Could I ask a question there, General?

Let us take a typical ROTC graduate who did decide to go into the Air Force on a permanent basis. Let us also assume that he was intelligent. What would be required for him to get a Regular commission?

General KIDD. At about the 3-year point in his career, his commander is asked to evaluate and make a recommendation in that regard. All of our Reserve officers, regardless of their source, are considered for Regular commissions.

Senator ALLOTT. At the end of the third year?

General KIDD. At about the 3-year point. There are some followon points but the majority will be taken aboard as Regular officers at about the third-year point. There are a couple of followon points. The Air Force today is just about 50 percent Regular. So, about 42 or 43 percent of ROTC and OTS graduates will be given Regular commissions, and move into the career force.

Senator ALLOTT. Thank you.

10-YEAR RETENTION RECORD OF ACADEMY GRADUATES AND OTHER OFFICERS

Senator PASTORE. Would it be possible at some juncture to insert in the record, going back over a period of a decade, to provide the percentage of those who graduated from the military schools and remain in the service as against those who come from the other sources?

General KIDD. Yes, sir; I can give you some figures right now as I will put them in the record.

Senator PASTORE. Put them in the record.

General KIDD. All right, sir.

(The information follows:)

PERCENT OF GRADUATES OF MILITARY SCHOOLS REMAINING IN SERVICE VERSUS OTHER SOURCES IN THE PAST 10 YEARS

A good comparison can be made starting with the officers commissioned from the three primary sources in FY 1960 and each year thereafter by analyzing the retention rates at the seven year service point. The first Air Force Academy class graduated in FY 1959 and the first Air Force OTS class graduated in FY 1960. The seven year service point is used because those officers remaining have completed their initial service commitment. The following table compares the retention rates at the seven year point by source of commission.

OFFICER RETENTION RATES

Fiscal year of graduation/commission	Fiscal year of 7-year service point	Source of commission (percent)		
		AF Academy	OTS	ROTC
1960	1967	69	54	47
1961	1968	64	52	43
1962	1969	63	42	38
1963	1970	58	42	37
1964	1971	65	44	38

CAPABILITY COMPARISON OF ACADEMY GRADUATES AND OTS AND ROTC GRADUATES

Chairman ELLENDER. You did not answer my question as to capabilities.

General KIDD. Let me say this: Whereas I don't know of an overall study that makes such a comparison, I think the retention figures give us a good indication, to answer your question. For example, in 1971, and we picked a 7-year point, 7 years of service, 65 percent of the Academy graduates were still in the Air Force. OTS, 44 percent. ROTC, 38 percent.

Now, the presumption here is that the best people stayed aboard. These people are screened on a qualitative basis. So, I think this is an indirect answer to your question.

COST COMPARISON STUDY: RETENTION DIFFERENCES

Let me add that I recently reviewed a study which compared the cost on a gross basis of Academy graduates with the other two sources, and considering retention differences, at the end of 20 years there is very, very little difference in the cost per year of an Academy graduate as opposed to ROTC or OTS. There is very little difference. Costs are almost the same.

Chairman ELLENDER. You refer to the retention factor?

General KIDD. Because of the high retention factor.

Chairman ELLENDER. What was the figure you gave me; 65 percent remained in the——

General KIDD. In 1971, it was 65 percent for the Air Force Academy; 44 percent for OCS.

COMPARABLE CAPABILITIES OF OFFICERS RETAINED

Chairman ELLENDER. Of those two percentages, 65 and 44, were you able to compare capability to determine whether or not the Academy students were better officers than the other?

General KIDD. Nothing more than I have already indicated, sir. We picked people to enter the career force on a quality basis; we picked the best people.

Chairman ELLENDER. At what point in their careers was this retention comparison made?

General KIDD. This is at the point where individuals no longer have an initial commitment. For nonrated officers in the Air Force, they are committed for 4 or 5 years of service. In the case of a pilot or navigator, he is committed to 5 years of service after training, which makes it a total of 6. That is why we have gone to the 7-year point after their initial commitment of service. That is what you might say a free sample.

Chairman ELLENDER. Those that you retain from the Officers Training Schools, had they completed their term?

General KIDD. Yes, sir; in every case——

Chairman ELLENDER. In the same manner as the 65 percent of the others?

General KIDD. Yes, sir; in every case, they had completed their initial service commitment.

Chairman ELLENDER. So they must have been very well qualified for you to keep them.

General KIDD. Yes, sir.

Chairman ELLENDER. Are they given equal status?

General KIDD. Yes, sir.

Chairman ELLENDER. Very well.

Proceed.

ROTC PROGRAM

General KIDD. The Air Force ROTC program is a major source of officers for the Air Force. Our objective is to produce 4,500 ROTC graduates per year. There are 173 active Air Force ROTC detachments, of which 135 actually enrolled some 900 women at the beginning of school year 1971–72. Ten colleges and universities have been approved for new detachments this fall, and three of these have significant minority group enrollments—black, Mexican-American, and American Indian.

Male enrollment in AFROTC declined 11 percent between October 1970 and October 1971. As a result, we do not expect to meet our objective of 4,500 AFROTC graduates in either fiscal year 1972 or 1973. However, thanks to legislation recently passed by the Congress, both the number of authorized scholarships and the monthly subsistence allowance were substantially increased. I believe that these actions will help us meet our long-range goals.

Officer Training School

Air Force Officer Training School (AFOTS) is our short leadtime program to meet needs exceeding those in our other programs and to absorb short-term reductions. This 12-week school will produce 3,800 new officers in each fiscal year 1972 and 1973. The majority will enter flying training. Two hundred twenty-five will be WAF, and 700 will be former enlisted personnel.

Officer Losses and Gains

Table IV shows officer losses and gains in detail.
(Table IV follows:)

TABLE IV.—DEPARTMENT OF THE AIR FORCE—OFFICER LOSSES/GAINS

	Fiscal year—		
	1971 actual	1972 program	1973 program
Type of loss:			
End of obligation	5,107	4,254	3,347
Early release		2,600	4,000
Career separation	764	613	923
Retirements (20 years plus)	5,574	4,218	4,203
Attrition	903	902	862
Medics (all types)	3,155	2,854	2,538
Other losses	399	522	262
Total	15,902	15,963	16,135
Type of gain:			
Academies	700	760	860
AFROTC	4,316	4,100	4,294
OTS	4,046	3,800	3,800
Airman education and commissioning program	(325)	(425)	(400)
Bootstrap commissioning program	(275)	(275)	(300)
Recall and direct appointment	195	186	110
Line officers	(166)	(138)	(50)
Legal officers	(5)	(6)	(10)
Chaplains	(24)	(42)	(50)
Medics	2,535	2,777	2,408
Other gains	304	76	15
Total	12,096	11,699	11,487

Gains and Losses by Type of Officer, Enlisted, and Cadets

Senator Young. The tabulation on page 19 of the justifications indicates total officer gains of 11,487 and total officer losses at 16,135, and is largely self-explanatory. However, would you please explain "Gain adjustment" and "Loss adjustment"?

General Kidd. Gain and loss adjustments are used to correct transactions scheduled to occur during a particular month but, for uncontrollable reasons, are necessarily delayed—that is, delayed retirement due to medical problem. The adjustment figures allow for month-to-month balance of the actual strength.

Separation of Medical Officers

Chairman Ellender. I note the separation of 2,538 medical officers. What percentage is this of the total?

General Kidd. The 2,538 fiscal year 1973 losses represents 21 percent of the medical officer inventory at the beginning of fiscal year 1973. During the fiscal year the Air Force will gain 2,408 medical officers for an end strength of 12,078.

EARLY RELEASE OF OFFICERS

Chairman ELLENDER. Under "Early release" I note the loss of 4,000. Please explain.

General KIDD. The 4,000 figure listed as "Early release" is the number of officers who will be released in fiscal year 1973 earlier than their previously scheduled separation date in order to meet the fiscal year 1973 end strength.

NORMAL ATTRITION DEFINED

Chairman ELLENDER. What is covered by the term "Normal attrition"?

General KIDD. The term "Normal attrition" pertains to several particular kinds of loss actions. Some of the more significant types of losses under this heading are those due to hardship, pregnancy, physical disability of personnel with less than 20 years' service, substandard performance of duty, unacceptable conduct, and death.

BERRY MEDICAL PLAN

Senator YOUNG. Please explain the item "Berry medical plan" losses.

General KIDD. The Berry plan, a program instituted to fill the services' projected requirements for specialists, allows physicians who are liable for 24 months active duty to volunteer to enter the service at a time mutually acceptable to the individuals and the service concerned. The "Berry medical plan losses" identified in fiscal years 1972 and 1973 are personnel performing services for the Army. Since these medical officers are paid for by the Army, they are not chargeable to the Air Force budget.

PROMOTIONS

General KIDD. We have assumed a continuation of current grade legislation in our fiscal 1973 budget submission, as the basis for costing, pending approval of grade relief legislation.

PROGRAMED PROMOTIONS

The number of officer promotions programed under current legislation is shown in table V. The promotions to general reflect larger mandatory losses of senior personnel in fiscal years 1972 and 1973; the actual number of generals will be declining, in accordance with law, as the force declines.

(Table V follows:)

TABLE V.—DEPARTMENT OF THE AIR FORCE—OFFICER PROMOTIONS

Promotions to—	Fiscal year—		
	1971 actual	1972 program	1973 program
General	54	63	99
Colonel	1,107	1,086	891
Lt. Colonel	3,610	2,907	2,370
Major	3,873	2,918	3,223
Captain	12,256	8,855	9,325
1st Lieutenant	11,017	8,849	9,782

RATED PROGRAM

General KIDD. Next, I will address the status of the pilot and navigator force.

RATED REQUIREMENTS AND INVENTORIES

During fiscal year 1973, we expect to lose some 4,108 pilots and 1,398 navigators. For the next several years, losses of pilots and navigators will exceed production and the rated inventories will continue to decline. However, if the training rates are maintained, the declining inventories coupled with decreased requirements will still provide us with sufficient young rated personnel to meet basic operational mission requirements and also provide career broadening opportunities for some of our rated officers.

PILOTS AND NAVIGATORS BELOW GRADE OF COLONEL

Table VI shows a comparison of our inventory of pilots and navigators, below the grade of colonel, with our requirements.

(Table VI follows:)

TABLE VI.—DEPARTMENT OF THE AIR FORCE—RATED INVENTORY VERSUS REQUIREMENTS

	Fiscal year—		
	1971	1972	1973
Pilots:			
Requirements	38,900	36,206	33,897
Inventory	34,721	34,977	33,969
Difference	−4,179	−1,229	72
Navigators:			
Requirements	17,700	16,041	15,397
Inventory	14,430	14,221	14,123
Difference	−3,270	−1,820	−1,274

RATED PRODUCTION

General KIDD. Rated training rates are developed by projecting the rated inventories into the future, and comparing inventories with forecast requirements, which include wartime planning factors.

Due to reduced requirements, we are able to reduce fiscal year 1973 active force pilot production by 25 percent from the fiscal year 1972 level—4,150 to 3,100. Two hundred and twenty-five of the fiscal year 1973 production will be helicopter pilots trained by the Army.

We plan to increase navigator production by 100—1,200 to 1,300 in fiscal year 1973, to eliminate continuing deficits.

SELECTION OF HELICOPTER PILOTS

Chairman ELLENDER. As I recall the Air Force has discontinued its helicopter training program. Am I correct about this?

General KIDD. Yes, sir. A year ago last fall, the Air Force discontinued training helicopter pilots. The Army now trains all our helicopter pilots. That is an annual quota of 225.

Chairman ELLENDER. How do you select the officers to be trained as helicopter pilots?

Colonel CAREY. We select our graduates of Air Force Academy, OTS and ROTC, who are commissioned as officers as trainees for the helicopter training program. They are commissioned officers. When they graduate from their school, they go into a specialized program in helicopters.

Chairman ELLENDER. You take them from the general run of your officers?

Colonel CAREY. Yes, sir.

Chairman ELLENDER. Do they do it on a voluntary basis or are they directed to do it?

Colonel CAREY. All are volunteers for pilot training. Selection for fixed wing or helicopter training is on a competitive basis. In this regard, some are selected for helicopter training based on competitive scores when their preference is for fixed-wing training.

Chairman ELLENDER. Proceed.

FLIGHT WAIVERS

General KIDD. In lieu of the previous flight waiver provisions, the 1972 Appropriations Act (section 715) was expanded to permit payment of flight pay to qualified individuals when assigned to duties not requiring the maintenance of basic flying skills. This authority was prompted by the congressional desire to reduce proficiency flying within the services. It is recommended that a similar provision be contained in the 1973 act.

FLIGHT WAIVER PROVISIONS

Chairman ELLENDER. Please describe the flight waiver provision program, including the categories under which the program operates and the number of personnel in these categories.

General KIDD. The flight waiver provisions of the fiscal year 1971 Appropriations Act provided the authority to waiver minimum flight requirements for members with over 15 years of rated service, on remote assignment, or in schools of more than 90 days. Our program uses these functional categories to select and manage flight requirement waivers. The number of personnel waived with over 15 years rated service was 4,362 in fiscal year 1971 and we estimate 4,519 in fiscal year 1972. Personnel waived because of remote duty were 739 in fiscal year 1971 and we estimate 600 in fiscal years 1972 and 1973. In fiscal year 1971 1,430 personnel were waived while attending school for more than 90 days and we expect 1,725 will be waived in fiscal year 1972. The fiscal year 1972 Appropriations Act significantly changed the flight waiver provisions by limiting proficiency flying to members required to maintain proficiency in anticipation of assignment to combat duties. Proficiency flying is specifically not permitted by students in schools of more than 90 days.

AIRMAN PROGRAM

The fiscal year 1972 airman program has an end strength of 604,473, a reduction of 19,690 from the President's fiscal year 1972 budget. The

programed fiscal year 1973 end strength is 595,979 for a further reduction of 8,494.

Voluntary Reductions and Control of Recruitment

Chairman Ellender. In carrying out these reductions you just mentioned, how do you go about that?

General Kidd. To achieve the required new end strength—as I mentioned in the case of the officers, we will make the reductions, do it on a voluntary basis. Individuals can apply for release and again we handle each one on an individual basis based on the remaining obligated service and the job he is performing. It is a selection of those who volunteer to leave the service. In the case of airmen, it is handled differently.

Chairman Ellender. When you speak of airmen, you refer to enlisted personnel?

General Kidd. Airmen are what we used to call the enlisted men. In the case of airmen, it is handled differently, particularly on short leadtime reductions. The course left open to us is to reduce the input, the recruiting of airmen.

Chairman Ellender. Those personnel would take the place of those whose term expires?

General Kidd. We must, of course, have a continuing flow of both officers and airmen into the service; otherwise we would have——

Senator Pastore. Is it not fair to put it this way? It is done by attrition, so to speak?

General Kidd. Yes, sir.

Senator Pastore. In other words, if a person is eligible for release, you consider whether or not you will grant him that release, depending upon how much you need him. On the other hand, if it is a post that does not have to be filled, you don't do it.

General Kidd. In the short leadtimes we are working with, though, the only feasible way to achieve an end strength in the case of airmen is to reduce the input of airmen in the bottom of the structure, so to speak. We do, of course, subtract the normal attrition. All airmen in the Air Force go to one location after recruitment, to basic military training at Lackland. What we do is reduce the flow of airmen to Lackland for basic training.

1972 Force Reduction

Chairman Ellender. You were given an order for a reduction of 19,690 for 1972. I presume that by the end of this fiscal year, June 30, you are supposed to reduce to that extent?

General Kidd. Yes, sir.

Chairman Ellender. When do you start the reduction for 1972? Is it going on now?

General Kidd. Yes, sir. This year we had a significant increase in the reduction in midyear due to congressional action and OSD decisions. So that in the month of December this year we had a significant reduction of about 20,000 in the enlisted force, the airman force, to be achieved by June 30. Our problem is to reduce the size of the force by that amount. The only feasible option is to reduce the input.

I might mention that the input into basic training at Lackland for the second half of this year is 36 percent lower than the input in the first half, due to this decision in midyear. This suggests that if we could start the year with our annual program and keep a constant program we could run a more efficient operation.

Senator PASTORE. Are you talking about recruitment?

General KIDD. Yes.

Senator PASTORE. In other words, you recruit less?

General KIDD. That is right.

Senator PASTORE. I think you are complicating the answer to Senator Ellender's question. He wants to know how you go about it. I think there are two ways. First of all, some are released. When you don't bring in as many as you previously did, you reach a lower figure. That is how simple it is.

General KIDD. You are entirely correct.

GENERAL DE LUCA'S BACKGROUND: EQUITABLE ELEVATION TO RESPONSIBILITY IN AUTHORITY

Senator YOUNG. Mr. Chairman.

On the matter of retention, I am interested in General De Luca's background. He enlisted as a private in 1942. Why did you stay on all these years?

Senator PASTORE. It is a good life and his name is De Luca. That is why he stayed. [Laughter.]

Senator YOUNG. What is your background?

General DE LUCA. I applied for pilot training but at that time eyesight had to be 20–20. So, I washed out quickly. My right eye was 20–30. Not being able to be a pilot, I was drafted in World War II.

I was trained as an accountant in civil life and I taught accounting. When I got into the Air Force, Army Air Corps in those days, I was put in the logistics business, supply, maintenance, transportation, procurement. I have served in that business all my 30 years in the Air Force.

The Air Force has the flexibility that General Kidd was talking about. You know, the Air Force will take Academy graduates as well as OCS or ROTC graduates, rated or nonrated officers, and to answer Senator Ellender, if you apply yourself and demonstrate productive performance, the rules of elevation to responsibility and authority in the Air Force are equitable, whether you are a graduate of the Academy, ROTC, OTS or OCS.

Senator PASTORE. And the treatment is just as good, too.

General DE LUCA. As Senator Pastore said, you can be just as good.

Senator PASTORE. If you apply yourself.

General DE LUCA. You have to produce.

Chairman ELLENDER. If you don't produce, you are not reelected to the Senate.

Senator PASTORE. Sometimes you are not reelected even if you do produce.

General DE LUCA. I have found the Air Force, sir, to be very fair and equitable.

Senator YOUNG. You have done very well.

Airmen Voluntary Releases and Control of Enlistments

Chairman Ellender. In order to comply with a reduction order, you reduce your enlistments, and if, at the end of the year, you still have personnel that you don't need, how do you go about selecting them?

General Kidd. Sir, it is my job to see that we reach these end strengths.

It is just a matter of adjusting those quotas. We can control the flow of people into the Air Force.

Senator Pastore. And you know pretty much at the end of the fiscal year, June 30, just about how you are going anyway. It may be a handful when it gets to be the 28th of June.

General Kidd. Maybe this is the answer to your question, sir. I get a daily report on the number of recruits coming into the Air Force.

Authorization of Requisite Rank Reduction

General Berg. Mr. Chairman, could I make comment?

You have raised two points here and I think it might help the committee if I commented on a related point.

General Kidd has been talking about people. The other aspect of the problem is the authorizations; in other words, the grades and so forth, because, as he said, all we do is stop bringing in new recruits.

But I am responsible to make sure that as we go down we don't simply go down all in privates, but that we go down in generals, colonels, lieutenant colonels, and majors. At the same time he is taking care of who we don't bring in we, in fact, make adjustments as far as grades are concerned. We don't actually go in and release some general or colonel but what we do is cut the numbers back, the net effect of which is that fewer get promoted. At the same time he is controlling it from the spaces of the people, I am taking care of it from the point of view of the spaces in the organization and grades.

Chairman Ellender. To what extent is promotion affected if you are ordered to cut back x number of officers?

General Berg. If I can give you a specific example.

If we are cut back 1,000 officers, the officer grade limitation bill lets us have a percent; so many of the total officers can be colonels, so many can be lieutenant colonels. We simply reduce it by that amount.

If we lose 1,000 officers, this reduces the number of colonels by 50. Then the following year, you promote 50 fewer.

Chairman Ellender. Are your officers determined by number of airmen you have?

General Berg. No, sir; they are graded in accordance with the total number of officers.

Morale Effect of Promotion Limitation

Senator Pastore. General Berg, this does reflect on morale, does it not? Consider an officer who is eligible to be a colonel. Because there is a reduction in force and thus limited promotions, he will be looking around for a job in civilian life, won't he?

General Berg. There are some other ways that we can adjust to that.

Senator Pastore. In other words, those who are on the verge of

getting out anyway you take steps to have them make up their minds a little more quickly?

General BERG. That is one answer.

General KIDD. You are entirely correct. As the force comes down, it increases the time an officer must serve in-grade to be promoted. The proposed bill that I mentioned earlier would change this and fix the promotion opportunity.

Senator PASTORE. And you begin to hear from his wife.

General KIDD. And allow time to adjust to a reducing force. So, the impact of the force reduction is not taken out on the individual's promotion opportunity.

END PRODUCT: POSSIBLE ELIMINATIONS AND REDUCTIONS OF ACTIONS AND FUNCTIONS

Chairman ELLENDER. What I am trying to determine is this: Are the officers reduced in the same proportion as the airmen are reduced?

General BERG. No, sir; not necessarily.

Chairman ELLENDER. Would you not then be inclined to have more officers than you need?

General BERG. No, sir. You see, we are talking simply about the end product. When we make the reduction, we go through and do such things as maybe cutting out a B–52 squadron or reduce some base or cut back a function. The numbers that are reduced here are those specific jobs that we cut out. So, we don't go in and say when we have a reduction it has to be 10-percent officers and 90-percent airmen. We don't make a reduction that way. We do it on the basis of what specific job we cut out.

If, for example, we went into a research and development activity which is heavily populated by officers because of the educational requirements, and we cut 1,000 people out of the Air Force Systems Command, it might be 500 officers and 500 airmen, as an example.

On the other hand, if you went in an operational command like the Strategic Air Command and you cut out some sort of organization, you might cut out 1,000 people, and it might be 100 officers and 900 airmen.

These figures that are produced here are a result not of going in and saying we are going to reduce them by the same amount but, rather, by the specific functions that we cut out.

Chairman ELLENDER. Are you able to select which functions to reduce to permit you to make this reduction?

General BERG. Yes, sir; that is correct. The only time that is not true is when a specific reduction is directed on us. I am speaking now of such things as appropriation bills in which you indicate you want us to take so much of a reduction in intelligence.

Chairman ELLENDER. We did that once.

REASSIGNMENT OF OFFICERS

Senator YOUNG. When you reduce a function involving generals and other officers, they are transferred to another position in the Air Force, is that correct?

General BERG. Yes. That is the point I was trying to make. We don't get rid of the officers concerned. They get reassigned someplace else in

the Air Force but, overall, maybe one fewer general will get promoted the following year.

Chairman ELLENDER. You may proceed.

General KIDD. Reductions of strength in both fiscal year 1972 and fiscal year 1973 will be attained, primarily by reduced procurement.

AIRMAN PROCUREMENT

For fiscal year 1973, we are estimating 128,371 losses; therefore, the airman procurement programs include 102,110 non-prior-service males, 4,750 WAF, and 7,500 prior-service airmen. These airman procurement levels are an increase from our final fiscal year 1972 procurement levels in spite of the reduction in strength.

RECRUITMENT DIFFICULTY AND STANDARD RETENTION

Senator PASTORE. May I ask a question at this point, Mr. Chairman?

Chairman ELLENDER. Surely.

Senator PASTORE. A lot has been said lately about the disenchantment of people with reference to military service. I don't have to belabor that. We are living in that kind of atmosphere just now. I hope we can correct it.

How would you compare the new enlistees against those you used to get before the Vietnam situation developed? Are they more dedicated? Are they more oriented toward the service? Do you have more trouble with them? How do you feel about them?

General KIDD. Well, sir, last spring, April and May, the Air Force had difficulty getting enough airmen to sign up. As a matter of fact, we were also 2,000 short of our procurement goals. At the same time, the quality of the Force went down. We measure quality in part in terms of the number of high school graduates we bring aboard. We have been operating up in the 90-percent level. That level dropped about 10 percent.

We score individuals in tests. The scores of those individuals at that period dropped rather dramatically. As a matter of fact, we had some difficulty meeting school quotas. We send 80 percent of our enlisted people to tech schools. We had some training courses that could not be filled at that time due to lack of quality.

Since the first of July, we have been on what I would describe as a hand-to-mouth existence. We have taken aboard just about all that there are to come. In the month of December, for example, we fell 370 short out of a quota of 6,000. We made it up with prior-service people. But it is a hand-to-mouth existence.

VOLUNTEERS AND ANTICIPATED RETENTION IMPROVEMENT

Of the people we are getting today, though, more and more of them, a higher percentage of them, are volunteers. So in that sense, I think our retention rates are going to be getting better and better.

Enlistment in the Air Force is basically for a 4-year period. We look for our first reenlistment at that point. What I am saying is that I think, starting this year, 4 years hence our rates will be getting better.

APPLICATIONS FOR ENTRANCE INTO ACADEMIES: DISINTEREST OF "A" STUDENTS

Senator PASTORE. I find that somewhat with the applicants that I have for the Academies. There was one time there was a rush. Now, of course, you have to more or less write to the schools and try to interest them in going to a military academy. You find that from the tests they take, the scores are not as high as they used to be. We used to get "A" students to apply. Now it is pretty tough. They just don't apply.

General KIDD. This is one of our major concerns. The quality of the people we are bringing in has to stay up to meet our requirements. We are in very serious trouble if the quality starts down and stays down.

Senator ALLOTT. Mr. Chairman, I would like to say to the gentleman from Rhode Island that what he has said is extremely interesting. Last year, I had 300 applications for Academies. I haven't analyzed them mathematically, but, in looking over their examination grades, they seem to run just about the same as they have in past years. This might bear some looking into, because it is a pecular phenomenon. This year, my applications already are running quite heavy for admission to the Academies. I would like to talk with you about this privately.

Senator PASTORE. I have had several instances where I have selected boys as principals, and they were "A-plus" students. Then they would write to me to thank me and say, "I appreciate it very much, but I have just been accepted by MIT." We lose them.

So I go to the next group. This never used to happen. If a boy applied to the Military Academy, that was where he wanted to go. Now he seems motivated not only by the free education, but also the stipend, too. When he completes his obligation, he leaves the service. I get a lot of applications, but it is harder to attract top-quality individuals.

SCHOLASTIC REQUIREMENTS IN MATHEMATICS

I have always said that we are in a different kind of situation now. One must have a very strong and high level of intellect in order to do what needs to be done in the services today.

What I look at, of course, are the grades on algebra, calculus, and mathematics, because they are very important today. If I get a boy who gets a low grade in history, but high in algebra, I take him in preference to another fellow who perhaps has a better average.

Senator YOUNG. Mr. Chairman, could I ask a question?

Chairman ELLENDER. Surely.

ACADEMY STUDENT CHEATING: NUMBERS OF CHEATERS AND TOLERATORS

Senator YOUNG. A short time ago, there was an incident at the Air Force Academy concerning cheating on examinations. How many of those cadets were determined to be cheating, and how many failed to report it when they knew about it? You had the two categories, did you not: those who were expelled for cheating and those expelled who knew about the cheating and didn't expose it?

General KIDD. Yes; they are called tolerators. There were 39 cadets involved in that instance.

Senator YOUNG. How many were in each category?

General KIDD. I don't have that number here.
Senator YOUNG. Would you provide that information?
General KIDD. Yes, sir.

AFA HONOR INCIDENTS

Senator YOUNG. Would you describe, or if you prefer, furnish for the record a description of the problem you had last year at the Air Force Academy that ended with the dismissal of a number of cadets?

General KIDD. Yes sir. The problem I believe you are referring to was an honor incident which was initially uncovered on January 19, 1972 as a result of an investigation of two cadets for theft. From evidence gathered by the Cadet Wing Staff and the Cadet Honor Representatives, the implicated cadets were brought before an eight member Cadet Honor Committee; 39 cadets, all second classmen (juniors), including a Dominican Republic cadet, were found guilty (unanimous vote required) of violation of the Honor Code involving academic cheating and were asked to resign. All 39 cadets submitted resignations which are currently being processed by the Air Force. Also, all 39, except the Dominican Republican, are subject to 2 years active duty as airmen. However, final determination by the Secretary has not as yet been made.

AIRMAN LOSSES

Chairman ELLENDER. In estimating your losses as you indicate at the top of page 19, are those for the most part people whose enlistments end?

General KIDD. Yes, sir; of the 128,371 losses projected for fiscal year 1973, we expect 76,000 to leave the service at the end of their enlistment rather than making the Air Force a career.

Chairman ELLENDER. You are just speaking of airmen?

General KIDD. Yes, sir.

Chairman ELLENDER. Proceed.

RETENTION

General KIDD. Retention of our enlisted personnel has been excellent for the past year—a 20.3 percent first-term reenlistment rate was attained in fiscal year 1971, up from 16.2 percent in fiscal year 1970. Career force entry requirements of 20,100 were met.

Retention of our career airmen is likewise most encouraging with the reenlistment rates now estimated to remain above 90 percent for the next 2 fiscal years. The pay raises enacted by the Congress, the recently implemented USAF personnel plan, the Project Volunteer efforts, and actions to make Air Force life more attractive—all contribute to improved retention.

Another action to help achieve our retention goal, while improving efficiency and morale, is the establishment of a Senior NCO Academy in fiscal year 1973. This new program will enable us to provide career NCO's a progressive professional military education system. It is particularly timely since it will help prepare our top NCO's for the distinctive demands of an all-volunteer force. The curriculum of the Senior Academy, in addition to enhancing communicative, leadership

and managerial skills, will stress contemporary social problems. By improving first line leadership, the Senior Academy should enable more effective utilization of the entire airman force.

Gains and Losses

Airman losses and gains, identified by category, are displayed in table VII.

(Table VII follows:)

TABLE VII.—DEPARTMENT OF THE AIR FORCE

AIRMAN GAINS

Type of gains	Fiscal year— 1971 actual	1972 program	1973 program
Nonprior service	91,874	80,825	102,110
WAF	4,289	4,500	4,750
Prior service	5,151	6,500	7,500
OTS	4,648	3,326	3,112
Academy prep	154	134	110
Other	2,482	2,322	2,100
ANG/AFRes recall	296	211	195
Total	108,894	97,818	119,877

AIRMAN LOSSES

	Fiscal year— 1971 actual	1972 program	1973 program
Type of losses:			
Attrition	23,937	26,098	21,917
Retirement	24,155	28,112	26,654
To officer status	4,046	3,800	3,800
Other losses	1,351		
Nonreenlistment	87,827	60,315	76,000
1st term	(81,536)	(54,289)	(68,925)
Career	(6,291)	(6,026)	(7,075)
Total	141,316	118,325	128,371

Gains and Losses, Airmen

Chairman Ellender. What causes you to estimate that 7,500 prior service enlisted personnel will be retained in the service in fiscal year 1973 when the figures for fiscal year 1971 and 1972 are considerably below that figure?

General Kidd. The prior service program for fiscal years 1971 and 1972 has been strong. During fiscal year 1971 we enlisted 5,075 prior service airmen. For fiscal year 1972 we are projecting 6,500 prior service enlistments. Incentives such as the November 1971 increase in basic allowance for quarters and the January 1972 basic pay increase have created interest in the prior service programs. The number of inquiries received by the Air Force Recruiting Service has established the prior service program as a strong recruiting program for fiscal year 1973.

NO RECOURSE TO DRAFT

Senator YOUNG. Do you expect to have 102,110 non-prior-service males enlist in fiscal year 1973 without recourse to the draft?

General KIDD. Yes, sir. As of this time we expect to achieve the non-prior-service male objective of 102,110 for fiscal year 1973 without recourse to the draft. For the past 6 months, however, airman accessions have been on a hand-to-mouth existence. The situation could change either way. Policies which have been implemented during fiscal year 1972 are having a favorable impact on the male non-prior-service program. Some of these policies are: (1) Enlistment by guaranteed AFSC's in the 4-year enlistment program—we now have 70 AFSC's in this option; (2) a 6-year enlistment program for which an individual is guaranteed technical training in one of 10 specific AFSC's, promotion to E–3 upon completion of basic military training and his choice of first permanent duty assignment by geographical area; (3) the first term airman retraining program, which under specific conditions, allows an airman to retrain during his initial enlistment. Other incentives are the increase in basic allowance for quarters which was effective in November 1971 and the January 1972 increase in basic pay. Finally, an important indicator is the number of inquiries received by the Air Force recruiters.

RECALL—RESERVES

Chairman ELLENDER. Please describe the item "Recall—Reserves" in which you anticipate the gain of 195 personnel.

General KIDD. The term "recall" refers to enlistment of specific individuals from the Air National Guard and the Air Force Reserves. This is a very selective program whereby specific qualified individuals are enlisted for an indefinite period to fill a highly technical job. The individuals who enlist are volunteers, they retain their Reserve status and are separated upon completion of the specific task, however, reenlistment into the Regular component is offered these individuals.

RETURNEES

Chairman ELLENDER. What do the 600 in the gain column under "Returned from dropped from rolls" consist of?

General KIDD. The 600 gains are personnel who are returned from "dropped from rolls" to active status. They would be returned to active status from one of the following five categories: (1) Returned from prisoner of war status; (2) returned from missing in action status; (3) returned from missing (noncombat) status—they were dropped due to an accident and were not rescued or located; (4) returned from absentee or deserter status; or (5) returned from prisoner (military or civilian confinement) status.

ATTRITION

Senator YOUNG. Under "losses" what does "attrition" encompass?

General KIDD. Attrition is an unanticipated loss not included in one of the foreseeable loss categories; such as, retirements, and expiration of term of service. Attrition losses are many and varied but may be

broken down into five basic groups: (1) deaths; (2) discharge for hardship reasons; (3) discharge for quality control reasons; (4) discharge for medical or unfitness reasons; and (5) desertions.

Variable Reenlistment Bonus and Proficiency Pay

During fiscal year 1973, we plan to continue the use of the variable reenlistment bonus (VRB) as the principal method of attaining adequate input into the career force in critical skills. That VRB serves its purpose well is evidenced by the fact that our first-term reenlistment rate in specialties designated for VRB is about 40 percent higher than in specialties not so designated. For a few specialties, we still find it necessary to apply shortage specialty proficiency pay because the VRB is insufficient as a retention incentive.

Proficiency pay is also offered to include volunteers to two special duty assignments—recruiter and basic military training instructor. The assignment of highly qualified volunteers to these functions is particularly important to the attainment of Project Volunteer goals.

Superior performance pay is being awarded to 15 percent of the eligible airmen on a competitive basis. This recognizes and rewards those airmen who have performed their duties in a superior manner over a specific period.

Top Six Structure and Promotions

The fiscal year 1973 top six enlisted grade structure and promotion programs have been fashioned in accordance with the personnel plan and will provide the enlisted man with a visible promotion program. Each airman eligible for promotion will enjoy equal opportunity for promotion to the next higher grade. It should be noted that we have reduced the percentage of airmen in the top six grades from 72.76 percent in fiscal year 1971 to 71.86 percent in fiscal year 1973, and our long-range plans are for this percentage to continue to decrease for the next several years until we stabilize at or near an optimum force structure of 65.2 percent in the top six grades.

The top six grade promotion history and promotions by grade are shown in table VIII.

(Table VIII follows:)

TABLE VIII.—DEPARTMENT OF THE AIR FORCE—TOP 6 GRADE PROMOTIONS

	Fiscal year—			
	1970 actual	1971 actual	1972 estimate	1973 estimate
Promotion history:				
Grade ceilings	477,851	454,764	439,573	428,271
Percent top 6	72.69	72.76	72.72	71.86
Promotions	173,140	165,773	140,354	175,205

	Fiscal year—		
	1971 actual	1972 estimate	1973 estimate
Promotions by grade:			
E9	1,232	926	1,459
E8	2,874	2,655	4,231
E7	8,692	9,127	11,283
E6	13,374	17,716	20,189
E5	49,933	33,888	46,803
E4	89,668	76,042	91,240
Total	165,773	140,354	175,205

PERMANENT CHANGE OF STATION PROGRAM (PCS)

General KIDD. The Air Force is requesting $471,700,000 for fiscal year 1973 PCS travel requirements. A comparison of PCS requirements from 1971 to 1973 is shown in table IX.

(Table IX follows:)

TABLE IX.—DEPARTMENT OF THE AIR FORCE—PCS COMPARISON (FISCAL YEARS 1971, 1973)

	Fiscal year—		
	1971 actual	1972 estimate	1973 estimate
Number of moves	807,083	735,196	791,131
Cost (in thousands)	$432,916	$431,000	$471,700

1972 MANAGEMENT SAVINGS ACTIONS AND COST INCREASE

General KIDD. You will recall that the Air Force initiated certain voluntary and involuntary management actions including the increase in overseas tours from 36 to 48 months, to stabilize the movements of military members and reduce associated PCS costs. The fiscal year 1972 estimate includes these changes and savings in PCS moves; however, cost increases, program changes and other increases have offset our efforts to significantly reduce PCS costs. The fiscal year 1973 PCS estimate reflects an increase in PCS movements and the continuing increase in costs. These increases are primarily due to increased officer and airman separations which create compensating accession and training movements.

The Air Force is continuing its efforts to reduce the number of moves and movement costs.

REVERSION TO SHORTER OVERSEA TOUR LENGTHS

The Air Force received numerous complaints regarding the conversion of long oversea tour lengths from 36 to 48 months. We plan to revert back to 36 months, except for voluntary extensions, as soon as possible. The Air Force is currently conducting a study of all overseas tour lengths.

In summary, Mr. Chairman and members of the committee, we are making significant progress toward shaping the personnel structure into a more effective, efficient, well trained and dedicated force. In this regard we solicit your support for this request and the programs discussed.

This completes my summary statement.

REPROGRAMING PROCEDURE FOR TRANSFER OF FUNDS TO COVER INCREASED COST OF PERMANENT CHANGE STATIONS

Chairman ELLENDER. Are there further questions?

General DE LUCA. For the record, you know, on this sheet you have that has the military personnel Air Force appropriation on line 24. The second to the last column has a figure of $7,000,672,000.

Because of what General Kidd just said about the rising expenses in the PCS cost, we are seeking to process a reprograming action through transfer authority, taking resources out of other places, of about $27,500,000. We will be processing that.

Chairman ELLENDER. Are you going to make application for that?
General DE LUCA. Yes, sir; we will.
Chairman ELLENDER. Out of funds you have in hand?
General DE LUCA. Yes, sir.
Chairman ELLENDER. Very well.

TIME ARTICLE ON RACE RELATIONS OF SERVICEMEN IN EUROPE

Senator ALLOTT. Mr. Chairman, I have procured from my office a Xerox of the article I spoke of——
Senator PASTORE. On what was that?
Senator ALLOTT. This is an article in Time of November 29, 1971, a sort of inflammatory article about the race situation in the armed services in Europe. I would appreciate if I could have a letter from you commenting on this article from your viewpoint. This does not indicate which branch of the service, but I would appreciate having a letter from you on that article.
General KIDD. Yes, sir.
Senator ALLOTT. I would rather not have it involved in the record here.
General KIDD. Yes, sir; we will provide it to you.

SUMMARY OF MILITARY PERSONNEL STRENGTH

Chairman ELLENDER. A summary of military personnel strength will appear in the record at this point.
(The information follows:)

SUMMARY OF MILITARY PERSONNEL STRENGTH

	Fiscal year 1971 actual		Fiscal year 1972 planned		Fiscal year 1973 planned	
	Man-years	End strength, June 30, 1971	Man-years	End strength, June 30, 1972	Man-years	End strength, June 30, 1973
DIRECT PROGRAM						
Officers	127,766	125,246	124,066	121,148	120,409	116,538
Enlisted	631,273	624,323	622,028	604,034	601,720	595,587
Academy cadets	3,940	4,401	4,020	4,417	4,184	4,417
Subtotal	762,979	753,970	750,114	729,599	726,313	716,542
REIMBURSABLE PROGRAM [1]						
Officers	480	480	398	314	294	276
Enlisted	657	657	533	439	403	392
Subtotal	1,137	1,137	931	753	697	668
TOTAL PROGRAM						
Officers	128,246	125,726	124,464	121,462	120,703	116,814
Enlisted	631,930	624,980	622,561	604,473	602,123	595,979
Academy cadets	3,940	4,401	4,020	4,417	4,184	4,417
Total	764,116	755,107	751,045	730,352	727,010	717,210

[1] Military personnel assigned to agencies outside of Department of Defense on a reimbursable basis under the provisions of 10 U.S.C. 8230 (Air Force).

ACTIVE DUTY MILITARY PERSONNEL MANPOWER BUDGET ACTIVITY

Chairman ELLENDER. At this point in the record there will appear the tabulation from the Justifications showing the active duty military personnel manpower by budget activity.

ACTIVE DUTY MILITARY PERSONNEL MANPOWER BY BUDGET ACTIVITY (FYDP) AND BY OPERATING PROGRAM

[Dollar amounts in thousands; end strengths in whole numbers]

Direct program	Fiscal year 1971, actual	Fiscal year 1972, estimate	Fiscal year 1973, estimate
1. STRATEGIC FORCES			
Operation of the Air Force:			
Costs	$1,398,351	$1,516,346	$1,593,127
End strengths:			
Officer	26,044	25,726	25,454
Enlisted	146,789	147,439	146,041
Total	172,833	173,165	171,495
2. GENERAL PURPOSE FORCES			
Operation of the Air Force:			
Costs	$1,776,552	$1,863,426	$1,849,185
End strengths:			
Officer	29,055	27,399	25,107
Enlisted	193,591	184,133	172,138
Total	222,646	211,532	197,245
3. INTELLIGENCE AND COMMUNICATIONS			
Operation of the Air Force:			
Costs	$767,044	$794,318	$774,409
End strengths:			
Officer	12,150	10,701	10,147
Enlisted	86,266	77,481	74,551
Total	98,416	88,182	84,698
Operation of Defense Agencies:			
Costs	$34,933	$35,420	$38,472
End strengths:			
Officer	1,021	1,015	976
Enlisted	2,428	2,582	2,542
Total	3,449	3,597	3,518
Research and Development, defense agencies:			
Costs	$2,018	$2,159	$2,272
End strengths:			
Officer	109	110	110
Enlisted	49	44	44
Total	158	154	154
Total, intelligence and communications:			
Costs	$803,995	$831,897	$815,153
End strengths:			
Officer	13,280	11,826	11,233
Enlisted	88,743	80,107	77,137
Total	102,023	91,933	88,370

ACTIVE DUTY MILITARY PERSONNEL MANPOWER BY BUDGET ACTIVITY (FYDP) AND BY OPERATING PROGRAM—Continued

[Dollar amounts in thousands; end strengths in whole numbers]

Direct program	Fiscal year 1971, actual	Fiscal year 1972, estimate	Fiscal year 1973, estimate
4. AIRLIFT AND SEALIFT			
Operation of the Air Force:			
Costs	$399,990	$423,029	$415,105
End strengths:			
Officer	7,488	6,846	6,018
Enlisted	42,288	40,038	37,497
Total	49,776	46,884	43,515
5. GUARD AND RESERVE			
Operation of the Air Force			
Costs	$19,569	$20,476	$23,020
End strengths:			
Officer	614	605	610
Enlisted	1,286	1,513	1,649
Total	1,900	2,118	2,259
6. RESEARCH AND DEVELOPMENT			
Research and development, Air Force:			
Costs	$201,022	$206,488	$206,708
End strengths:			
Officer	7,256	6,952	6,795
Enlisted	12,742	11,188	10,799
Total	19,998	18,140	17,594
7. CENTRAL SUPPLY AND MAINTENANCE			
Operation of the Air Force:			
Costs	$81,078	$96,045	$110,278
End strengths:			
Officer	2,809	3,054	3,055
Enlisted	5,655	7,240	7,264
Total	8,464	10,294	10,319
Operation of defense agencies:			
Costs	$5,852	$6,691	$6,752
End strengths:			
Officer	367	364	364
Enlisted	40	43	43
Total	407	407	407
Research and development, defense agencies:			
Costs	$15	$17	$17
End strengths:			
Officer	1	1	1
Enlisted			
Total	1	1	1
Total, central supply and maintenance:			
Costs	$86,945	$102,753	$117,047
End strengths:			
Officer	3,177	3,419	3,420
Enlisted	5,695	7,283	7,307
Total	8,872	10,702	10,727

ACTIVE DUTY MILITARY PERSONNEL MANPOWER BY BUDGET ACTIVITY (FYDP) AND BY OPERATING PROGRAM—Continued

[Dollar amounts in thousands; end strengths in whole numbers]

Direct program	Fiscal year 1971, actual	Fiscal year 1972, estimate	Fiscal year 1973, estimate
8. TRAINING, MEDICAL, AND OTHER GENERAL PERSONNEL ACTIVITIES			
Operation of the Air Force:			
Costs [1]	$1,621,573	$1,824,400	$1,952,919
End strengths:			
Officer	31,181	31,121	30,863
Enlisted	116,819	116,328	119,740
Cadets	4,401	4,417	4,417
Total	152,401	151,866	155,020
9. ADMINISTRATION AND ASSOCIATED ACTIVITIES			
Operation of the Air Force:			
Costs	$192,975	$212,044	$206,628
End strengths:			
Officer	6,130	6,220	5,317
Enlisted	14,982	14,619	12,354
Total	21,112	20,839	17,671
Operation of Defense agencies:			
Costs	$8,846	$10,007	$10,069
End strengths:			
Officer	475	465	424
Enlisted	300	297	279
Total	775	762	703
Research and development, defense agencies:			
Cost	$425	$529	$704
End strengths:			
Officer	21	36	36
Enlisted	7	10	10
Total	28	46	46
Total, administration and associated activities:			
Costs	$202,246	$222,580	$217,401
End strengths:			
Officer	6,626	6,721	5,777
Enlisted	15,289	14,926	12,643
Total	21,915	21,647	18,420
10. SUPPORT OF OTHER NATIONS			
Operation of the Air Force:			
Costs	$13,774	$16,777	$61,410
End strengths:			
Officer	525	533	1,261
Enlisted	1,081	1,079	10,636
Total	1,606	1,612	11,897
SUMMARY			
Operation of the Air Force:			
Costs	$6,270,906	$6,766,861	$6,986,081
End strengths:			
Officer	115,996	112,205	107,832
Enlisted	608,757	589,870	581,870
Cadets	4,401	4,417	4,417
Total	729,154	706,492	694,119

Footnote on p. 186.

ACTIVE DUTY MILITARY PERSONNEL MANPOWER BY BUDGET ACTIVITY (FYDP) AND BY OPERATING PROGRAM—Continued

[Dollar amounts in thousands end strengths in whole numbers]

Direct program	Fiscal year 1971, actual	Fiscal year 1972, estimate	Fiscal year 1973, estimate
SUMMARY—Continued			
Operation of defense agencies:			
Costs	$49,631	$52,118	$55,293
End strengths:			
Officer	1,863	1,844	1,764
Enlisted	2,768	2,922	2,864
Total	4,631	4,766	4,628
Research and development, Air Force:			
Costs	$201,022	$206,488	$206,708
End strengths:			
Officer	7,256	6,952	6,795
Enlisted	12,742	11,188	10,799
Total	19,998	18,140	17,594
Research and Development, Defense Agencies:			
Costs	$2,458	$2,705	$2,993
End strengths:			
Officer	131	147	147
Enlisted	56	54	54
Total	187	201	201
Total, direct program:			
Costs	$6,524,017	$7,028,172	$7,251,075
End strengths:			
Officer	125,246	121,148	116,538
Enlisted	624,323	604,034	595,587
Cadets	4,401	4,417	4,417
Total	753,970	729,599	716,542
Reimbursable program:			
Costs	$51,227	$42,344	$42,509
End strengths:			
Officer	480	314	276
Enlisted	657	439	392
Total	1,137	753	668
Total, Air Force:			
Costs	$6,575,244	$7,070,516	$7,293,584
Officer	125,726	121,462	116,814
Enlisted	624,980	604,473	595,979
Cadets	4,401	4,417	4,417
Total	755,107	730,352	717,210

[1] Includes permanent change of station travel: fiscal year 1971, $432,642; fiscal year 1972, $430,800; fiscal year 1973, $471,500.

STRATEGIC FORCES

Chairman ELLENDER. For "Strategic forces," the justifications indicate that although the estimated end strength of 171,495 officers and enlisted personnel for fiscal year 1973 will decline slightly from the estimated end strength of 173,165 for fiscal year 1972, the funds required will increase from $1,516,346,000 to $1,593,127,000. I assume that pay increases account largely for this. Would you explain?

General DE LUCA. Yes, sir. The two pay raises account for the rise in costs. As you will recall, the pay increase authorized by Public Law 92–129 was effective on November 14, 1971. The second pay raise was

authorized by Executive Order 11577 and effective January 1, 1972. The fiscal year 1973 full year cost of the two raises requires an additional $89,514,000 over the fiscal year 1972 cost. The $89,514,000 has been offset by $12,733,000 realized from the end strength reduction.

STRATEGIC FORCES DESCRIBED

Senator YOUNG. Describe generally what sort of work the personnel engaged in this activity do.

General BERG. Strategic forces are composed of two major groupings of forces—offensive and defensive.

Offensive forces are those of the Strategic Air Command (SAC) which are comprised of a mixture of combat aircraft (B–52 and FB–111), intercontinental ballistic missiles and all regular Air Force tankers used to refuel the aircraft.

Defensive forces contain the aircraft in the Aerospace Defense Command (ADC) and Alaskan Air Command (AAC) as well as the ground environment systems which support these commands in their detection, identification, interception, and if necesary, destruction roles. These defensive forces include F–106 fighter interceptor squadrons and ground environment surveillance and warning systems.

The personnel assigned to these forces are generally responsible for the operation, maintenance, and support of the weapons systems assigned to the strategic forces. Operations include those activities which are directly concerned with mission performance, such a pilots, navigators, and missile launch personnel. Maintenance includes activities which are related to keeping the aircraft and missiles in operational condition for training and mission performance. Support activities are those functions performed in support of the primary mission. These include activities such as supply, civil engineering, personnel, comptroller, transportation, and medical services.

GENERAL PURPOSE FORCES

Chairman ELLENDER. For "General purpose forces" the fiscal year 1972 estimate is $1,863,426,000 and the fiscal year 1973 estimate is $1,849,185,000, a slight decrease. According to the justifications you plan a reduction of 14,287 officers and enlisted personnel in fiscal year 1973. Indicate how the pay increase and the reduction in force relate to these figures.

General DELUCA. The decrease in officer and enlisted strengths during fiscal year 1973 will reduce costs by $119,236,000. The two pay increases have offset this amount to the extent of $104,995,000.

GENERAL PURPOSE FORCES REDUCTION

Senator YOUNG. Indicate generally where the bulk of this reduction will be accomplished.

General BERG. Yes, sir. In general the bulk of this reduction will be accomplished by decreasing the size and capabilities of our general purpose forces and transferring to other programs or reducing the operational status of some air bases. I will provide a summary for the record.

(The information follows:)

	Military reduction
Tactical airlift (reduce 20 aircraft, crew ratios, utilization rates (wartime flying hour capability) and Southeast Asia activity)	
Reconnaissance (reduce 78 aircraft, crew ratios, utilization rates and Southeast Asia activity)	−2,646
Special operations force (reduce 78 aircraft)	−1,339
Base transfers/reductions	−6,603
Other actions	+26
Total	−14,287

GENERAL PURPOSE FORCES DESCRIPTION

Chairman ELLENDER. Describe the activity known as "General purpose forces."

General BERG. Yes, sir. The general purpose forces activity consists of force-oriented elements, including the command organizations associated with these forces, the logistic organization organic to these forces, and the related logistic and support units which are deployed or deployable as constituent parts of military/naval forces. This program encompasses primarily Tactical Air Command, Pacific Air Forces, and the U.S. Air Forces, Europe. They provide worldwide tactical strike forces for support of friendly ground forces in the various theaters of operation.

INTELLIGENCE AND COMMUNICATIONS

Chairman ELLENDER. For "Intelligence and communications" the funds requested for fiscal year 1973 are estimated at $815,153,000 as compared with $831,897,000 for fiscal year 1972. Personnel reductions of 3,563 are planned from the 91,933 estimated for fiscal year 1972, bringing the estimated end strength for fiscal year 1973 down to 88,370. Please explain.

General DE LUCA. The estimate for fiscal year 1972 is based on 98,145 man-years. The estimate for fiscal year 1973 will fund 90,554 man-years. The reduction of 7,591 man-years decreases fund requirements by $63,042,000. However, this is substantially offset by the additive $46,298,000 required to fund the fiscal year 1972 pay raises for a full 12 months during fiscal year 1973.

Chairman ELLENDER. For intelligence and communications the funds requested for fiscal year 1973 are $815,153,000. Please describe this activity.

General BERG. Yes, sir. This program consists of five parts. Intelligence activities; communications, including USAF command and control functions and weather service; traffic control approach and landing system; air rescue; and support of OSD agencies.

The intelligence fund estimate includes provision for cryptologic activities which provide for the collection, processing, and reporting of communications and electrical intelligence information, communications security, and electronic security services, and the establishment and operations of emergency reaction facilities. This estimate also includes other general intelligence activities which are utilized for the collection of intelligence through surveillance; reconnaissance and

detection; the processing, production and dissemination of intelligence; and counterintelligence and investigative activities.

Communications costs include provision for military personnel associated with the major Defense communications system; transmission subsystems, and the Autovon, Autodin, and Autosevocom switching centers which Air Force operates and maintains under the management control and operational direction of the Defense Communications Agency. This estimate also includes military personnel costs for our DCS terminal communications facilities including ground satellite stations, the Air Force Communications Service Engineering and Installation activities, Headquarters Air Force Communications Service and its subordinate area headquarters, as well as costs of the Air Force worldwide ground-to-air networks, and the Air Force portion of the command and control manpower for the operation of command posts at Headquarters USAF, PACAF, USAFE, TAC, ADC, et cetera. In addition, communications costs include the traffic control, approach and landing system requirements for operation of control towers, Rapcons, ground control approach systems instrument landing systems, Tacans, air-ground communications, et cetera.

Manpower costs for Weather Service are based on number of bases requiring weather service and type of aircraft, flying hours and basing of aircraft; ground weather equipment and specific overhead/administrative requirements.

Similarly, requirements for Aerospace Rescue and Recovery are based upon the number of rescue units, number of aircraft, type of aircraft, flying hours, basing of aircraft, and specific overhead and administrative requirements.

Included in this program is the Air Force contribution of military personnel in support of the OSD Defense agencies. The agencies are the Defense Communications Agency; Defense Nuclear Agency, Defense Intelligence Agency, and the National Security Agency. Military personnel authorizations for these agencies are based on OSD/JCS direction.

PERSONNEL DEFENSE AGENCIES

Senator YOUNG. I note that of the total personnel for fiscal year 1973, 3,518 will be employed in operations of defense agencies of which over 2,500 will be enlisted personnel. Please describe generally the functions of these personnel, both officers and enlisted.

General BERG. Yes, sir. These personnel are authorized to the National Security Agency, and Defense Intelligence Agency, Defense Communications Agency, and Defense Nuclear Agency. They are integrated into the staff and operational elements of each agency and perform duties compatible with the agency mission. To elaborate a brief description of duties performed at each agency follows:

Personnel authorized to the National Security Agency perform clerical, administrative, security, and intelligence functions in support of cryptologic and intelligence efforts.

Personnel authorized to Defense Intelligence Agency perform operational intelligence duties associated with the collection and production of intelligence data, security, automatic data processing and various administrative duties. They are also employed in overseas assignments [deleted].

Personnel authorized to Defense Communications Agency provide management control and operational direction for the Defense communications system through the planning, engineering, and implementation process. They are also involved in operation of computers for national military command systems and supporting activities of OSD and JCS.

Personnel authorized to the Defense Nuclear Agency participate in consolidated management of nuclear weapons stock piles, nuclear weapons effects research programs, and nuclear weapons testing including radio biology.

INTELLIGENCE AND COMMUNICATIONS R. & D. PERSONNEL

Senator YOUNG. I also note that 110 officers and 44 enlisted personnel will be utilized in research and development, defense agencies. How will these be used?

General BERG. The research and development personnel authorized to the National Security Agency analyze collect data to determine requirements for new equipments and methodologies required for optimum exploitation of intelligence sources. Additionally, they design new equipment and techniques for the accomplishment of the communications security and cryptologic missions of the National Security Agency and the Air Force.

Personnel in this category authorized to the Defense Communications Agency are engaged in system engineering activities designing the Defense Communications System of the future and developing standard computer hardware and software systems for the worldwide military command and control system.

Research and development activities which are performed by Air Force personnel at the Defense Nuclear Agency include nuclear weapons effects, nuclear weapons testing and radiobiology.

AIRLIFT AND SEALIFT

Chairman ELLENDER. For "Airlift and sealift," funds requested for fiscal year 1973 total $415,105,000, a slight reduction from the $423,029,000 estimated for fiscal year 1972. Personnel end strengths are estimated to reduce from 46,884 in fiscal year 1972 to 43,515 in fiscal year 1973. Please describe the effect of the pay increase and the reduction in force in arriving at this total request.

General DELUCA. A savings of $31,322,000 from the reduced strength is partially offset by $23,398,000 in additional costs for the full year effect of the two fiscal year 1972 pay raises.

REDUCTION

Chairman ELLENDER. To what degree has the reduction in activity in Southeast Asia had on the force decrease in the past 2 years?

General BERG. The reduction of activity in Southeast Asia has caused a decrease of 1,575 in the personnel end strength during the past 2 years.

DESCRIPTION

Senator YOUNG. I wish you would describe this activity.

General BERG. The airlift program includes our Strategic Airlift Forces, C–141 and C–5A aircraft, crew training, command and support units, aerial ports for the processing and movement of passengers and cargo, plus support costs for bases operated by the Military Airlift Command. This program also includes special airlift missions of DOD and operation of the 89th Military Airlift Wing (Special Missions) at Andrews Air Force Base.

GUARD AND RESERVE

Chairman ELLENDER. For "Guard and Reserve" the fiscal year 1973 estimate is $23,020,000 as compared with $20,476,000 for fiscal year 1972. The number of officers and enlisted personnel also increase, from 2,118 in 1972 to 2,259 in 1973. What is the reason for this increase in personnel?

General BERG. Numerous adjustments occur between fiscal years 1972 and 1973 in the types and numbers of aircraft assigned to the Guard and Reserves. The increase in personnel is primarily for the F–106 units transferred to the ANG (+160). The increase is large because current directives require active duty personnel to control, maintain, and handle [deleted], also some of these personnel are required for the dispersed operating bases. Other major increase is advisers for 3 RF–4C squadrons (+18).

Chairman ELLENDER. Describe how these personnel are employed.

General BERG. These are active duty military personnel in direct support of the Air Force Reserve and Air National Guard assigned missions. They are being utilized in functions such as: Advisers, instructors, command and staff, the Reserve personnel center, and base operating support at Ellington AFB, Tex.

RESEARCH AND DEVELOPMENT

Chairman ELLENDER. For "Research and development" I note that although personnel will drop from 18,140 for fiscal year 1972 to 17,594 in fiscal year 1973, the estimated funds required remain about the same: $206,488,000 for fiscal year 1972 and $206,708,000. Is this entirely attributable to Pay Act increases?

General DE LUCA. Yes, sir; the savings due to strength reductions amount to $10,268,000. That amount is offset by pay increase costs totaling $10,488,000.

DESCRIPTION

Senator YOUNG. Describe this activity.

General BERG. The purpose of Air Force research and development is to advance aerospace technology, and adopt these advances into qualitatively superior operational aerospace systems to accomplish the Air Force mission. We use military scientists, engineers, technicians, and managers skilled in understanding strategic, tactical, and mili-

tary concepts and operations to produce advanced aerospace systems. These military provide the future systems which others will operate. The entire Air Force R. & D. effort requires close cooperation among military, civilian, and contractor personnel. Also included are some support personnel at every level of responsibility who assist the scientists, engineers, technicians, and managers.

CENTRAL SUPPLY AND MAINTENANCE

Chairman ELLENDER. For "Central supply and maintenance" the estimates for fiscal year 1972 were $102,753,000. For fiscal year 1973 they will increase to $117,047,000. Military personnel will also increase: from 10,702 in 1972 to 10,727. Explain why a personnel increase is necessary in this activity at this time.

General BERG. The manpower increase in this function is the result of a review of the workload in dispensary functions and the application of management engineered standards.

Chairman ELLENDER. I note that you plan to utilize 407 military personnel at a cost of $6,752,000 in the operation of Defense agencies. What generally will be the function of these 364 officers and 43 enlisted men?

General BERG. These military personnel represent the Air Force participation in the Defense Supply Agency. They function in areas such as logistics, materiel, comptroller, planning and programing, procurement, communications, management analysis, administration, as well as many other areas.

RESEARCH AND DEVELOPMENT

Chairman ELLENDER. What is the function of the one officer listed under "Research and development defense agencies"?

General BERG. This officer is assigned to the Defense Documentation Center, Defense Supply Agency, Cameron Station, Va. He assists in the formulation and implementation of Department of Defense directives and instructions pertaining to the scientific and technical information program. He maintains liaison with organizations throughout Government and industry using these services; identifying recurring problems, conducting studies, and recommending improvement and corrective changes in the system.

CENTRAL SUPPLY AND MAINTENANCE

Senator YOUNG. Describe this activity.

General BERG. "Central supply and maintenance" includes such major Air Force logistics functions as inventory control points, procurement operations, depot supply operations, and depot maintenance. The inventory control points calculate the materiel required to provide logistical support for the various aircraft, missiles and communications systems. Procurement operations involve prime procurement actions to satisfy these materiel requirements. Depot supply operations accomplish the physical receipt, storage and issue of the materiel to depot maintenance activities within the Air Force Logistics Command

and to other Air Force customers on a worldwide basis. Depot maintenance involves major repair and maintenance of aircraft, missiles, electronic components, and other items of Air Force equipment. Costs related to base operating support, training and command functions of the Air Force Logistics Command and costs for operation of the Eastern Test Range are also included.

TRAINING, MEDICAL AND OTHER GENERAL PERSONNEL ACTIVITIES

Chairman ELLENDER. For "Training, medical and other general personnel activities" the request for fiscal year 1973 is $1,952,919,000. This is an increase over the fiscal year 1972 amount of $1,824,400. I also note that there is a contemplated increase in the number of enlisted personnel to be utilized under this activity. Please explain the reason for the increase in the request for funds as well as the need for additional personnel.

General DELUCA. The fund increase is for three purposes. First, $6,915,000 is for the strength increase. Second, $80,904,000 is for the additive full year costs of the fiscal year 1972 pay raises. Third, $40,700,000 is for permanent change of station travel.

The permanent change of station travel increase involves several factors including transportation rate increases; adjustments in length of overseas tours; experienced increase in the average weight of authorized household goods; redeployment of personnel as a result of SEA phasedown; and more separations and retirements.

The principal need for additional people stems from the sharp rise in male recruits without prior service required to replace losses. We are going from 80,825 non-prior-service recruits in fiscal year 1972 to 102,110 in fiscal year 1973. It will require more people to handle the expanded training program needed to prepare those recruits for duty. The social action program which General Kidd discussed in his statement will also require a strength increase.

PCS INCREASE

Chairman ELLENDER. Included in this activity are funds budgeted for "Permanent change of station travel." We shall discuss this more fully later, but would you indicate generally here why there is such a marked increase for these funds in fiscal year 1973?

General KIDD. Yes sir. The reason for the increase is related to an increase in PCS movements and the continuing increase in costs. Increased officer and airman separations create the need for increased movements throughout other categories of the PSC program In addition, the Air Force must return and replace those personnel who were involuntarily extended and who voluntarily extended their tours from fiscal year 1972 to fiscal year 1973. Other factors contributing to the increase in funds are transportation rate changes, dislocation allowance—pay raise—and increased mileage entitlements. New entitlements—shipment of foreign made privately owned vehicles, increased shipment of household goods—dollar revaluation, personnel turbulence as a result of force reductions, and increased household goods shipments also contribute to the higher fiscal year 1973 cost.

TRAINING, MEDICAL AND OTHER GENERAL PERSONNEL ACTIVITIES
DESCRIPTION

Senator YOUNG. Describe this overall "Training, medical, and general personnel activity."

General BERG. This program includes recruit and specialized training; flight training for undergraduate pilots and navigators, electronic warfare officers, instructor pilots, and survival training; professional education provided at resident schools such as the Air Command and Staff College and the Air War College; the Air Force Academy; the Reserve Officer Training Corps (ROTC) encompassing both the senior (college level) and junior (secondary school level) program; and the airmen education and commissioning program. This program also includes base operating costs to support Air University's and Air Training Command's major installations, support of hospitals, laboratories and other activities associated with the School of Aerospace Medicine, and aeromedical evacuation activities. Other general personnel activities include overseas dependent schools in the Pacific area, recruiting services, transient personnel and the overall permanent change of station travel program. Some of the recently added social programs are also covered in this activity. They consist of race relations training at each base as well as Air Force participation in the Defense Race Relations Institute; drug abuse rehabilitation to include identification through eventual assimilation into the active force; and administrative support to the Department of Labor operated skill center which provides technical skills to separating airmen to facilitate transition into civilian life.

ADMINISTRATION AND ASSOCIATED ACTIVITIES

Chairman ELLENDER. For "Administration and associated activities" the request for fiscal year 1973 is $217,401,000, a bit of a reduction from the $222,580,000 for fiscal year 1972. I also note that there is a reduction in military personnel from 21,647 to 18,420. Please indicate the counteracting relationship between the Pay Act increases and the strength reduction.

General DELUCA. The strength reduction would reduce costs $16.5 million in fiscal year 1973 except that the reduction is partially offset by full year costs of recent pay increases amounting to $11.3 million in fiscal year 1973.

Chairman ELLENDER. Describe this activity generally.

General BERG. This program includes Headquarters USAF, selected major field headquarters, support of Office Secretary Defense and Joint Chiefs of Staff and other servicewide support activities. The major field commands headquarters are USAF Southern Command (including base operating support for Albrook and Howard Air Force Bases); Headquarters Command (including base operating support for Andrews and Bolling Air Force bases); the Air Force Accounting and Finance Center and the Air Force Data System Design Center. Servicewide activities are the USAP Postal and Courier Service; the Air Force Audit Agency; the Air Force Inspection and Safety Center; the Air Force Military Personnel Center; the Civil Air Patrol; the Audio Visual Service and the USAF Band.

ADMINISTRATION EMPLOYEES IN DEFENSE AGENCIES

Senator YOUNG. I note that although there has been a military personnel reduction, you still estimate 703 military will be utilized in activities under "Operation of Defense Agencies" and 46 under "Research and Development, Defense Agencies." Please describe the function of these personnel.

General BERG. There are 244 military personnel authorized to OSD, and 459 military personnel authorized to JCS. These personnel represent the Air Force share of staff support requirements as levied by these organizations. They perform headquarters staff functions in OSD and JCS such as planning operations and systems analysis.

In addition, there are 46 military personnel authorized to OSD, performing a R. & D. function. These personnel work for the Weapons Systems Evaluation Group (WSEG) and provide DOD with comprehensive objectives and independent analysis and evaluation under projected conditions of war.

SUPPORT OF OTHER NATIONS

Chairman ELLENDER. For "Support of other nations" the fiscal year 1972 estimated costs are indicated at $16,777,000. For fiscal year 1973 the estimate is $61,410,000. This marked increase is reflected in the increase in military personnel. The number of officers so engaged will go from 533 to 1,261 and the number of enlisted personnel will increase from 1,079 to 10,636. Explain this fully.

General DELUCA. As you know, the Nixon doctrine places emphasis on helping our allies to help themselves. That is why this program has been increased. It is an internal accounting transfer of manpower from our combat forces and not an overall increase to our fiscal year 1973 end strength.

Senator YOUNG. Generally speaking, what is included under this activity?

General BERG. This activity includes the Air Force portion of the U.S. share of support to international military headquarters and agencies such as the North Atlantic Treaty Organization (NATO), Central Treaty Organization (CENTO) and the Southeast Asia Treaty Organization (SEATO). It further includes Air Force authorizations to Military Assistance Advisory Groups (MAAG's), Military Missions and Military Assistance Group's (MIL Gps) located in 45 European, Pacific area, and Central and South American countries.

REIMBURSABLE PROGRAM

Chairman ELLENDER.. In the summary under "Reimbursable program" I find that $42,509,000 is estimated as money for which the Air Force will be reimbursed for the pay of 668 personnel. Is that correct?

General DELUCA. The estimate of $42,509,000 includes $17.4 million for pay and allowances of the 668 personnel. The $25.1 million balance of this estimate is for reimbursements from individuals for meals furnished in Government dining halls.

Chairman ELLENDER. Please supply for the record the agencies in which these military personnel will be utilized.

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

Fiscal year 1973 T/M

Federal Aviation Agency	44
Agency for International Development	1
Selective Service	50
NASA	190
Department of Labor	5
Atomic Energy Commission	3
U.S. Arms Control and Disarmament Agency	9
GSA	11
U.S. Information Agency	1
Department of Transportation	2
HEW	1
Department of Justice, Bureau of Narcotics	1
Space Council, Executive Office of the President	2
Classified projects:	
Air Intelligence	9
Heavy Hook	2
Heavy Blue	2
Slow Curve	214
Heavy Sand	121
Total	668

DISTRIBUTION OF MILITARY PERSONNEL BY GEOGRAPHICAL AREA

Chairman Ellender. At this point there will appear a tabulation from the justification indicating the distribution of military personnel by geographic area.
(The information follows:)

DISTRIBUTION OF MILITARY PERSONNEL BY GEOGRAPHICAL AREA [1]

Region and country	Number of personnel—Fiscal year (end strength) 1971	1972	1973
Europe and related areas:			
United Kingdom	[Deleted.]		
Italy			
Spain			
Turkey			
West Germany			
Other Europe and related areas			
Total, Europe and related areas	73,332	77,521	75,601
Western Pacific:			
Japan	[Deleted.]		
South Korea			
Philippines			
Ryukyu Islands			
Taiwan			
Total, Western Pacific	54,801	49,780	42,335
Near East and South Asia	602	588	490
Other Pacific	312	492	489
Western Hemisphere	1,909	1,603	903
U.S.S.R. and East Europe	30	28	28
United States, territories, and SEA	624,121	600,340	597,364
Total	755,107	730,352	717,210

[1] Number of personnel distributed by region, and by country if the end strength for a country exceeds 5,000.

Chairman ELLENDER. In the classified tabulation of "Distribution of military personnel by geographic area," I note a reduction in the overall total of 13,142, generally reflected throughout. Is there anything of particular significance in this tabulation to which you may wish to address yourself?

General BERG. This tabulation reflects both the reduction in our overseas presence and reductions in total military end strength. I will limit my comments here to reductions in our military presence overseas. I feel two comments are significant. First, notable reductions are programed in the Western Pacific area. It is significant that although prior-year reductions resulted in part from redeployments of tactical units, reductions projected for fiscal years 1972 and 1973 will be achieved chiefly through a support drawdown made possible by closure and consolidation of facilities as well as intelligence reductions. Second, the adjustments included for Europe and related areas are, of course, contingent upon negotiations with our NATO allies.

SCHEDULE OF INCREASES AND DECREASES

Chairman ELLENDER. At this point in the record there will appear the schedule of increases and decreases in the fiscal year 1973 program as it appears in the justifications.

(The information follows:)

Schedule of increases and decreases, fiscal year 1972

	Thousands
Total	$7,028,172
Increases:	
1. Pay and allowances of officers	+45,707
Full-year effect of Nov. 14, 1971, pay increase	+30,500
Full-year effect of Jan. 1, 1972, pay increase	+60,200
Reduction of 3,657 man-years	−64,800
Grade structure change	+5,100
Average salary differential due to longevity factors	+3,400
Adjustments in entitlements; i.e., flying training, BAQ, subsistence, special pay	+11,307
2. Pay and allowances of enlisted personnel	+152,746
Full-year effect of Nov. 14, 1971, pay increase	+165,133
Full-year effect of Jan. 1, 1942, pay increase	+120,935
Reduction of 20,308 man-years	−98,800
Longevity factors	−12,600
Grade structure change	−8,900
24,296 less man-years drawing pro pay	−14,400
Adjustment in entitlements; i.e., flight pay, special pay, BAQ, reenlistment bonus, family separation pay	+1,378
3. Pay and allowances of cadets	+1,525
Full-year effect of Nov. 14, 1971, pay increase	+465
Full-year effect of Jan. 1, 1972, pay increase	+492
Increase of 164 man-years	+568
Increases:	
4. Permanent change of station travel	+40,700

EXPLANATION

Type moves	Increased number of moves	Cost increase
Accession	22,219	$2,220
Training	16,661	1,764
Operational	4,287	4,062
Rotational	1,754	31,603
Separation	10,236	638
Unit	778	413
Total	55,935	40,700

The most significant reason for the additional dollar requirement is the increase in moves displayed above. Other factors were transportation rate changes; dislocation allowance (pay raise); and increased mileage entitlements which were effective for a full year. New entitlements (shipment of foreign made privately owned vehicles, increased shipment of household goods), dollar revaluation, personnel turbulence as a result of force reductions and increased household goods shipments also contributed to the higher FY 1973 cost.

Decreases:

5. Subsistence of enlisted personnel	—$16,265
Basic allowance for subsistence (Explanation: Reduction of 14,824 man-years based upon declining strengths and a lower daily rate.)	—14,384
Subsistence-in-kind (Explanation: Reduction of 4,537 man-years related to overseas strength decreases.)	—1,181
6. Other military personnel costs. (Explanation: Reduced man-years plus lower servicemen's group life insurance premiums.)	—1,510
Fiscal year 1973 program	7,251,075

PAY ACT INCREASES

Chairman ELLENDER. In the tabulation entitled "Schedule of increases and decreases" the Pay Act increases of November 14, 1971, and those of January 1, 1972, are reflected in the increases. In view of the fact that these increases are spaced so closely together, I wish you would provide for the record a brief history of these, including the current costs and the reasons they were provided.

General KIDD. Yes, sir. The first of these two raises is Public Law 92–129, signed September 28, 1971. The actual effective date on the bill was October 1 but the Wage and Price Control Board delayed the date until the end of the freeze on November 14. This act is aimed primarily at enlisted personnel, grades E–1 through E–4, and officers with less than 2 years in the service and is a key incentive toward an all-volunteer force. The increase in quarters allowances, the first since 1963, brought this allowance closer to the current cost of housing. The fiscal year 1973 total costs of Public Law 92–129 are $537,431,000.

The second pay raise results from the classified civilian employee increase authorized by Public Law 90–207 in December 1967. This law provided military personnel a comparable increase in basic pay each time the general schedule of compensation for Federal classified employees is increased. Executive Order 11638, signed December 28, 1971, placed this increase in effect on January 1, 1972. The fiscal year 1973 cost of this raise will be $356,375,000.

Chairman ELLENDER. Provide for the past 10 years a breakdown of all military and civilian pay increases, showing the percentages of each on each occasion.

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

MILITARY AND CIVILIAN BASIC PAY INCREASES

[In percent]

Effective date	Military basic pay	Classified civilian salaries
Oct. 14, 1962		5.5
Oct. 1, 1963	14.2	
Jan. 5, 1964		4.1
July 1, 1964		4.2
Sept 1, 1964	2.3	
Sept. 1, 1935	10.4	
Oct. 1, 1965		3.6
July 1, 1966	3.2	2.9
Oct. 1, 1967	5.6	4.5
July 1, 1968	6.9	4.9
July 1, 1969	12.6	9.1
Jan. 1, 1970	8.1	6.0
Jan. 1, 1971	7.9	6.0
Nov. 14, 1971	[1]1.6	
Jan. 1, 1972	7.2	5.5

[1] Basic pay increases applicable only to lower grade officers and airmen, under 2 years service.

GRADE STRUCTURE CHANGES

Chairman ELLENDER. On the same table there is a request for an increase of $5,100,000 in grade structure changes for officers and a reduction of $8,900,000 for enlisted personnel for the same reason. Please indicate how this is arrived at.

General KIDD. Yes, sir. If the strength reductions in fiscal year 1973 could be made proportionately to each officer and airman grade, there would be no grade structure change. In the case of officers, the difference is due to a net increase in the average grades resulting from the expanded fiscal year 1973 early release program which impacts in the lower officer grade spectrum. For airmen, however, the reverse is true. The decrease is the result of lower average grades caused by the higher nonprior service procurement programed in fiscal year 1973.

LONGEVITY FACTORS

Chairman ELLENDER. A similar situation exists in regard to longevity factors. Please explain.

General KIDD. Longevity is the term applied to years of military service for pay purposes. The overall average longevity of officers increased indicating that our force is older in years of service. This is true because the increased fiscal year 1973 early release program accelerated lower grade separations. In the case of enlisted personnel, nonprior service procurement was increased to offset excessive losses thus reducing average longevity.

ADJUSTMENTS IN ENTITLEMENTS

Chairman ELLENDER. The justifications indicate an increase of $11,307,000 in "Adjustments in entitlements" for officers and an increase of $1,378,000 for enlisted personnel. Please detail this increase.

General KIDD. The detail will be provided for the record.
(The information follows:)

Pay and allowances of officers:	
Incentive pay	−$2,600,000
Basic allowance for quarters	−6,800,000
Station allowances, overseas	−200,000
Uniform allowance	−100,000
Separation payments	+15,800,000
Social security tax—employer's contribution	+5,207,000
Total	+11,307,000
Pay and allowances of enlisted personnel:	
Incentive pay	−500,000
Special pay	−12,100,000
Reenlistment bonus	−1,000,000
Basic allowance for quarters	−8,500,000
Family separation allowance	−500,000
Clothing allowance	+5,400,000
Separation payments	+14,600,000
Social security tax-employer's contribution	+3,978,000
Total	+1,378,000

SUMMARY OF REQUIREMENTS BY BUDGET PROGRAM

Chairman ELLENDER. There will appear in the record a summary of requirements by budget program.
(The information follows:)

SUMMARY OF REQUIREMENTS BY BUDGET PROGRAM

[In thousands of dollars]

Title	Fiscal year— 1971 actual	1972 estimate	1973 estimate
(1)	(2)	(3)	(4)
Direct program:			
Pay and allowances of officers	$1,935,931	$2,042,600	$2,088,307
Pay and allowances of enlisted	3,797,197	4,214,078	4,366,824
Pay and allowances of cadets	13,117	15,019	16,544
Subsistence of enlisted personnel	311,999	307,865	291,600
Permanent change of station travel	432,642	430,800	471,500
Other military personnel costs	33,131	17,810	16,300
Total, direct program	6,524,017	7,028,172	7,251,075
Reimbursable program:			
Pay and allowances of officers	8,393	7,450	7,571
Pay and allowances of enlisted	12,698	9,858	9,838
Subsistence of enlisted personnel	29,862	24,836	24,900
Permanent change of station travel	274	200	200
Total, reimbursable program	51,227	42,344	42,509
Total program:			
Pay and allowances of officers	1,944,324	2,050,050	2,095,878
Pay and allowances of enlisted	3,809,895	4,223,936	4,376,662
Pay and allowances of cadets	13,117	15,019	16,544
Subsistence of enlisted personnel	341,861	332,701	316,500
Permanent change of station travel	432,916	431,000	471,700
Other military personnel costs	33,131	17,810	16,300
Total, obligations	6,575,244	7,070,516	7,293,584

SUMMARY OF OFFICER REQUIREMENTS BY PROJECT

Chairman ELLENDER. At this point in the record there will appear a summary of requirements by project for "Pay and allowances of officers."

(The information follows:)

SUMMARY OF REQUIREMENTS BY PROJECT

[In thousands of dollars]

Title	Fiscal year— 1971 actual	1972 estimate	1973 estimate
(1)	(2)	(3)	(4)
Basic pay	$1,449,738	$1,524,298	$1,541,470
Incentive pay	144,132	140,446	137,855
Special pay	29,663	26,142	22,890
Basic allowance for quarters	127,647	157,624	169,111
Basic allowance for subsistence	73,685	71,512	69,352
Station allowances, overseas	12,424	12,900	11,970
Uniform allowance	2,932	2,839	2,759
Family separation allowance	5,583	4,490	4,401
Separation payments	33,760	42,660	61,903
Social security tax, employer's contribution	51,488	52,145	57,620
Missing-in-action and prisoner of war (80 Stat. 625)	13,272	14,994	16,547
Total, obligations	1,944,324	2,050,050	2,095,878
Less reimbursements	8,393	7,450	7,571
Total, direct obligations	1,935,931	2,042,600	2,088,307

BASIC PAY FOR OFFICERS

Chairman ELLENDER. Basic pay for officers shows a request for $1,541,470,000, an increase over the $1,524,298,000 for fiscal year 1972, although the total man-years were reduced by 3,761. Is this attributable to pay increases?

General KIDD. Yes, sir. The full year effect of Public Law 92–129 and Executive Order 11638 in fiscal year 1973 over fiscal year 1972 amounts to $53 million. These additional costs are partially offset by the savings attributable to the reduction of man-years.

REDUCTION IN FIELD GRADE OFFICERS

Senator YOUNG. Your total decrease is roughly 3 percent in all officer grades, but I notice that in the grades from brigadier general on up the decrease is only about seven-tenths of 1 percent. Why is that?

General KIDD. The reductions you refer to are in man-years only. The reduction in end strengths will be substantially higher and will total about 2 percent. This percentage reflects the limits contained in title 10, United States Code. Likewise, our field grade strengths are also reduced according to statutory limitations.

INCREASE IN FIRST LIEUTENANTS

Chairman YOUNG. I also note that there is an increase—the only one, incidentally—in first lieutenants. Please explain.

General KIDD. The increase in the number of first lieutenants in fiscal year 1973 is a result of a recent policy change which enables all Air Force nurses who possess a baccalaureate degree to enter active duty in the grade of first lieutenant. Prior to this change, many such officers entered the Air Force as second lieutenants.

INCENTIVE PAY FOR HAZARDOUS DUTY

Chairman ELLENDER. A total of $137,855,000 is requested for "Incentive pay for hazardous duty." Under the subhead "Flying duty crew members" increases are projected for officers in the grades of lieutenant general, captain, and first lieutenant. Please explain.

General KIDD. The increased man-year average for lieutenant general is the result of a rated lieutenant general that was suspended being returned to flying status; and a nonflying lieutenant general who is scheduled to retire and being replaced by a general officer on flight status. There has been no increase in total lieutenant general authorizations. The increase in captain and first lieutenant man-years is the result of the yearly increase in pilot productions from fiscal 1969 through fiscal 1972. The graduates from pilot training during this period will be serving in the grade of captain or first lieutenant in fiscal 1973. The increase in captain and first lieutenant man-years is offset by a decrease in colonel, lieutenant colonel, and major man-years.

FLIGHT MEDICAL OFFICERS AND STUDENT FLIGHT NURSES

Chairman ELLENDER. Under "Nonrated noncrew members" similar increases are to be found for flight medical officers and student flight nurses. Why is that?

General KIDD. The man-years for flight medical officers and student flight nurses reflect the man-year number in training to replace losses in the flight surgeon and flight nurse skills. They do not relate to authorizations in these skills but represent the training requirements needed to replace actual and programed losses. The increase in student flight nurses is required to replace an increase in the loss of trained flight nurses.

The increase in man-years for flight medical officers is the result of an increase in requirements from 280 flight medical officers on June 30, 1971 to 345 on June 30, 1972. The increase during this period computed to a man-year figure of 312 for fiscal 1972. Since the requirement for flight medical officers was 345 on June 30, 1972, the starting point for fiscal 1973 will be 345 flight medical officers and this figure remains relatively stable for the year, giving us the estimated man-years of 345 for fiscal 1973.

SPECIAL PAY

Chairman ELLENDER. For "Special pay" for officers a total of $22.890,000 is requested. Please indicate how this special pay is arrived at.

General KIDD. There are four categories of special pay for officers: (1) Medical, dental, veterinary, and optometry officers are entitled to special pay for active service in addition to any other pay and allowances. Veterinary and optometry officers receive $100 per month;

medical and dental officers' rates vary from $100 to $350 per month based on length of service. (2) Continuation pay for physicians is paid to medical officers serving on active duty in a critical specialty—from major through lieutenant general—who have completed five or more years' service and their initial active duty obligations, and who execute a written agreement to remain on active duty for at least 1 additional year. Payments vary by grade: lieutenant general, 1 month basic pay; major general, 2 months; brigadier general, 3 months; colonel, lieutenant colonel, and major, 4 months. (3) Personal money allowances are authorized for generals and lieutenant generals and vary from $41.67 to $333.33 per month based on grade and/or assignment. (4) Other special pay is $65 per month and is paid to officers subject to hostile fire.

PROFESSIONAL PERSONNEL

Chairman ELLENDER. Please describe the relative strength of physicians and optometrists in fiscal years 1972 and 1973.

General KIDD. The strength of physicians and optometrists will decrease in fiscal year 1973. Physicians' strength will drop from 3,885 in fiscal year 1972 to 3,800 in fiscal year 1973. Optometrists' strength will be reduced from 185 to 180. The man-year averages increased slightly in fiscal year 1973 because of the high inventory of these officers at the beginning of the year.

Chairman ELLENDER. In regard to the optometrists, the average rate of special pay increases from $757 in fiscal year 1972 to $1,200 in fiscal year 1973. Why is that?

General KIDD. This is a new entitlement authorized by Public Law 92–129 which became effective November 14, 1971. The rate provided by this legislation was $100 per month. The maximum payment for fiscal year 1972 is $756.67.

PERSONAL MONEY ALLOWANCE

Chairman ELLENDER. Some 53 officers will receive a "Personal money allowance." Please explain the need for this.

General KIDD. This allowance is payable while the officer is serving in a specific duty assignment for which the rank and pay of a lieutenant general or general is authorized. The Air Force has 14 generals and 39 lieutenant generals authorized to receive these allowances. These payments were authorized with consideration of the responsibilities of these officers and with the prestige of such grades which invariably entails entertainment and hospitality obligations.

BASIC ALLOWANCE FOR QUARTERS

Chairman ELLENDER. For "Basic allowance for quarters" officers, the fiscal year 1973 request is for $169,111,000. This is an increase over the amount estimated as required for fiscal year 1972, which was $157,624,000. I assume that this reflects the increase in the statutory rates, so that the reduced number of man-years involved is more than absorbed by the rate increase. Please describe this relationship.

General KIDD. The increased costs due to the full year effect of Public Law 92–129 are approximately $18,300,000 and more than offsets the $6,800,000 savings due to the man-year reduction.

Chairman ELLENDER. Under "Inadequate family housing" a similar situation exists; does it not?

General KIDD. That is correct.

Senator YOUNG. I note that one general receives $2,208 for inadequate family housing. Just where is that located?

General KIDD. Osan Air Force Base, Korea.

BASIC ALLOWANCE FOR SUBSISTENCE

Chairman ELLENDER. For "Basic allowance for subsistence" the request is for $69,352,000, a slight decrease from the $71,512,000 for fiscal year 1972. There has been no change in the statutory rate from last year, has there?

General KIDD. No, sir. There has not. The decrease is directly related to the reduction in man-years.

Chairman ELLENDER. The only increase in the tabulation relates to first lieutenants. I previously inquired about the increase in first lieutenants. Would your response to that question be similar to this?

General KIDD. Yes, sir. That is correct.

STATION ALLOWANCE, OVERSEAS

Chairman ELLENDER. For "Station allowances, overseas" the fiscal year 1973 request is $11,970,000, a decrease from the $12,900,000 for fiscal year 1972. Please describe this project.

General KIDD. This project consists of three separate allowances: Cost of living; cost of housing; and temporary lodging allowances. Both cost of living and cost of housing allowances serve to defray the excess costs experienced by officers in certain overseas locations. Temporary lodging allowance is authorized only upon initial arrival overseas and/or immediately preceding departure from overseas. This allowance is provided to help offset the additional costs incurred when a member must occupy temporary commercial facilities and subsist in public restaurants.

CHANGES IN STATION ALLOWANCE, OVERSEAS

Senator YOUNG. Indicate any significant changes from last year.

General KIDD. There is a reduction of eligibles in each of the three categories. This is due to the continuing overall reduction in our overseas strengths. The rates vary due to the impact of the dollar devaluation and the full year's effect of Public Law 92–129 on the quarters and housing allowances.

UNIFORM ALLOWANCES

Chairman ELLENDER. For "Uniform allowances" the request for fiscal year 1973 is $2,759,000, a reduction from the $2,839,000 estimated for fiscal year 1972. The reduction in number from 17,723 to 17,199 is the only significant change and accounts for the reduction, does it not?

General KIDD. Yes, sir. That is correct.

FAMILY SEPARATION ALLOWANCE

Chairman ELLENDER. For the "Family separation allowances" the request for fiscal year 1973 is $4,401,000. This is a slight reduction from the $4,490,000 estimated for fiscal year 1972. Please describe this project, including changes in the statutory rate.

General KIDD. Family separation allowances (FSA) are payable only to members with dependents but whose dependents are not authorized to travel to his duty station. There are two types of FSA. FSA–I is to pay a member for added expenses for his housing caused by enforced separation from his family. It applies when he must maintain a home for his family and one for himself overseas. FSA–I rates are identical to basic allowance for quarters (BAQ) without dependents. Public Law 92–129 increased BAQ rates effective November 14, 1971, thus causing the rate increase as noted. FSA–II, $30 per month, compensates a member for added expenses incurred because of enforced separation from his family due to PCS or TDY for more than 30 days.

SEPARATION PAYMENTS

Senator YOUNG. A total of $61,903,000 is requested for "Separation payments" for fiscal year 1973. This compares with $42,660,000 for fiscal year 1972. The marked difference between the 2 years seems to be concentrated in the $21,081,000 for the early release of 4,000 officers. Please discuss.

General KIDD. In fiscal year 1973, the Air Force is faced with one of the largest reductions experienced in recent years. We are exploiting all voluntary means possible in an attempt to meet the reduced end strength. The required number of early releases, however, is considerably greater than ever obtained. The $21,081,000 included in this budget is to meet the costs of utilizing involuntary means to achieve the fiscal year 1973 end strength.

SOCIAL SECURITY TAX: EMPLOYER'S CONTRIBUTION

Chairman ELLENDER. For "Social security tax, employer's contribution" the request for fiscal year 1973 is $57,620,000, an increase over the $52,145,000 for fiscal year 1972. Please describe this project as well as the rate increase that occasioned the increase in the request.

General KIDD. This project provides for the employer's tax to the Social Security Administration as required by the Federal Insurance Contribution Act. The rate increase reflected in fiscal year 1973 is the result of the following contributing factors: full year impact of Public Law 92–129 and Executive Order 11638, the fiscal year 1972 pay increases; increase January 1, 1972, of amount subject to tax from $7,800 to $9,000; increase January 1, 1973, of tax rate from 5.2 percent to 5.65 percent.

MISSING IN ACTION AND PRISONERS OF WAR

Chairman ELLENDER. For the personnel missing in action and prisoners of war $16,547,000 is requested for fiscal year 1973. Please describe this project indicating as you do so the nature of the increase.

General KIDD. A member who enters a missing-in-action or prisoner-of-war status is entitled to the pay and allowances to which entitled at beginning of such status or to which he becomes entitled later, such as promotions and pay increases. The increases noted are due primarily to the full year effect of Public Law 92–129 and Executive Order 11638, the fiscal year 1972 pay raises.

PAY AND ALLOWANCES OF ENLISTED PERSONNEL

Chairman ELLENDER. At this point in the record there will appear a summary of requirements by project for "Pay and allowances of enlisted personnel."

(The information follows:)

SUMMARY OF REQUIREMENTS BY PROJECT

Title	Fiscal year 1971 actual	Fiscal year 1972 estimate	Fiscal year 1973 estimate
Basic pay	$2,823,872	$3,171,071	$3,283,437
Incentive pay	28,248	26,119	25,581
Special pay	65,945	53,914	40,670
Proficiency pay	49,463	54,128	39,743
Reenlistment bonus	108,755	118,045	121,381
Basic allowance for quarters	361,337	418,419	450,523
Family separation allowance	17,271	14,749	14,428
Station allowances, overseas	39,343	41,076	40,036
Clothing allowances	66,278	60,914	61,856
Separation payments	108,372	102,308	122,631
Social security tax, employer's contribution	140,421	162,532	175,651
Missing in action and prisoners of war (80 Stat. 625)	590	661	725
Total obligations	3,809,895	4,223,936	4,376,662
Less reimbursements	12,698	9,858	9,838
Direct obligations	3,797,197	4,214,078	4,366,824

BASIC PAY OF ENLISTED PERSONNEL

Chairman ELLENDER. For "Pay and allowances of enlisted personnel" the request is for $4,376,662,000. This is broken down into a number of subheads. The first of these is "Basic pay" for which $3,283,437,000 is requested for fiscal year 1973. This is an increase over the $3,171,071,000 for fiscal year 1972. I note that the number of man-years has been reduced from 622,561 to 602,123, but that the average rate has increased, thus accounting for the increase in the request. Please comment.

General KIDD. The average rates shown in the fiscal year 1973 column reflect the full year pay raise effect of Public Law 92–129 effective November 14, 1971 and E. O. 11638 effective January 1, 1972. The full year additional costs of these pay raises amounted to approximately $227,400,000 and are partially offset by the savings attributable to the reduction of man-years.

INCENTIVE PAY, HAZARDOUS DUTY

Senator YOUNG. For "Incentive pay, hazardous duty" the request is for $25,581,000, a very slight reduction from the $26,119,000 estimated for fiscal year 1972. Please describe the nature of this hazardous duty pay.

General KIDD. These are funds requested to provide pay for enlisted personnel under the provisions of 37 United States Code 301 for the following types of duty: (1) Crew members, (2) Noncrew duty involving frequent and regular participation in aerial flights, (3) Parachute jumping, (4) Demolition of explosives, (5) Acceleration/deceleration experimental duty, (6) High/low pressure chamber duty, and (7) Thermal stress experimental duty. Crew members are paid from $50 to $105 per month, based on grade. Other hazardous duty is based on the statutory rate of $55 per month.

NON-CREW INCENTIVE PAY

Senator YOUNG. I notice that there are 2,500 noncrew enlisted personnel who receive flying duty pay. What is the nature of their occupation?

General KIDD. Sir, over half of the noncrew flight pay is paid to airmen assigned certain duties in the aircraft maintenance function, primarily those who work on the special in-flight problems that cannot be detected on the ground. Other significant areas are avionics, communications and electronic systems fields. Smaller miscellaneous categories include photography, intelligence, and medics. Lastly, there are some special air police who are utilized on board Presidential aircraft.

HIGH-LOW PRESSURE CHAMBER ACTIVITIES

Senator ELLENDER. Please describe the high and low pressure chamber activities for which 695 man-years of personnel will receive an average of $660.

General KIDD. The enlisted men assigned to high and low pressure chamber activities perform duty inside our pressure chambers. Their job is to insure that personnel undergoing training suffer no ill effects from the pressurization and depressurization. This is a very critical function since all aircrew members are required to undergo periodic pressure chamber training.

SPECIAL PAY

Chairman ELLENDER. For "Special pay" for enlisted personnel the fiscal year 1973 request is for $40,670,000, a reduction from the $53,914,000 estimated for fiscal year 1972. Please describe the type of activity this is, including both "Duty at certain places" and "Other special pay."

General KIDD. "Duty at certain places" is a special pay authorized to enlisted members who are assigned to duty at certain places outside the contiguous 48 States and the District of Columbia, as designated by the Secretary of Defense. "Other special pay" is paid to enlisted personnel subject to hostile fire.

PROFICIENCY PAY

Senator ELLENDER. For "Proficiency pay" the fiscal year 1973 request is for $39,743,000, a reduction from the $54,128,000 estimated for fiscal year 1972. I wish you would define the items under this head and indicate the nature of the significant changes.

General KIDD. There are three types of proficiency pay, each with a separate purpose and criteria for award.

Shortage Specialty (Proficiency Pay) serves as a secondary retention incentive in selected specialties that are experiencing especially difficult retention problems. It is authorized in addition to the Variable Reenlistment Bonus (VRB) when the VRB has not proved sufficient to raise the career manning to an adequate level in a particular specialty. For fiscal year 1973 the man-years and cost of this pay has been decreased by nearly 40 percent. This is a result of improved manning as requirements have decreased. Seven specialties have been terminated from active Shortage Specialty (Proficiency Pay) status for fiscal year 1973, while only one new specialty has been added (917X0, physicians assistant).

Secondly, Special Duty Assignment (Proficiency Pay) is designed to stimulate airmen to volunteer for special duty assignments outside of their normal career fields. Currently, our Air Force recruiters and basic military training instructors are authorized this pay. There is only a small decrease in man-years and cost for Special Duty Assignment (Proficiency Pay) for fiscal year 1973, primarily resulting from force reductions. No changes in the administration of this pay are planned.

The third type is Superior Performance (Proficiency Pay) which has the purpose of encouraging and rewarding outstanding effectiveness on the job. Only airmen who are not serving in a specialty designated for another type of Proficiency Pay may compete for this pay, and only the top 15 percent of the eligible airmen may be selected. The slight decrease in man-years and cost of Superior Performance (Proficiency Pay) has resulted from the effect of force reductions and the small but positive effect of including the seven specialties being removed from the Shortage Specialty (Proficiency Pay) program.

I will submit data reflecting the precise costs and man-year totals for each of the proficiency pays for both fiscal year 1972 and fiscal year 1973.

(The information follows:)

	Fiscal year 1972	Fiscal year 1973
Shortage specialty (proficiency pay):		
Man-years	56,399	35,559
Cost (millions)	$33.847	$20.994
Special-duty assignment (proficiency pay):		
Man-years	4,199	3,658
Cost (millions)	$2.519	$2.195
Superior performance (proficiency pay):		
Man-years	49,339	45,984
Cost (millions)	$17.762	$16.554

REENLISTMENT BONUS

Senator ELLENDER. For "Reenlistment Bonus" the fiscal year 1973 request is for $121,381,000, an increase over the fiscal year 1972 amount of $118,045,000. Please describe the difference between the regular bonus payments and the Variable Reenlistment Bonus.

General KIDD. The regular bonus is paid to each airman who reenlists in the regular Air Force. The first reenlistment bonus is com-

puted on a basis of 1 month's basic pay multiplied by the number of years for which the airman is reenlisting. The second, third, and fourth reenlistment bonuses are simply, two-thirds, one-third, and one-sixth of the monthly basic pay, respectively, times the number of years of reenlistment. No bonus is paid for reenlistments beyond 20 years of service and no more than a total of $2,000 may be paid under title 37, section 308, United States Code.

The variable reenlistment bonus is paid in addition to the regular bonus only at the first reenlistment point to airmen who reenlist in the specialties designated for the variable bonus. This bonus is authorized only in specialties experiencing career manning deficiencies. The variable bonus is designed for selective application and is used only where needed. For fiscal year 1973, 86 specialties will be in the program. The amount of this bonus is computed as a multiple (1, 2, 3, or 4) of the regular bonus and may be paid in lump sum or equal annual installments over the period of the first reenlistment contract.

REENLISTMENT BONUSES DESCRIBED

Senator YOUNG. Distinguish between the various types of variable reenlistment bonuses.

General KIDD. There is actually only one variable reenlistment bonus; however, it may be divided into four different categories or multiples, designated V–4, V–3, V–2, and V–1. The numerical portion of the designator indicates the multiple of the regular bonus used to compute the variable bonus. For example: A sergeant, E–4, over 3 years' service, reenlisting for the first time, would be entitled to a regular bonus of about $1,550. If his specialty is designated for a variable bonus (V–4), then four times the regular bonus or about $6,200 would be paid in addition, for a total of nearly $7,750. The same logic applies to the lower multiples which, of course, results in lower bonus amounts. The multiple assigned to a particular specialty depends primarily on the degree of the need. If a specialty requires a high training investment and the career manning and reenlistments are considerably below requirements, a multiple four (V–4) would probably be authorized.

Chairman ELLENDER. What is the largest amount an enlisted man may receive as a bonus?

General KIDD. Sir, the largest possible total reenlistment bonus is $10,000. The statutory limitation on the regular bonus is $2,000 (37 U.S.C. 308) and the largest variable bonus multiple is four (V–4). Therefore, the maximum variable bonus is $8,000 and the maximum total bonus is $10,000. Payment of this amount is very rare.

BASIC ALLOWANCE FOR QUARTERS

Chairman ELLENDER. For "Basic allowance for quarters" the request for fiscal year 1973 is $450,523,000, an increase over the $418,419,000 estimated for fiscal year 1972. Once again, I note that the number has been reduced but the cost has gone up. Does all of this increase relate to an increase in the statutory rate to be paid?

General KIDD. That is correct.

INADEQUATE HOUSING

Chairman ELLENDER. How is it that the "Inadequate housing" rate seems to have more than doubled in many instances in two years?

General KIDD. The rates reflect the impact of Public Law 92–129 which increased quarters allowances for 7½ months in fiscal year 1972 and for a full year in fiscal year 1973. Rates are based on the statutory "with dependents quarters rate" less a fair rental amount established on each unit.

FAMILY SEPARATION ALLOWANCE

Chairman ELLENDER. For "Family separation allowance" the fiscal year 1973 request is $14,428,000, slightly less than that estimated for fiscal year 1972. Please describe any significant changes in this project in the past year.

General KIDD. The increase in rates for enlisted personnel who are PCS overseas with dependents not authorized is due to the full year effect of Public Law 92–129 which increased quarters allowances. The reduction of personnel eligible is due to the overall reduction of personnel assigned overseas.

STATION ALLOWANCES, OVERSEAS

Chairman ELLENDER. For "Station allowances, overseas" the fiscal year 1973 request is $40,036,000, a slight reduction from the $41,076,000 estimated for fiscal year 1972. As I see it, the reduction in number in each category has been largely balanced out by increases in the average rate. Is that correct?

General KIDD. That is correct. Also, there is a slight reduction in the housing rates for fiscal year 1973.

Senator YOUNG. Would you please describe briefly the three items in this project?

General KIDD. Cost of living allowances are authorized to assist members in defraying the added costs of all elements of the cost of living in certain overseas areas. Housing allowances are payable to members in certain overseas areas who do not occupy Government quarters. Temporary lodging allowances reimburse a member for more than normal expenses incurred for food and lodging upon arrival at and immediately preceding departure from an overseas permanent duty station.

CLOTHING ALLOWANCES

Chairman ELLENDER. For "Clothing allowances" for fiscal year 1973 the request is $61,856,000, a slight increase over the estimate for fiscal year 1972 of $60,914,000. The rates seem to have remained just about constant, but the number has increased. Please speak to that requirement.

General KIDD. The increased number is primarily in the airman initial military clothing allowance area. This is due to increased procurement necessary to offset excessive losses and attain required end strength.

Senator YOUNG. Who may receive the civilian clothing allowance?

General KIDD. Civilian clothing allowances are approved for airmen performing duty in a foreign country or other location where wear of such attire is mandatory or justified by the written desire of a person in authority of that country or organization.

STANDARD MAINTENANCE ALLOWANCE

Chairman ELLENDER. Describe the standard maintenance allowance for both military and civilian clothing.

General KIDD. Maintenance allowances are monthly cash payments made to airmen for the purpose of buying or repairing uniform—or civilian—clothing to maintain the prescribed type and quantities of authorized items. Standard maintenance allowance for military clothing is paid from the 37th month of service until the enlisted service expires. The civilian clothing maintenance starts with the seventh month of continuous assignment to a duty requiring the wearing of civilian clothing through the expiration of such an assignment. Airmen are not entitled to both allowances during the same period.

SPECIAL SUPPLEMENTAL ALLOWANCES

Senator YOUNG. Under Special Supplemental Allowances I note a number of items, some of which are self-explanatory and some of which are not. Please explain "Honor Flights," "Other requirements"—for which the number involved is 32,000—and "USAF Prep School."

General KIDD. Airmen assigned to the honor guard representing each major command are referred to under "Honor Flights." "Other requirements" refer to airmen assigned to Southeast Asia for 60 days or more. Finally, each U.S. Air Force Academy Preparatory School student is authorized this supplemental allowance in addition to the initial military clothing allowance.

SEPARATION PAYMENTS

Chairman ELLENDER. For "Separation payments" the fiscal year 1973 request is $122,631,000, an increase over the estimated amount for fiscal year 1972 of $102,308,000. I note that 175,566 personnel will receive lump sum terminal leave payments, an increase of 25,544 over those estimated for fiscal year 1972. Does this account for most of the increase, together with the increased rate?

General KIDD. Yes, sir. That is correct.

SOCIAL SECURITY TAX: EMPLOYER'S SHARE

Chairman ELLENDER. For the social security tax, employer's share, for fiscal year 1973 the request is $175,651,000, an increase over the funds estimated for fiscal year 1972, which amount to $162,532,000. Please describe this increase.

General KIDD. This increase is the result of the following: full-year impact of the fiscal year 1972 pay raises; increase—January 1, 1972—of amount subject to tax from $7,800 to $9,000; and increase—January 1, 1973—of tax rate from 5.2 to 5.65 percent. Savings due to the reduction of man-years partially offset this increase.

WOMEN IN THE AIR FORCE

Senator YOUNG. Last year it was indicated that there was a 41-percent increase in WAF strength in the 3 previous years. Please indicate

whether you were able to increase such strength of approximately 10,000 in fiscal year 1972.

General HOLM. The strength as of December 31, 1971, was 12,172, 10,944 enlisted women, and 1,228 line officers. We anticipate an end FY 72 strength of approximately 12,792, 11,490 enlisted women and 1,275 officers. We had projected a strength of approximately 11,885, 10,500 enlisted women, and 1,355 officers by the end of fiscal year 1972. At this point in time, we do not expect the original estimated strength of 1,355 officers will occur because of the voluntary option for early release recently announced to reduce the total Air Force officer strength. Policies regarding such releases apply equally to both men and women. Our ability to exceed the estimated end strength for enlisted women by about 1,000 for fiscal year 1972 is due to improved retention and the relatively favorable recruiting climate for women. WAF strength is included within total Air Force strengths and any additional women do not affect changes in the Air Force end military strengths.

Senator YOUNG. Please describe generally the WAF program: morale, caliber, retention, and so forth.

General HOLM. By law and by design, there is no separate corps of women within the Air Force personnel structure, no separate promotion lists or promotion quotas for women, no separate training facilities and no special classification or assignment systems. They are part of the total military personnel resource and, as such, contribute directly to the overall mission of the Air Force. It is Air Force philosophy today that personnel policies and procedures should be essentially the same for men and women military members of the Air Force except where there are legitimate, rational reasons to do otherwise. There are many indications that morale is good because of this integrated system and increasing opportunities for assignment and utilization. The retention rate for women officers is about the same as for male officers and the reenlistment rate for first-term enlisted women is showing steady improvement. We believe the caliber of both has never been higher based on their achievements and the desire of women to join the Air Force.

PAY AND ALLOWANCE OF CADETS

Chairman ELLENDER. At this point in the record there will appear a summary of requirements by project for pay and allowances of cadets.

(The information follows:)

PROGRAM: PAY AND ALLOWANCES OF CADETS—SUMMARY OF REQUIREMENTS, BY PROJECT

[In thousands of dollars]

Title	Fiscal year 1971 actual	Fiscal year 1972 estimate	Fiscal year 1973 estimate
(1)	(2)	(3)	(4)
Academy cadets	13,117	15,019	16,544
Total direct obligations	13,117	15,019	16,544

ACADEMY CADETS

Chairman ELLENDER. For Academy cadets, the fiscal year 1973 request is for $16,544,000, an increase over the $15,019,000 estimated for fiscal year 1972. I note that you estimate a beginning and end strength of 4,417 but a man-year strength of 4,184. Please explain.

General KIDD. Man-year averages are a computation of man-months for pay to military members. Inasmuch as cadets are lost throughout the year and gained to the strengths only in June, the monthly end strengths decrease each month, therefore the average strength will always be less than the beginning and ending year strengths.

INCREASE IN MAN-YEARS

Senator YOUNG. I note that total man-years of cadet strength has increased during each of the past 3 years. Is this to continue?

General KIDD. No, sir; the Academy is programed to reach 4,417 at end of fiscal year 1972. The strength will be stabilized at 4,417 each year thereafter and the man-years will fluctuate within a narrow range depending on annual attrition experience.

Chairman ELLENDER. The increase in the request is occasioned by a slight increase in the number of man-years and an increase in the average rates paid. Is there any thing else of significance in connection with this project?

General KIDD. No, sir; there is not.

SUBSISTENCE OF ENLISTED PERSONNEL

Chairman ELLENDER. At this point in the record there will appear a summary of requirements by project for subsistence of enlisted personnel.

(The information follows:)

PROGRAM: SUBSISTENCE OF ENLISTED PERSONNEL—SUMMARY OF REQUIREMENTS, BY PROJECT

[In thousands of dollars]

Title	Fiscal year 1971 actual	1972 estimate	1973 estimate
(1)	(2)	(3)	(4)
Basic allowance for subsistence	260,977	255,604	241,220
Subsistence in kind	51,022	52,261	50,380
Total direct obligations	311,999	307,865	291,600
Plus reimbursements	29,862	24,836	24,900
Total obligations	341,861	332,701	316,500

SUBSISTENCE DESCRIBED

Chairman ELLENDER. For "Subsistence of enlisted personnel," the fiscal year 1973 request is $291,600,000, a reduction from the fiscal year 1972 amount of $307,865,000. This is divided into two projects. The first of these is "Basic allowance for subsistence" for which $241,220,000 is requested. Please describe this request generally.

General KIDD. Basic allowance for subsistence provides monetary allowances for airmen who do not subsist in Air Force dining halls. It includes allowances when an individual is authorized to mess separately, an individual is in leave status, rations in kind are not available, individual is assigned to duty under emergency conditions where Government messing facilities are not available, and augmentation of subsistence allowance for meals when taken separately.

TEST ITEM

Senator YOUNG. I notice a new item under this at Shaw Air Force Base. Please describe this "Test item."

General KIDD. This is a 1-year test to provide all food to enlisted personnel on a reimbursable basis at Shaw Air Force Base. Authority has been granted to permit approximately 945 enlisted personnel permanently assigned to Shaw Air Force, a basic allowance for subsistence in lieu of subsistence in kind. Food during the 1-year test will be sold on an item rather than on a meal basis, more like the modern commercial cafeterias. This test of a new concept in military feeding is scheduled to begin in August 1972.

COST OF FOOD

Chairman ELLENDER. How have the costs of food affected this appropriation item? I note that, contrary to expectation, there have been some decreases.

General KIDD. The commuted ration rate was reduced from $1.52 to $1.46 based upon actual DOD-wide average cost of food served in dining facilities during the period of January–June 1971. Subsistence-in-kind estimates were reduced as a result of actual experience of ration cost and absentee rates during the same 6-month period.

SUBSISTENCE IN KIND

Chairman ELLENDER. For the second major item, "Subsistence in kind," $50,380,000 is requested for fiscal year 1973. Please describe this generally.

General KIDD. Subsistence in kind represents the costs of feeding enlisted personnel in Air Force dining halls. The funds requested provide for the procurement of subsistence supplies for issues as rations to enlisted personnel. Also included are emergency and operational rations, and payment for meals furnished under contract at commercial facilities where the payment of commuted rations would create an individual hardship and/or the costs of establishment of a Government mess facility are prohibitive.

PERMANENT CHANGE OF STATION TRAVEL

Chairman ELLENDER. At this point in the record, there will appear a summary of requirements by project of "Permanent change of station travel."

(The information follows:)

PROGRAM: PERMANENT CHANGE OF STATION TRAVEL—SUMMARY OF REQUIREMENTS, BY PROJECT

[In thousands of dollars]

Title	Fiscal year 1971 actual	1972 estimate	1973 estimate
(1)	(2)	(3)	(4)
Accession travel	12,835	15,212	17,432
Training travel	17,809	21,246	23,010
Operational travel between duty stations	51,784	50,951	55,013
Rotational travel to and from overseas	295,742	283,314	314,917
Separation travel	49,785	53,819	54,457
Travel of organized units	4,961	6,458	6,871
Total obligations	432,916	431,000	471,700
Less reimbursements	274	200	200
Total direct obligations	432,642	430,800	471,500

PERMANENT CHANGE OF STATION TRAVEL

Chairman ELLENDER. For "Permanent change of station travel," the fiscal year 1973 request is for $471,700,000, an increase of $40,700,000 over the $431 million required for fiscal year 1972. I note that an increase is requested for each of the six projects.

ACCESSION TRAVEL

For the first, "Accession travel," the request for fiscal year 1973 is $17,432,000 as compared with $15,212,000 for fiscal year 1972. The tabulation on page 84 of the justifications indicates that you estimate a total of 130,742 moves for 1973 as compared with 108,523 for 1972. What is the reason for that?

General KIDD. Increased officer and airmen separations generate the need for increased accession moves to meet Air Force end strength authorized requirements.

RATE CHANGE

Senator YOUNG. I notice that the rates change in each category except household goods. Please explain.

General KIDD. The new mileage rates occurring in the last 5 months of fiscal year 1972 did not affect shipment costs of household goods.

TURBULENCE IN MOVES

Chairman ELLENDER. There seems to be considerable turbulence, if that is the word, in the number of enlisted accession moves. Please explain why that is.

General KIDD. Enlisted accession travel requirements are generated by the number of airmen to be enlisted each fiscal year. Increases and decreases in enlistments and corresponding accession moves is directly attributable to the personnel actions required to meet end strength objectives.

Senator YOUNG. Normally, I believe one would assume that accession moves for dependents and accession moves for household goods would generally follow the pattern of the number of military accession moves. This does not seem to be the case in regard to enlisted accession

moves over the period of fiscal years 1971 to 1973. Could you explain why this is so?

General KIDD. Yes, sir. I would like to point out that the combined total of prior and nonprior service airmen who are procured derives the total number of PCS accession moves. However, the number of prior service airmen procured is the data source for determining the numbers of dependents and household goods to be moved. Prior service enlistees normally are the only accessions who because of grade are eligible to move dependents and household goods at Government expense. Prior service enlistees show a steady increase, fiscal year 1971 through fiscal year 1973.

Chairman ELLENDER. For fiscal year 1973 the estimate for training travel is $23,010,000, an increase over the fiscal year 1972 amount, which is $21,246,000. Training travel moves continue to increase each year: 132,448 in fiscal year 1971, 145,325 in 1972, and an estimated 161,986 in 1973. Please explain.

General KIDD. I would like to point out that a PCS move from the training station to an overseas unit is classified a rotational move. Conversely, a move from the training station to a CONUS location is classified a training move. These are steadily increasing as a direct result of our reducing overseas population. Also contributing to the increase from fiscal year 1972 to fiscal year 1973 is the fact that we have more airmen technical training moves in the fiscal year 1973 program which are associated with the increased airmen procurement in fiscal year 1973.

DISLOCATION ALLOWANCE

Chairman ELLENDER. Please describe the dislocation allowance.

General KIDD. The purpose of the dislocation allowance is to partially reimburse a member, with or without dependents, for the expenses incurred in relocating his household upon a permanent change of station or incident to an evacuation. This allowance equates to 1 additional month's basic allowance for quarters to which the member is otherwise entitled. This allowance was recently increased with passage of Public Law 92–129, November 14, 1971.

OPERATIONAL TRAVEL BETWEEN DUTY STATIONS

Chairman ELLENDER. For operational travel between duty stations the estimate for fiscal year 1973 is $55,013,000. This is an increase over the amount of $50,951,000 estimated for fiscal year 1972. Please describe what is included in operational travel between duty stations.

General KIDD. Operational travel includes PCS requirements for operational reassignment of officers and airmen between duty stations within CONUS and within overseas areas. Operational reassignments consist in part of moves to redistribute needed skills as well as to fill new requirements. Some of the specific items included are patient and prisoner reassignments, humanitarian reassignments, reassignment to join spouse or twin, and reassignment pursuant to Project Children Have a Potential (CHAP). Operational travel also includes requirements for reassignment of officers and airmen resulting from force structure changes, such as activation, inactivation, and reorganization of units and movements of units without personnel.

OPERATIONAL TRAVEL BETWEEN DUTY STATIONS INCREASE

Chairman ELLENDER. Detail generally the principal reasons for this increase.

General KIDD. First, there are 4,287 more moves in the fiscal year 1973 program due to the turbulence caused by force reductions. Second, there is an increase in the cost of entitlements. Dislocation allowances, which are equivalent to 1 month's basic allowance for quarters, were increased by Public Law 92–129, November 14, 1971. We will be paying for a full 12 months at the higher rates during fiscal year 1973. Also, new mileage increases were effective in February 1972 and will be paid for a full year in fiscal year 1973. This increase which affects military member and dependent travel is based upon new criteria for determining highway distances using interstate and defense highways. Preexisting and obsolete highway and common carrier distance tables were eliminated.

ROTATIONAL TRAVEL TO AND FROM OVERSEAS

Chairman ELLENDER. For rotational travel to and from overseas the fiscal year 1973 request is $314,917,000. For fiscal year 1971 the amount was $295,742,000 and for fiscal year 1972 the amount was $283,314,000. Please explain why there is an increase in 1973 after the 1972 reduction.

General KIDD. Yes, sir. The increase in the fiscal year 1973 estimate is related to the following:

(*a*) The requirement to return and replace those personnel who were involuntarily extended from fiscal year 1972 to fiscal year 1973.

(*b*) Additional PCS moves related to personnel turbulence generated by force reductions.

(*c*) New entitlements. Effective July 1, 1972, foreign made privately owned vehicles are authorized to be shipped at Government expense. Military members returning from restricted weight (2,000-pound limitation) areas will be entitled to ship up the full joint travel regulation limit less the amount of household goods previously placed in nontemporary storage.

(*d*) Increased mileage entitlements based upon a new method of computing highway distances.

(*e*) Increases in MAC cargo and passenger tariff rates effective primarily in the last half of fiscal year 1972 will be paid for a full 12 months in fiscal year 1973. Special airlift rates were also increased in the last half of fiscal year 1972 and will be paid for a full year in fiscal year 1973.

(*f*) Foreign currency revaluation which will have an impact overseas on moving and/or storage of household goods.

(*g*) A full 12 months of increased dislocation allowance payments.

(*h*) Army port handling charges were increased effective July 1, 1972, for processing of Air Force passengers, household goods, and privately owned vehicles.

AMERICAN-FLAG COMMERCIAL VESSELS

Senator YOUNG. Describe generally the policy and fund utilization in connection with American-flag commercial vessels.

General KIDD. Generally, Air Force members and dependents travel by air; however, the Department of Defense Appropriation Act sets aside a specified amount for the procurement of commercial passenger sea transportation services on American-flag ships during a fiscal year. The amount set aside has been on the decline since passenger surface travel on the Atlantic has been canceled. The current estimates relate to movements between the United States and the Pacific area only and the limited service offered by American-flag vessels makes it difficult to utilize the required funds. Unused funds are transferred to the Department of the Treasury at the end of the year.

TRAILER ALLOWANCE

Chairman ELLENDER. In each of these accounts there is an item dealing with trailer allowances. Please describe the general policy in connection with this and also include a description of what is done in connection with overseas travel.

General KIDD. The trailer allowance is to provide for the transportation of a house trailer within the United States, within Alaska, and between the United States and Alaska, for use as a residence. Any member of the Air Force who would otherwise be entitled to have his household goods transported at Government expense is entitled to trailer allowances providing that three conditions exist. First, a house trailer is acquired on or prior to the effective date of the member's orders and is to be transported for use by the member, his dependents, or both as a residence. Second, the member elects trailer allowances in lieu of both the dislocation allowance and transportation of baggage and household goods; and, a last condition, that the trailer has been placed in fit condition, to the satisfaction of the Government. In connection with overseas travel, no entitlement accrues for transportation of a trailer outside the United States, except within Alaska or between the United States and Alaska. However, members whose dependents are authorized to and do travel to a designated place within the CONUS, when concurrent travel of dependents is not authorized to the overseas duty station, are entitled to trailer allowances.

SELECTION OF TRAVEL METHOD

Chairman ELLENDER. Would you please provide a statement for the record detailing the policy and magnitude of selecting surface, special airlift and commercial air travel to and from overseas?

General KIDD. I will do so.

(The information follows:)

1. Travel Policy. Air transportation is the primary mode of travel for the movement of all Air Force military and civilian personnel, including their dependents, to, from, and between overseas areas. However, since Congress sets aside yearly a portion of the budget allotted for travel and specifies that this portion shall be used for procurement of commercial surface accommodations on US flag carriers, the Air Force programs spaces monthly only to and/or from Hawaii, Japan, and the Republic of the Philippines and the Continental United States. Assignment of commercial surface accommodations are made according to Priorities A, B, and C. Priorities A and B require a current medical certificate certifying that based on an examination of the dependent it has been determined that air transportation is medically contraindicated. Priority C travel is allowed, when space is available, for those unaccompanied members and accompanied family groups who desire surface transportation. Since there is no US flag

carrier operating between the CONUS and Europe or the Mediterranean area, the use of foreign flag may be permitted when authorized by proper medical and transportation authorities on a case by case basis. Only the dependent is then accommodated; other family members are required to travel by air.

2. Special Assignment Airlift. Special rates by aircraft type are charged when the aircraft is provided for the exclusive use of an agency to meet special considerations of pickup, delivery, and off-route service requests. These rates are based on plane load capability. They apply from the time the aircraft departs home station until return or sooner if aircraft re-enters a channel where its capability can be effectively applied. A minimum daily charge is applicable when the daily flying time charge is less than the minimum charge. Special assignment airlift may be required for unit moves or for special needs where regularly scheduled Military Airlift Command (MAC) service is not available or if available cannot be used because mission needs dictate special airlift. This airlift is rarely used.

3. Commercial Air Travel (Category Z). This travel is by regularly scheduled US flag international air carriers with tickets procured by Government Transportation Requests at special rates applicable to Department of Defense traffic. Category Z travel is automatically authorized to certain geographical areas where MAC does not provide a scheduled service by either military aircraft or commercial aircraft under contract to MAC. Category Z travel may also be authorized when MAC (military or contract) scheduled service will not meet the operational requirements of the traveler.

SEPARATION TRAVEL

Chairman ELLENDER. For "Separation travel" the funding request for fiscal year 1973 is $54,457,000. I note that a total of 139,987 such moves is contemplated for 1973. I wish you would justify the increase requested.

General KIDD. Yes, sir. Generally enlisted separations fluctuate in relation to the end of enlistments 4 years earlier. Fiscal year 1968, enlistments were 90,543 and separations for expiration of enlistment in fiscal year 1972—4 years later are 60,315. Fiscal year 1969, enlistments were 116,864 and fiscal year 1973 separations will total 76,000.

TRAVEL OF ORGANIZED UNITS

Senator YOUNG. For "Travel of organized units" the estimate for fiscal year 1973 is $6,871,000. What is included under this general head?

General KIDD. This account includes PCS movements of officers and airmen moving as a part of the move of an organized unit. It also includes the moves of personnel who are fillers and replacements to the unit and who move concurrently with the unit. This item includes moves between duty stations within the CONUS, within overseas areas, and to and from overseas.

TRAVEL OF ORGANIZED UNITS INCREASE

Chairman ELLENDER. Costs of this type of travel continue to show a yearly increase. Please explain.

General KIDD. Cost increases are related to an increase in the number of units programed to relocate within the Conus and movements of units to and from overseas based upon realinement of organizations. In addition, new entitlements which are effective for a full year in fiscal year 1973, have increased the cost of this type of travel. New entitlements include increased dislocation allowance (pay raise) and increases in mileage allowances.

GENERAL POLICY ON TRAVEL

Chairman ELLENDER. I wish you would provide for the record a statement on the general policy in regard to travel, indicating just what is being done to curtail the rising costs associated with travel.

General KIDD. Yes, sir.

(The information follows:)

The following actions have been taken to curtail the rising costs associated with travel and to stabilize the lives of military members and their dependents:

(*a*) Personnel are encouraged to voluntarily extend their tours in overseas areas up to sixty months.

(*b*) Personnel serving stabilized tours in the Continental U.S. are encouraged to extend their tours up to one year.

(*c*) Personnel serving in most 36-month overseas areas have been involuntarily extended to 48 months.

(*d*) Transportation agencies were directed to use the most economical means of transporting passengers and personal effects.

(*e*) Increased minimum time on station from 18 to 24 months for officers and 12 to 18 months for airmen.

(*f*) Undergraduate pilot trainees who complete training and become instructors will remain at the base at which they were trained.

(*g*) A special committee was established to review additional methods of reducing PCS moves and costs. Three items have been implemented:

(1) Unprogrammed availables (personnel in hospitals, flying status suspensions) are assigned where possible to the closest location and/or base.

(2) AFROTC personnel accessed to the Air Force are assigned where possible to the nearest Air Force base.

(3) Major commands' authority to curtail individuals to level out rotation schedules has been withdrawn.

(*h*) Major commands' intracommand reassignment quotas have been reduced.

In spite of the Air Force efforts outlined above to curtail rising costs associated with travel, continuing inflation has offset our efforts to a large degree.

OTHER MILITARY PERSONNEL COSTS

Chairman ELLENDER. At this point in the record there will appear a summary of requirements by project of "Other military personnel costs."

(The information follows:)

PROGRAM: OTHER MILITARY PERSONNEL COSTS—SUMMARY OF REQUIREMENTS, BY PROJECT

[In thousands of dollars]

Title (1)	Fiscal year 1971 actual (2)	Fiscal year 1972 estimate (3)	Fiscal year 1973 estimate (4)
Apprehension of Air Force deserters, absentees, and escaped military prisoners	239	252	216
Interest on uniformed services savings deposits	12,277	12,225	11,897
Death gratuities	3,352	3,158	2,886
Servicemen's group life insurance	17,263	2,175	1,301
Total direct obligations	33,131	17,810	16,300

1973 FUNDING

Chairman ELLENDER. For "Other military personnel costs" for fiscal year 1973, the amount requested is $16,300,000, a slight reduction from fiscal year 1972.

APPREHENSION OF DESERTERS

Of the four items under this head, the first is "Apprehension of Air Force deserters, absentees, and escaped military prisoners," for which $216,000 is requested. Describe what this money is used for.

General KIDD. This money is used to pay for expenses in connection with the apprehension of deserters, absentees, and escaped military prisoners and for their delivery to the control of the Department of Defense. These expenses include cost of subsistence while in civilian confinement, rewards, and cost of transportation, lodging, and subsistence of guards sent in pursuit of a member.

MILITARY ABSENTEES

Senator YOUNG. The justifications indicate that it is anticipated that 900 military absentees will be apprehended during the year. Would you provide for the record a tabulation showing the total number of absentees, deserters, and escaped military prisoners over a period of several years utilizing whatever format is available to the Department and indicating the number who have been apprehended also?

General KIDD. Yes, sir.

(The information follows:)

The following data reflects the total number of absentees and deserters and the number returned to military control for fiscal year 1967 through 1971. The number of escaped military prisoners is included in the deserters figures since they are immediately classified as deserters when they escape military confinement.

Fiscal year	Absentees	Rate per 1,000	Absentees return to military control	Deserters	Rate per 1,000	Deserters return to military control
1967	3,155	3.6	(1)	375	.4	359
1968	3,194	3.6	2,149	393	.4	374
1969	3,902	4.4	2,703	538	.6	357
1970	4,890	5.9	3,268	984	.8	772
1971	7,027	9.4	5,613	1,117	1.5	1,070

[1] Not available.

A breakout of the number of absentees and deserters who are apprehended as opposed to those who voluntarily return to military control is not available prior to fiscal year 1971. During fiscal year 1971, 1,459 (26 percent) absentees and 368 (34 percent) deserters were apprehended.

The costs associated with apprehending and returning members to military control for the past four fiscal years to include the payment of rewards, expenses and travel of guards are as follows:

Fiscal year:	*Amount*
1968	$134,000
1969	148,000
1970	175,000
1971	206,832

PUNISHMENT

Senator YOUNG. What is the general policy regarding punishment for apprehended personnel?

General KIDD. Since unauthorized absenteeism and desertion are military offenses under the Uniform Code of Military Justice, appre-

hended personnel are normally considered for disposition under the UCMJ. Additionally, they may be considered for administrative discharge action. The type action taken by the member's commander, after advice by the Judge Advocate, is based on several variables such as the nature of the offense, past duty performance, and prior disciplinary actions or court-martial convictions. Punishments received are based on similar considerations.

In the case of deserters, the Manual for Courts Martial 1969 (Revised) provides that, for a conviction of desertion where the absence is terminated by apprehension, the maximum imposable confinement is 3 years as opposed to 2 years if the absence is terminated otherwise.

INTEREST ON SAVINGS DEPOSIT PROGRAM

Chairman ELLENDER. The next item is "Interest on uniformed services savings deposit program" for which $11,897,000 is requested. Please describe this item.

General KIDD. Public Law 89-538, August 14, 1966, established the uniformed services savings deposit program for military personnel while overseas. It authorized 10 percent per annum interest payments on deposits from $5 to a maximum accumulation of $10,000. The funds requested are to provide for the interest on the deposits of participating Air Force members.

DEATH GRATUITIES

Chairman ELLENDER. For "Death gratuities" the estimate for fiscal year is $2,886,000. Under what conditions may a beneficiary receive the payment of $3,000?

General KIDD. Death gratuities are paid, regardless of how death occurred, to eligible beneficiaries of members who die while on active duty. Death gratuities consist of 6 months' basic pay, incentive and special pays (including proficiency and hostile fire pay) at the rate to which the decedent was entitled on date of death; however, the total may not exceed $3,000. Due to the recent pay increases, most 6 months' computations exceed the $3,000 maximum payment allowable.

CADET DECEDENTS

Chairman ELLENDER. Why were "Cadet decedents" omitted from the fiscal year 1973 justification?

General KIDD. It has not been the policy of the Air Force to forecast deaths of cadets due to the age bracket and the rarity of occurrences at the Academy in the past. Numbers shown for past years reflect actual occurrences, and have been small; three in fiscal year 1971; three to date in fiscal year 1972.

SERVICEMEN'S GROUP LIFE INSURANCE

Senator YOUNG. For the "Servicemen's group life insurance" program, the request for fiscal year 1973 is $1,301,000. Describe the recent change in the program.

General KIDD. The reduction in this program is directly related to the reduced level of combat activity in Southeast Asia. The funds re-

quired of the Air Force by the Veterans' Administration relate to the extra hazard cost of the insurance and fluctuate periodically to meet increases and decreases in the volume of claims received.

INTELLIGENCE ACTIVITIES

Chairman ELLENDER. On page 107 of the justifications, it is indicated that a total of 31,400 military personnel will be utilized in intelligence activities. This is a reduction from the 38,527 end strength in fiscal year 1971 and the 33,116 for fiscal year 1972. Please describe how this relates to the reductions made by the Congress in fiscal year 1972 of $20,500,000—$6,500,000 for intelligence personnel in general defense and $14 million in cryptographic programs.

General BERG. Our fiscal year 1972 estimate to the Congress was reduced by $6.5 million for general defense intelligence. To accomplish this reduction, we abolished 1,467 authorizations. The $14 million reduction in cryptologic activities was accomplished by abolishing 3,807 military authorizations. The end strength of the Air Force was reduced by like amounts.

SPECIAL ANALYSES

Chairman ELLENDER. The justifications also include a section entitled "Special analyses." The information contained in that section will be included in the record at this point.

(The information follows:)

SEC. 5—SPECIAL ANALYSES

	Fiscal year—		
	1971	1972	1973
1. Military personnel assigned to communications activities (end strengths):			
Officers	3,045	2,871	2,807
Enlisted	40,778	40,048	39,247
Total	43,823	42,919	42,054
2. Military personnel assigned to ADP activities (end strengths):			
Officers	1,729	1,762	1,720
Enlisted	12,101	12,332	12,040
Total	13,830	14,094	13,760
3. Military personnel assigned to intelligence activities (end strengths):			
Officers	5,112	4,481	4,219
Enlisted	33,415	28,635	27,181
Total	38,527	33,116	31,400

PERSONNEL ASSIGNED TO HEADQUARTERS ACTIVITIES

Chairman ELLENDER. At this point in the record, there will appear a tabulation of military and civilian personnel assigned to headquarters activities.

(The information follows:)

MILITARY AND CIVILIAN PERSONNEL ASSIGNED TO HEADQUARTERS ACTIVITIES (END STRENGTHS)

	Fiscal year 1971 actual				Fiscal year 1972 estimate				Fiscal year 1973 estimate			
	Military				Military				Military			
	Officers	Enlisted	Total	Civilians	Officers	Enlisted	Total	Civilians	Officers	Enlisted	Total	Civilians
Departmental administration:												
Air Force personnel assigned to other DOD activities:												
Office of Secretary of Defense	235	105	340	.....	238	106	344	.....	196	88	284	.....
Joint Chiefs of Staff	255	202	457	.....	257	201	458	.....	258	201	459	.....
Defense Nuclear Agency	48	30	78	.....	48	27	75	.....	48	27	75	.....
Defense Communication Agency	63	11	74	.....	56	9	65	.....	56	9	65	.....
Defense Intelligence Agency	18	8	26	.....	19	5	24	.....	19	5	24	.....
Defense Supply Agency	58	.....	58	.....	47	.....	47	.....	47	.....	47	.....
National Security Agency	11	2	13	.....	12	2	14	.....	12	2	14	.....
Subtotal	688	358	1,046	.....	677	350	1,027	.....	636	332	968	.....
Air Force personnel assigned to Air Force activities:												
Office of the Secretary of the Air Force	154	23	177	287	157	35	192	274	157	35	192	274
Air Staff	1,846	275	2,121	2,103	1,997	262	2,259	2,222	1,904	248	2,152	2,222
National Guard (Air Force)	51	2	53	139	42	2	44	155	42	2	44	155
Subtotal	2,051	300	2,351	2,529	2,196	299	2,495	2,651	2,103	285	2,388	2,651
Total, departmental	2,739	658	3,397	2,529	2,873	649	3,522	2,651	2,739	617	3,356	2,651

Major commands:												
Alaskan Air Command	113	100	213	89	147	206	353	141	147	206	353	141
Aerospace Defense Command	501	380	881	435	529	442	971	418	529	442	971	418
Air Force Communication Service	181	122	303	223	362	529	891	558	362	529	891	558
Air Force Logistics Command	368	153	521	2,006	366	106	472	2,146	366	106	472	2,146
Air Force Reserve	71	139	210	207	56	70	126	158	57	69	126	158
Air Force Systems Command	652	181	833	754	653	249	902	829	653	249	902	829
Air Training Command	387	298	685	431	498	354	852	612	498	354	852	612
Air University	87	82	169	83	59	27	86	60	59	27	86	56
Headquarters Command	66	179	245	58	57	101	158	64	57	101	158	64
Military Airlift Command	363	261	624	536	572	424	996	736	572	424	996	736
Pacific Air Forces	342	207	549	168	534	793	1,327	291	548	815	1,363	299
Strategic Air Command	898	642	1,540	431	1,263	1,074	2,337	592	1,263	1,074	2,337	592
Tactical Air Command	535	496	1,031	296	800	658	1,458	597	830	680	1,510	600
United States Air Forces Europe	523	538	1,061	366	616	608	1,224	402	606	583	1,189	392
United States Air Forces Southern Command	74	62	136	42	65	53	118	44	65	53	118	44
United States Air Force Security Service	173	287	460	223	200	364	564	276	200	364	564	276
Total, major commands	5,334	4,127	9,461	6,348	6,777	6,058	12,835	7,924	6,812	6,076	12,888	7,921
Unified commands:												
North American Air Defense Command	256	307	563	233	255	281	536	233	259	286	545	233
United States European Command	132	123	255	----------	147	125	272	----------	147	125	272	----------
Pacific Command	195	199	394	----------	159	145	304	----------	159	145	304	----------
United States Southern Command	31	26	57	----------	32	22	54	----------	32	22	54	----------
Alaskan Command	36	74	110	25	36	70	106	24	36	70	106	24
Readiness Command (Strike Command)	142	214	356	139	87	67	154	77	87	67	154	77
Atlantic Command	29	12	41	----------	28	12	40	----------	28	12	40	----------
Total, unified commands	821	955	1,776	397	744	722	1,466	334	748	727	1,475	334
Total, headquarters operations and administration [1]	8,894	5,740	14,634	9,274	10,394	7,429	17,823	10,909	10,299	7,420	17,719	10,906

[1] Includes Air University which was not in the headquarters activities table submitted for the fiscal year 1972 President's budget. Does not include the Air Force Military Personnel Center and the Air Materiel Area Headquarters which were in the table submitted for the fiscal year 1972 President's budget.

1. The preceding table includes only those military and civilian personnal assigned to Departmental and Major Command headquarters. The Air Force has reduced the aggregate number of military and civilian personnel assigned to its principal headquarters activities, which include those listed as well as the Intermediate headquarters immediately subordinate to the Major Commands, and those activities engaged in direct support of Departmental, Major Command and Intermediate headquarters. Functions and associated manpower heretofore assigned to the Field Extensions which should properly be a part of the Air Staff in consonance with the full spirit and intent of existing statutes governing the Air Staff role, have been realigned accordingly. Remaining functions and manpower heretofore assigned to the Field Extensions engaged in operating functions in the field have been realigned accordingly. These headquarters redefinitions, realignments, and resulting savings are based on Air Force studies initiated in FY 1971 which are being implemented incrementally in FY 1972 and FY 1973.

2. The studies cited were undertaken to achieve two key objectives. First to standardize the definition of "Headquarters" permitting an accurate assessment of true headquarters costs and second to reduce these headquarters costs. They addressed:

(*a*) Development of standardized definitions for headquarters staff functions, as opposed to support and operating functions, and function-by-function realignment/consolidation consistent with these definitions.

(*b*) Broad reduction and streamlining of intermediate headquarters (Numbered Air Forces, Air Divisions, and equivalent levels).

3. The following recapitulates the results on a "before" and "after" basis. The following defines the terminology utilized.

(*a*) The "Before Redefinition" columns depict the manpower array as it would have appeared before any reductions had the Air Force studies not been implemented.

(*b*) The "After Redefinition" columns depict the manpower array resulting from study implementation.

(*c*) The "Net Change" columns depict aggregate headquarters reductions consisting of:

(1) Manpower authorizations saved with commensurate cost reductions.

(2) Manpower authorizations associated with operating functions realigned to subordinate activities in the field.

(3) Changes resulting from the redefinition of what specific functions should be considered headquarters, headquarters direct support, and operating activities.

MILITARY AND CIVILIAN PERSONNEL

	Fiscal year 1971 actual	Fiscal year 1972 estimate			Fiscal year 1973 estimate		
		Before redefinition	After redefinition	Net change	Before redefinition	After redefinition	Net change
Office, Secretary of the Air Force	464	413	466	+53	466	466	.....
Field extensions	148	147	.....	−147	.....	.....	.....
Air Staff	4,224	3,876	4,481	+605	4,374	4,374	.....
Field extensions	14,851	14,933	.....	−14,933	.....	.....	.....
Subtotal	19,687	19,369	4,947	−14,422	4,840	4,840	.....
Headquarters, Alaskan Air Command	302	315	494	+179	494	494	.....
Direct support and intermediate headquarters	711	717	175	−542	175	175	.....
Subtotal	1,013	1,032	669	−363	669	669	.....
Headquarters, Aerospace Defense Command	1,316	1,333	1,389	+56	1,389	1,389	.....
Direct support and intermediate headquarters	1,443	1,336	1,334	−2	1,334	1,334	.....
Subtotal	2,759	2,669	2,723	+54	2,723	2,723	.....

MILITARY AND CIVILIAN PERSONNEL—Continued

	Fiscal year 1971 actual	Fiscal year 1972 estimate			Fiscal year 1973 estimate		
		Before redefinition	After redefinition	Net change	Before redefinition	After redefinition	Net change
Headquarters, Air Force Communications Service	526	529	1,449	+920	1,449	1,449	
Direct support and intermediate headquarters	3,370	4,056	2,471	−1,585	2,471	2,471	
Subtotal	3,896	4,585	3,920	−665	3,920	3,920	
Headquarters, Air Force Logistics Command	2,527	2,570	2,618	+48	2,618	2,618	
Direct support and intermediate headquarters	2,621	2,862	1,614	−1,248	1,614	1,614	
Subtotal	5,148	5,432	4,232	−1,200	4,232	4,232	
Headquarters, Air Force Reserve	417	423	284	−139	284	284	
Direct support and intermediate headquarters	31	289	364	+75	364	364	
Subtotal	448	712	648	−64	648	648	
Headquarters, Air Force Systems Command	1,587	1,628	1,731	+103	1,731	1,731	
Direct support and intermediate headquarters	1,994	2,051	1,803	−248	1,803	1,803	
Subtotal	3,581	3,679	3,534	−145	3,534	3,534	
Headquarters, Air Training Command	1,116	1,134	1,464	+330	1,464	1,464	
Direct support and intermediate headquarters	1,440	1,611	1,123	−488	1,123	1,123	
Subtotal	2,556	2,745	2,587	−158	2,587	2,587	
Headquarters, Air University	252	258	146	−112	142	142	
Direct support and intermediate headquarters			87	+87	87	87	
Subtotal	252	258	233	−25	229	229	
Headquarters, Headquarters Command	303	306	222	−84	222	222	
Direct support and intermediate headquarters		70	116	+46	116	116	
Subtotal	303	376	338	−38	338	338	
Headquarters, Military Airlift Command	1,160	1,154	1,732	+578	1,732	1,732	
Direct support and intermediate headquarters	2,110	2,033	1,306	−727	1,306	1,306	
Subtotal	3,270	3,187	3,038	−149	3,038	3,038	
Headquarters, Pacific Air Forces	717	749	1,618	+869	1,618	1,662	+44
Direct support and intermediate headquarters	4,859	4,847	4,272	−575	4,272	3,427	−845
Subtotal	5,576	5,596	5,890	+294	5,890	5,089	−801
Headquarters, Strategic Air Command	1,971	1,974	2,929	+955	2,929	2,929	
Direct support and intermediate headquarters	3,961	3,914	2,757	−1,157	2,757	2,757	
Subtotal	5,932	5,888	5,686	−202	5,686	5,686	
Headquarters, Tactical Air Command	1,327	1,366	2,055	+689	2,110	2,110	
Direct support and intermediate headquarters	2,412	2,308	1,741	−567	1,741	1,741	
Subtotal	3,739	3,674	3,796	+122	3,851	3,851	
Headquarters, U.S. Air Forces Europe	1,427	1,357	1,626	+269	1,581	1,581	
Direct support and intermediate headquarters	1,012	1,132	790	−342	790	790	
Subtotal	2,439	2,489	2,416	−73	2,371	2,371	

MILITARY AND CIVILIAN PERSONNEL—Continued

	Fiscal year 1971 actual	Fiscal year 1972 estimate			Fiscal year 1973 estimate		
		Before redefinition	After redefinition	Net change	Before redefinition	After redefinition	Net change
Headquarters, U.S. Air Forces Southern Command	178	179	162	−17	162	162	
Direct support and intermediate headquarters			97	+97	97	97	
Subtotal	178	179	259	+80	259	259	
Headquarters, U.S. Air Force Security Service	683	683	840	+157	840	840	
Direct support and intermediate headquarters	1,218	1,505	563	−942	563	563	
Subtotal	1,901	2,188	1,403	−785	1,403	1,403	
Total	62,678	64,058	46,319	−17,739	46,218	45,417	−801
SUMMARY (EXCLUDES OSD, JCS, DEFENSE AGENCY HEADQUARTERS, AND ALL UNIFIED COMMANDS)							
Office, Secretary of the Air Force/Air Staff	4,688	4,289	4,947	+658	4,840	4,840	
Field extensions	14,999	15,080		−15,080			
Major command headquarters	15,809	15,958	20,759	+4,801	20,765	20,809	+44
Direct support and intermediate	27,182	28,731	20,613	−8,118	20,613	19,768	−845
Summary total	62,678	64,058	46,319	−17,739	46,218	45,417	−801

ATTAINMENT OF HEADQUARTERS REDUCTIONS IN PERSONNEL

Chairman ELLENDER. The subcommittee has reviewed the data submitted by the Air Force showing reductions in headquarters staffs in fiscal year 1972 and fiscal year 1973. How will these reductions be attained?

Colonel POSNER. Throughout the Air Force, we have already completed or will complete in the remaining months of fiscal year 1972 and and in fiscal year 1973 the broad Air Force initiatives undertaken in fiscal year 1971 to streamline our headquarters management structure. This effort entailed fundamental restructuring of each of our principal command and management echelons. It was motivated by concern over headquarters manpower and dollar costs, congressional, OSD, and USAF desire, to reduce and economize apparent duplications in existing management structure, absence of an accepted and widely understood headquarters definition, and existing organizational misalinement of headquarters staff versus operating and support functions.

The key to the entire effort has been our function-by-function analysis of headquarters activities, in order to arrive at an accurate identification of, and accounting for, properly constituted headquarters staff functions as opposed to support/operating functions properly a part of field organizations. Standardized definitions of headquarters staff versus support and operating functions were developed, with particular emphasis upon the correct organizational level to which the respective functions should be assigned.

These and related headquarters cost and realinement actions will dispel past difficulties in effectively managing the Air Force headquarters structure, will result in worthwhile manpower savings, and will lay the foundation for more cost-effective headquarters organization and sizing.

ELEMENTS INCLUDED IN HEADQUARTERS DEFINITION

Chairman ELLENDER. You have stated that each of the principal command and management echelons of the Air Force was addressed in the course of this project. Precisely which elements of the Air Force are included in the definition of principal command and management echelons, and how have they been affected by this project in fiscal year 1971, fiscal year 1972, and fiscal year 1973?

Colonel POSNER. Our principal command and management echelons are defined to include headquarters elements at departmental, major command, and intermediate levels, and direct support activities at major command and intermediate levels. Our most significant manpower reductions and savings were realized at intermediate level, and I will address this level first.

Intermediate headquarters are being streamlined to an operational configuration, by either eliminating or significantly reducing staff management functions such as personnel, comptroller, civil engineering, material, administration, intelligence, Judge Advocate General, surgeon, history, inspector general, and information. Our intermediate headquarters are defined as numbered air forces, air divisions, and similar intermediate command and management echelons between the major command headquarters and the operational units in the field. Staff management functions heretofore accomplished at the intermediate level will be streamlined and centralized for accomplishment at the major command level. As a result, and on the basis of thorough function-by-function analysis, some functional centralization at major command level has taken place, with a commensurate increase in manpower resources at major command level devoted to those functions.

The actions taken at major command level were dedicated to the proposition that such headquarters should be composed solely of staff functions. Operating and support functions are being realined to base organizations or, in the case of headquarters direct support function, to the headquarters support squadrons. The duties being performed by personnel assigned to base level activities that were directly supervised by the major commands or their support squadrons were reviewed. Those that met the criteria of staff functions were realined to the major command headquarters proper; those that were in direct support of the major command headquarters were realined to their support squadrons. All of these actions will result in a more effective management structure that is clearly defined, permitting accurate headquarters cost accounting and sizing.

Our review of departmental headquarters (that is, Office of the Secretary of the Air Force, and the Air Staff) and our field extensions, was dedicated to essentially the same fundamental objectives as outlined

above. Departmental staff functions heretofore carried in the field extensions have been realined to departmental headquarters together with 739 associated manpower authorizations. Offsetting manpower reductions and savings have concurrently been effected within departmental headquarters, and approximately 50 manpower authorizations associated with operating and support functions have also been realined to the field. As a result, there has been a small net increase in the size of departmental headquarters. As in the case of lower headquarters echelons, there will be a complete and accurate identification and accounting in future of properly constituted departmental headquarters staff functions.

The field extension organizational concept heretofore employed within the Air Force is being entirely eliminated. All field extension functions and manpower authorizations remaining after realining pure staff functions to departmental headquarters as outlined above, are being realined to field commands. A total of more than 14,000 manpower authorizations associated with a broad array of operating and support functions, the vast bulk of which are geographically dispersed throughout the United States and overseas, are involved. Four new separate operating agencies have been established consisting of some 6,500 manpower spaces. They include: Air Force Audit Agency, Norton AFB, Calif.; Air Force Inspection and Safety Center, Norton AFB, Calif.; Air Force Office of Special Investigations, dispersed throughout the world with a small operating staff at Washington, D.C.; and Air Force Military Personnel Center, Randolph AFB, Tex. The balance of the manpower authorizations and functions heretofore carried in the field extensions are being transferred to major commands and separate operating agencies. All of these field extension realinements are being effected concurrent with imposed manpower reductions or savings identified in the course of our extensive headquarters costing studies.

I would like to insert in the record a statistical summary reflecting the results of these actions. Fiscal year 1971 actual headquarters personnel strength in each of the activities concerned constitutes our base line. The fiscal year 1972 and fiscal year 1973 data shown represent our estimated personnel strengths in each of the activities concerned, after implementing the reductions and realinements described above.

(The information follows:)

	Fiscal year—		
	1971 actual	1972 estimate	1973 estimate
Departmental headquarters	4,688	4,947	4,840
Field extensions	14,999	.....	.....
Major command headquarters	15,809	20,759	20,809
Support squadrons	11,447	6,707	6,707
Intermediate headquarters	15,154	13,292	13,061
Support squadrons	581	614	.....
Total	62,678	46,319	45,417

ACTUAL MANPOWER SAVINGS

Chairman ELLENDER. These data on page 109e show a net manpower reduction of 16,359 in fiscal year 1972, and 902 in fiscal year 1973. How much of these reductions represent true manpower savings in each fiscal year, and did these savings meet the objectives established by this committee for fiscal year 1972?

Colonel POSNER. I will provide that information for the record.

(The information follows:)

The following statistical summary below shows the actual savings realized at each of our three principal headquarters echelons.

	Fiscal year—	
	1972 estimate	1973 estimate
Departmental headquarters and field extensions	83	
Major command and support squadrons	80	
Intermediate and support squadrons	1,013	801
Total	1,176	801

Mr. Chairman, please note that these are our initial estimates of the manpower savings which will be realized as a result of this extensive project. We believe that additional manpower savings will accrue as commanders gain additional experience under the new structure. But we believe it is imperative that in the near term, we allow our management structure to "settle down" in its overhauled configuration. The other alternative is to impose arbitrary percentage reductions, an alternative which the Congress specifically cautioned against during the FY 71 and FY 72 Appropriations Act proceedings.

Our fiscal year 1972 initial manpower savings estimate of 1,176 personnel exceeds the headquarters cost dollar reductions directed by the Congress last year of $3.6 million in the O&M Appropriation, and $2 million in the Military Personnel, Air Force, Appropriation, as indicated below:

Fiscal year 1972 estimate

	Amount
Civilian manpower savings	$506
Military manpower savings	670
Aggregate manpower savings	1,176
O. & M. appropriation savings	3,600,000
Military personnel, Air Force, appropriation savings	3,400,000
Aggregate appropriation savings	7,000,000

INTERMEDIATE LEVEL SUPPORT SQUADRON MANPOWER ELIMINATION

Chairman ELLENDER. I note that support squadrons at major command level will continue to account for over 6,700 manpower authorizations through fiscal year 1973, while support squadron manpower at intermediate level is completely eliminated in fiscal year 1973. Why is that?

Colonel POSNER. Major command headquarters are relatively large organizations directing and managing a major segment of the total Air Force mission. As such, their direct support requirement is relatively large and clearly defined. Intermediate headquarters, on the other hand, are established to reduce the span of control of the major

commanders with respect to operational matters. They are usually small organizations, and require little direct support. This support can easily be provided by the operating activity with which they are located. In those few instances where this is not the case, the direct support is or will be included in the intermediate headquarters proper. Our last three support squadrons at intermediate headquarters level will be eliminated by end fiscal year 1973.

PROPER IDENTIFICATION OF HEADQUARTERS ACTIVITIES

Chairman ELLENDER. Reasonable consistency in defining those organizations and functions which properly constitute headquarters activities has clearly been lacking in the past. Do your current definitions assure reasonable consistency from command to command within the Air Force?

Colonel POSNER. Yes, sir. Personnel performing headquarters staff functions and those performing direct headquarters support functions are not accurately identified. Consistency in unit designations has been a prime objective in the course of our headquarters actions. The initial steps we have thus far taken will allow greater accuracy in costing and sizing our headquarters functions in the future. We are certain that our planned follow-on refinements of Air Force headquarters organizational doctrine will allow further savings, predicated on analyses of the manpower resources dedicated to essentially similar functions from command to command.

MILITARY PERSONNEL ASSIGNED TO ACTIVITIES OUTSIDE THE SERVICE

Chairman ELLENDER. At this point in the record, there will appear a tabulation entitled "Military Personnel Assigned to Activities Outside the Military Service."

(The information follows:)

MILITARY PERSONNEL ASSIGNED TO ACTIVITIES OUTSIDE THE MILITARY SERVICE (END STRENGTHS)

	Fiscal year 1971			Fiscal year 1972			Fiscal year 1973		
	Officer	Enlisted	Total	Officer	Enlisted	Total	Officer	Enlisted	Total
Other Department of Defense activities:									
Office Secretary of Defense	241	105	346	244	106	350	202	88	230
(Research and Development)	(21)	(7)	(28)	(36)	(10)	(46)	(35)	(10)	(46)
Joint Chiefs of Staff	255	202	457	257	201	458	258	201	459
Defense Nuclear Agency	173	454	267	144	122	266	136	111	247
(Research and Development)	(35)	(41)	(77)	(37)	(36)	(73)	(37)	(36)	(73)
Defense Communication Agency	199	354	553	201	363	564	201	363	564
(Research and Development)		(3)	(3)	(2)	(5)	(7)	(2)	(5)	(7)
Defense Intelligence Agency	452	394	846	483	369	852	452	340	792
National Security Agency	306	1, 275	1, 581	297	1, 772	2, 069	297	1, 772	2, 069
(Research and Development)	(73)	(5)	(78)	(71)	(3)	(74)	(71)	(3)	(74)
Defense Supply Agency	368	40	408	365	43	408	365	43	408
(Research and Development)	(1)		(1)	(1)		(1)	(1)		(1)
Total, other Department of Defense activities	1, 994	2, 824	4, 818	1, 991	2, 976	4, 967	1, 911	2, 918	4, 829
(Research and Development)	(131)	(56)	(187)	(147)	(54)	(201)	(147)	(54)	(201)
Other Government agencies (reimbursable):									
Air Intelligence	1	13	14		9	9		9	9
Federal Aviation Administration	30	14	44	30	14	44	30	14	44
Selective Service	50		50	50		50	50		50
Intelligence HQS USAF only	1		1						
U.S. Arms Control	16		16	9		9	9		9
Heavy Hook	1		1	2		2	2		2
Door Hinge		12	12						
AID State Department	1		1	1		1	1		1
Heavy Blue	1	1	2	1	1	2	1	1	2
Department of Transportation	5		5	2		2	2		2
Slow Curve	100	145	245	76	138	214	76	138	214
National Aerospace Administration (NASA)	250	377	627	124	160	284	76	114	190
Assistant General Manager for Military Application	3		3	3		3	3		3
Heavy Sand	8	86	94	10	111	121	10	111	121
Opalacka, Fla	5	3	8						
Department of Labor	2	5	7		5	5		5	5
Smithsonian Institution		1	1		1	1			
National Aero Space Council	3		3	2		2	2		2
Joint Economic Commission	1		1	1		1			
Voice of America	1		1	1		1	1		1
Health, Education, and Welfare	1		1	1		1	1		1
GSA, ADP Simulation Center							11		11
Department of Justice				1		1	1		1
Total, other Government agencies (reimbursable)	480	657	1, 137	314	439	753	276	392	658

MILITARY PERSONNEL ASSIGNED TO OTHER SERVICES

Chairman ELLENDER. The tabulation under "Special activities" includes a chart that shows that 4,829 Air Force military personnel are assigned to other Defense Department activities. Of these, 2,918 are enlisted personnel. Generally speaking, what are the duties of these personnel?

General BERG. These enlisted personnel are authorized to the following Defense agencies: Office of Secretary of Defense, Joint Chiefs of Staff, Defense Supply Agency, National Security Agency, Defense Intelligence Agency, Defense Nuclear Agency, and Defense Communication Agency. They support the mission of their respective agency by performing duties which are generally applicable to all agencies, such as administrative clerical, logistics, computer programming, and communications. Some duties which are exclusively performed by certain agencies are as follows:

Enlisted personnel authorized to the Defense Supply Agency perform services on contract administration, procurement, supply control, storage, and inventory.

Enlisted personnel authorized to the National Security Agency perform security and intelligence functions in connection with cryptologic activities.

Enlisted personnel authorized to the Defense Intelligence Agency perform operational intelligence duties associated with the collection and production of intelligence data, security, and automatic data processing. They are also employed in overseas assignments as part of the Defense attaché system.

Enlisted personnel authorized to the Defense Nuclear Agency perform various functions in support of nuclear weapons; such as, allocation, storage, maintenance, retirement, and geographic inventory.

Enlisted personnel authorized to Defense Communication Agency monitor Defense communication systems, operate computers for national military command support systems, assist in providing Presidential communications, and support JCS and OSD war gaming.

MILITARY PERSONNEL ASSIGNED TO R. & D.

Senator YOUNG. What in a broad sense would the 54 enlisted personnel be doing in research and development activities?

General BERG. I will furnish that for the record.

(The information follows:)

The 54 enlisted personnel authorized to Research and development activities provide such services as: operating computers and preparing machine listings on various R. & D. programs, performing duties as medical laboratory technicians, maintaining records on nuclear and biological programs, providing clerical assistance to the Weapons Systems Evaluation Group and performing clerical duties at the Advanced Research Project Agency.

MILITARY PERSONNEL ASSIGNED TO NASA

Chairman ELLENDER. I note that 228 military personnel are used by NASA. Describe in general terms their functions.

General BERG. Sir, these Air Force people supply a wide range of Air Force skills to NASA. Included are the Air Force astronauts,

medical and dental officers, veterinarians, optometrists, electrical engineers, mechanical engineers, aeronautical engineers, astronautical engineers, physiological training specialists, computer system design engineers, bioenvironmental engineers as well as a group who operate the Air Force Eastern Test Range. This latter group accomplishes such functions as flight operations, range instrumentation and data analysis in support of the NASA mission.

MILITARY PERSONNEL ASSIGNED TO LABOR DEPARTMENT

Chairman ELLENDER. How are the five enlisted personnel utilized by the Department of Labor?

General BERG. The Department of Labor has opened skill centers in various communities in the United States. These airmen are assigned to the Job Corps vocational training section and are utilized in developing instructional materiels and systems for administering on the job vocational training programs. These airmen were selected to write these instructional manuals because of their Air Force experience in developing training manuals and aids.

MILITARY PERSONNEL ASSIGNED TO NATO

Chairman ELLENDER. Military personnel utilized include 61 in Military Assistance in Iran, Germany and phase III of NATO. Describe generally the function of the 24 officers so assigned.

General BERG. These authorizations are all in support of the military sales program and as such are reimbursed through military sales. The officers associated with Iran support the sale of F–4's to that country. They primarily perform a training function on the F–4 for that country.

The three officers in Germany are performing a training function in connection with the sale of electronic components to the German Air Force.

The phase III of NATO requiring 15 officers is to support the evaluation, source selection, contract award, development management, procurement, launch, and on orbit support for the satellites in the NATO communication system.

MILITARY PERSONNEL ASSIGNED TO IRAN

Chairman ELLENDER. The remaining 37 enlisted personnel are provided to Iran for technical assistance. Please indicate their function.

General BERG. These enlisted personnel support the military sales program and perform a maintenance training function for the Iranians on the F–4 aircraft sold to that country.

FORCE STRUCTURE CHANGE

Senator YOUNG. Please indicate for the record any major force structure changes in the past year.

General BERG. Major force structure changes supporting the fiscal year 1973 budget since the amended fiscal year 1972 budget are as follows:

Strategic Defensive Forces.—Transfer F–106 squadrons to Air National Guard and inactivate BOMARC and BUIC sites.

Tactical Air Forces.—One fighter squadron, three reconnaissance squadrons and one airlift squadron transferred to Air Reserve Forces; one tactical electronics warfare squadron and one special operations force squadron phased out.

Air Reserve Forces.—Maintained 92 flying units in the Air National Guard and 54 flying units in the Air Force Reserve, and modernized with more modern aircraft from the Active Forces.

CHANGES IN PERSONNEL STRENGTH

Chairman ELLENDER. As you have in the past, would you please provide the committee with a step-by-step tabulation of all major changes in personnel strength since submission of the fiscal year 1972 request.

General BERG. I will be happy to do so. The fiscal year 1973 military personnel and strength of 717,210 contained in this year's budget submission reflects a reduction of 35,572 from our budget request of last year for end fiscal year 1972 of 752,782. Although this reduction results from a multitude of workload adjustments, the major changes in personnel strength were caused by the following actions.

Adjustments in military personnel

Item	
Fiscal year 1972 congressional reductions (authorization bill reductions and reductions in intelligence, headquarters and public affairs directed in the appropriations bill)	−8,700
Further intelligence reductions	−1,716
Further headquarters reductions	−735
Phaseout or transfer from the active force of strategic forces weapons systems	−6,270
Missile modification/conversion	+1,075
Phaseout or transfer from the active force of tactical aircraft and capabilities reduction	−10,329
Reduced strategic airlift flying hours and crew ratios	−5,650
Increase in nonprior service procurement	+3,932
Reduction in undergraduate pilot training	−2,226
Overseas base reductions	−5,193
Reduction of weather and rescue aircraft	−945
Increases for social action programs (for example, drug abuse and race relations)	+1,916

SERVICE REQUEST FOR 1973

Chairman ELLENDER. Please provide the committee with a statement describing the original request made by the Department for fiscal year 1973 for this appropriation together with any guidelines preimposed.

General DE LUCA. The original Air Forces estimate for this appropriation was $7,121 million. The Air Force estimate was based upon a military end strength of 731,062 with 742,546 man-years. These requirements were developed based upon broad program guidelines. The estimate included costs of the October 1, 1971, pay raise and Project Volunteer requirements which did not require legislation.

As a result of various program adjustments, the Office of the Secretary of Defense approved $7,251.1 million for this appropriation together with a military end strength of 717,210 and 727,010 man-years. This estimate also includes the full year cost of the January 1, 1972, pay increase authorized by Executive Order 11638.

ROTATION TO SOUTHEAST ASIA

Senator YOUNG. Last year the rotation policy to Southeast Asia was described in some detail. Has there been any change in that policy in the interim?

General KIDD. There has been no change in the rotation policy in the last year. Air Force personnel still serve an unaccompanied 12-month tour in Southeast Asia.

SUPPORT OF FREE WORLD FORCES

Chairman ELLENDER. Are any funds included for fiscal year 1973 for the support of free world forces in this appropriation?

Mr. HENSHAW. No, sir. The military personnel, Air Force, appropriation does not include funds specifically for the pay and allowances of free world forces.

VIETNAM CASUALTIES

Senator YOUNG. For the record, would you please provide a listing on the Vietnam casualties since the inception of the conflict.

General KIDD. Yes, sir.

(The information follows:)

During the period January 1, 1961 through January 1, 1972, the following casualties occurred:

Hostile deaths	910
Nonhostile deaths	878
Wounded	3,142
Currently missing	577
Currently captured or interned	240
Total	5,747

MISSING IN ACTION AND PRISONERS OF WAR

Senator YOUNG. Also for the record would you provide a tabulation of officers and airmen who are missing in action and prisoners of war.

General KIDD. Yes, sir.

(The information follows:)

	Missing	Captured[1]	Total
Officers	523	233	756
Airmen	54	7	61
Total	577	240	817

[1] As of January 1972.

MILITARY MISSION PERSONNEL

Chairman ELLENDER. Please indicate the number of military mission personnel you are budgeting for in fiscal year 1973 and the total cost of such.

General DE LUCA. In fiscal year 1973, 989 military personnel, 482 officers and 547 enlisted, have been budgeted for the military missions. The total cost of these personnel is estimated to be $12.1 million.

FOREIGN CIVILIAN EMPLOYEES

Chairman ELLENDER. Please provide for the record the number of foreign civilian employees paid by your department and designated by country.

General BERG. Yes, sir.

(The information follows:)

Foreign employees—Department of the Air Force fiscal year 1973 budget

Country:	
Denmark	7
France	5
Germany	9,066
Greece	349
Iceland	19
Italy	596
Netherlands	71
Norway	35
Portugal	884
Spain	705
Turkey	525
United Kingdom	1,824
Japan	6,198
Philippine Islands	2,525
Ryukyu Islands	2,097
South Korea	1,292
Taiwan	872
Ethiopia	2
Iran	9
Canada	145
Panama	651
Other	5,543
Total	33,420

PAY ACT INCREASES

Chairman ELLENDER. Would you please provide a tabulation that will indicate the effective date and cost of all pay act increases in fiscal years 1971, 1972 and 1973?

General DE LUCA. I'll be glad to.

(The information follows:)

Authority	Effective date	Fiscal year 1971	1972	1973
Executive Order 11577 (Public Law 92-207)	Jan. 1, 1971	$179.7	$345.0	$331.0
Public Law 92-129	Oct. 1, 1971 [1]		345.8	537.4
Executive Order 11638 (Public Law 92-210)	Jan. 1, 1972		184.6	356.4
Total		179.7	875.4	1,224.8

[1] Delayed by price freeze to Nov. 14, 1971.

FLIGHT WAIVER PROVISIONS

Chairman ELLENDER. How do these numbers compare with those who received flight pay under this provision a year ago?

General KIDD. The number of personnel whose minimum flight requirements will be waived under the provisions of the fiscal year 1972 Appropriations Act has not been determined pending receipt of implementing instructions from the Office of the Secretary of Defense.

PROJECT 100,000

Senator YOUNG. Please address yourself to any changes that have taken place in Project 100,000 in the past year, including a description of what the project is attempting to accomplish and the effect, if any, that the introduction of the concept has had on the service.

General KIDD. Project 100,000 began on October 1, 1966, with the announcement by the Secretary of Defense that the services would accept men for enlistment who previously would have been rejected for mental or physical reasons. Mandatory enlistment quotas for each military service were established by the Department of Defense (DOD). On December 1, 1971, DOD discontinued the mandatory quotas for enlistment of Project 100,000 men. Section 744 of the DOD Appropriations Act of 1972 (Public Law 92-204), stated in part, "None of the funds in this Act shall be available for the induction or enlistment of any individual into the military service under a mandatory quota based on mental categories." Consequently, on January 14, 1972, DOD canceled all mental group IV quotas.

Controlling the input and utilization of personnel enlisting under Project 100,000 has been difficult as their qualifications limit their technical training and duty assignment. Under the current concept of a volunteer, highly trained professional force, it is essential that we recruit those individuals with the necessary potential for success. Because of the mental requirements which the individuals must meet to be categorized under Project 100,000, an extensive amount of time has been spent locating and recruiting people to meet mandatory quotas. Elimination of these mandatory quotas will now permit recruiters to direct their efforts to recruiting only those personnel who fully meet the needs of the Air Force.

PROJECT TRANSITION

Senator YOUNG. Has there been any significant changes in Project Transition in the past year?

General KIDD. Yes, sir. In June 1971, the President directed the Labor Department to work with the Defense Department and expand the transition program. Defense, in turn, directed implementation of four plans to comply with the President's direction. As it affects the Air Force, plan 1 required the establishment of full transition services overseas by October 1971. This involved 41 new overseas transition units and 138 additional people to provide counseling, education, training, résumé preparation and job finding assistance to members being returned to the United States for separation or retirement. Plan 2 called for support of the drug abuse rehabilitation program which the Air Force accomplishes with existing transition program resources in the transition unit at Lackland Air Force Base, Tex., site of the Air Force Special Treatment Center. Plan 3 required vocational training of eligible U.S.-based members (those within 6 months of separation/retirement) to be expanded 50 percent, and plan 4 directed establishment of a skill center to provide training into nationally marketable skills for those personnel without useable skills who are returning from overseas, or based at remote U.S. installations where transition training is not available. The Air Force Skill Center was

opened January 10, 1972, with the Department of Labor, through the Department of Health, Education, and Welfare, providing courses under the Manpower Development and Training Act. Currently, 13 classes in 11 different skills are being taught at the skill center. Plans are being made to conduct 15 classes in 13 different skills in fiscal year 1973 to provide an annual student production of approximately 1,500 students.

Senator YOUNG. Are you still carrying on Project Transition activities at McGuire and Travis Air Force Bases?

General KIDD. The overseas transition program officers (OTPO's) provide transition services to overseas based personnel by correspondence. The McGuire office was deactivated October 1, 1971, and its functions were assumed by the overseas transition program office at Travis Air Force Base. The Travis office will be deactivated June 1, 1972. Forty-one new overseas transition units were established October 27, 1971, and personnel returning to the United States in June 1972 and thereafter will be assisted at the overseas base where they are assigned. McGuire and Travis base transition offices are now obligated to provide transition service only for personnel assigned to these two activities respectively.

Senator YOUNG. How would you equate the effectiveness of the program?

General KIDD. Our feedback from individuals and commands indicate that the program is highly effective. The program's facilities provide actual job offers nationwide to terminating servicemen, which is a credible base for them to use electing whether to pursue a military or civilian career. This helps to dispel tales of grandiose salaries in civilian enterprise and assists our overall reenlistment program. It is also a means by which returning veterans can find job opportunities and thereby helps reduce unemployment by direct job placement. During fiscal year 1972, the Air Force expects to train approximately 14,000 personnel, whose Air Force skill is not readily employable, into nationally marketable skills. An additional 2,400 are expected to be trained through the Air Force Skill Center, and skill-center-type programs at U.S. bases conducted under the Manpower Development and Training Act. The Air Force plans to continue current efforts in fiscal year 1973 to facilitate direct employment of terminating Air Force members and help to reduce unemployment.

GAO REPORT ON TEMPORARY LODGING ALLOWANCE (TLA)

Chairman ELLENDER. The General Accounting Office, in a survey of the temporary lodging allowance for military personnel assigned to duties at overseas locations, found that Air Force "operating expenses had increased due to the absence of good administrative and managerial procedures, the uneconomical use of Government facilities, and the failure of responsible management officials at both the major command and installation levels to actively pursue available cost reduction alternatives."

The Auditor General recommended certain corrective measures. These are as follows:

"Establish necessary controls and procedures and designate records with which to manage and administer the TLA program at the installation level;

"Request overseas major commands to insure that their subordinate units recognize the potential TLA savings that can be realized if existing Government facilities are used more effectively;

"Advise major commands to require that overseas installation commanders accomplish an annual study to identify the causes for TLA payments. When appropriate, installation commanders should explore the feasibility of implementing various TLA cost-avoidance actions;

"Require that overseas major commands assist installation commanders in implementing feasible TLA cost-avoidance actions; and

"Request that the joint travel regulations be amended to eliminate the important entitlement inequity concerning the availability and use of cooking facilities, and further request that appropriate changes to the regulations be made to describe more clearly the necessary prerequisities for TLA entitlements and to provide reviewing officials with a better method by which to determine whether members are entitled to TLA."

Please describe how this problem arose.

General KIDD. The problem results primarily from a shortage of readily available family-type Government quarters, temporary Government quarters, and adequate permanent-type economy quarters at many of our overseas installations. As a result, members and families must use temporary economy accommodations during the period they are completing arrangements for permanent quarters. Also, members and families must use temporary accommodations during periods immediately preceding their departure from overseas installations when they are required to vacate permanent quarters prior to their actual departure date from the overseas area. The TLA is authorized to partially reimburse members for the more than normal expenses incurred at hotel or hotel-like accommodations and public restaurants during these periods.

Chairman ELLENDER. Does the Department of the Air Force agree with the findings of the General Accounting Office?

General KIDD. Yes; the Air Force has been taking aggressive action to improve TLA payment procedures since the release of the USAF Auditor General's report of audit in early 1970. It should be recognized that the recent GAO report essentially recalls their audit findings of 1964 and 1965, and those of the USAF Auditor General, with no attempt to infer—or revalidate—that these conditions currently exist within the Air Force.

Chairman ELLENDER. What corrective measures have been taken?

General KIDD. In response to the Air Force Auditor General report, the Air Force Chief of Staff sent a letter to all overseas major commands addressing the management and administration of TLA; to reduce TLA payments, Air Force directives were revised emphasizing the effective utilization of available Government facilities; for management purposes, a standardized certificate was developed for use in establishing members' TLA entitlements; guidance and implementing instructions to all overseas commands regarding leasing of transient accommodations in lieu of paying TLA were included in the USAF "call" (instructions) for fiscal year 1972 operations operating budget; recommendations for amending the joint travel regulations to provide more effective guidance for determining TLA entitlements were submitted to the Per Diem, Travel, and Transpor-

tation Allowance Committee; a project for construction of a 100-unit temporary lodging facility at Hickam Air Force Base, Hawaii, was included in the fiscal year 1972 military construction program, but was disapproved by the Armed Services Committees. The proposal for construction of this facility was justified strictly on the basis of a cost savings in appropriated funds (TLA). Based on the TLA expenditures which could have been avoided, the cost of this facility, $1.7 million, could have been amortized over a period of approximately 2 years.

Chairman ELLENDER. I can understand how this situation might arise in a period when a military department is locating in a new country or installation, but do not understand why it would arise after years of activity abroad. Would you comment?

General KIDD. The extent of the TLA problem was not completely evident until the accomplishment of an extensive audit by the USAF Auditor General in 1969 at 14 oversea locations. Previous GAO coverage concentrated on Naples, Italy; Hawaii and London, England. In the case of Hawaii, had the construction of the temporary lodging facility at Hickam AFB been approved, TLA payments could have been significantly reduced. The fundamental basis of the TLA problem is a lack of adequate temporary government accommodations and shortages of permanent and economy housing for our military families transiting to and from our oversea installations. In this regard, our uncertain tenure and flexibility in basing posture at some locations has caused construction restraints. TLA problems sometimes result from oversea mission oriented requirements involving base reductions and intra-theater unit relocations. These relocations, in many cases, are to areas where permanent housing is not immediately available. We also experience unanticipated relocations of this nature which impact upon what we consider stabilized programs. For example, during the time frame involved we faced the problem of mass relocation of units because of the need to withdraw from France, and thus, large numbers of people were transferred within Europe.

Chairman ELLENDER. Does not the Air Force have a system of internal checks designed to prevent such occurrences?

General KIDD. Yes. Each oversea commander has the fundamental responsibility to insure that TLA payments are fully justified and that all appropriate actions are taken to minimize these expenditures. In addition, TLA authorizations for periods beyond those basic periods contained in the Joint Travel Regulations must be approved by the appropriate major air command. Both The Inspector General and the Auditor General of the Air Force provide an inspection or audit surveillance to insure that procedures governing the use and/or control of government funds are adequate and that responsible personnel comply with established procedures.

Chairman ELLENDER. Thank you very much, General Kidd.

General KIDD. Thank you, Mr. Chairman.

STATEMENT OF MAJ. GEN. HOMER I. LEWIS, CHIEF, AIR FORCE RESERVE

ACCOMPANIED BY:

MAJ. GEN. JOSEPH R. DeLUCA, DIRECTOR OF BUDGET, HEADQUARTERS, U.S. AIR FORCE

BRIG. GEN. DONALD J. CAMPBELL, DEPUTY TO THE CHIEF OF AIR FORCE RESERVE

MAJ. GEN. JAMES A. HILL, DIRECTOR OF AEROSPACE PROGRAMS, DCS/PROGRAMS AND RESOURCES

COL. ORLANDO P. LORETTI, COMPTROLLER, OFFICE OF AIR FORCE RESERVE

MAJ. BRUCE J. PETERSON, EDUCATION PROGRAMS DIVISION, DIRECTORATE OF PERSONNEL PROGRAMS

BUDGET REQUEST

Chairman ELLENDER. The next appropriation to be considered is "Reserve Personnel, Air Force," for which the fiscal year 1973 budget estimate is $131,442,000, which includes $6,242,000 for the January 1, 1972, pay raise.

PROGRAM FINANCING

At this point in the record there will appear certain program and financing information from the justifications.

(The information follows:)

RESERVE PERSONNEL, AIR FORCE

PROGRAM AND FINANCING (IN THOUSANDS OF DOLLARS)

	1971 actual	1972 estimate	1973 estimate
Program by activities:			
Direct program:			
1. Reserve component personnel	$87,700	$98,805	$115,830
2. Reserve officer candidates	8,951	13,619	15,612
Total direct program	96,651	112,424	131,442
Reimbursable (total)	14	20	850
Total obligations	96,665	112,444	132,292
Financing:			
Receipts and reimbursements from Federal funds			−802
Non-Federal sources [1]	−14	−20	−48
Unobligated balance transferred from other accounts		−4,240	
Unobligated balance lapsing	299		
Budget authority	96,950	108,184	131,442
Budget authority:			
Appropriation	92,950	101,716	125,200
Transferred from other accounts	4,000		
Appropriation (adjusted)	96,950	101,716	125,200
Proposed supplemental for Military Pay Act increases		5,344	
January 1972 pay increase supplemental/amendment		1,124	6,242

[1] Reimbursements are derived from sale of meals and clothing to service members (10 U.S.C. 9621).

Note: The amounts shown as January 1972 pay increase supplemental/amendment are not distributed to each individual appropriation in the fiscal year 1973 President's budget, but are reflected as a 1-line Defense-wide contingency amount. The amounts shown above are estimates, pending final determination of the amounts to be requested when supplemental and amended estimates are formally transmitted.

SUMMARY OF REQUIREMENTS

Chairman ELLENDER. At this point there will also appear a "Summary of requirements."

(The information follows:)

SUMMARY OF REQUIREMENTS (IN THOUSANDS)

Program number and title (1)	Fiscal year 1971 actual (2)	Fiscal year 1972 estimate (3)	Fiscal year 1973 estimate (4)
720 Reserve personnel	$87,714	$98,825	$116,680
780 Reserve officer candidates	8,951	13,619	15,612
Total program requirements (obligations)	96,665	112,444	132,292
Less actual/anticipated reimbursements	14	20	850
Less unobligated balance transferred from other accounts		4,240	
Unobligated balance lapsing	299		
Total direct obligations/appropriations	96,950	108,184	131,442

SUMMARY REQUIREMENTS BY PROJECT

Chairman ELLENDER. Also at this point in the record there will appear a tabulation entitled "Summary requirements by project."

(The information follows:)

PROGRAM 720: RESERVE PERSONNEL—SUMMARY REQUIREMENTS BY PROJECT

[In thousands]

Project number and title	Fiscal year 1971 actual	Fiscal year 1972 estimate	Fiscal year 1973 estimate
721 Training, pay group A	$55,488	$59,037	$65,479
722 Training, pay group B	5,028	5,711	6,410
723 Training, pay group D	1,895	2,119	2,472
725 Training, pay group F	7,809	7,512	10,987
726 School training	7,072	12,590	17,636
727 Special training	7,051	9,345	10,614
728 Administration and support	2,371	2,511	3,082
Total program	87,714	98,825	116,680
Less actual/anticipated reimbursements	−14	−20	−850
Total direct obligations	87,700	98,805	115,830

APPROPRIATION COMPONENTS

Chairman ELLENDER. The principal witness will be Maj. Gen. Homer I. Lewis, Chief of Air Force Reserve.

You may proceed, General.

General LEWIS. Mr. Chairman and members of the committee, it is indeed a pleasure to appear once again before this committee to present the fiscal year 1973 financial requirements for the Air Force Reserve personnel appropriation.

This appropriation includes the funds for the pay, allowances, clothing, subsistence, travel, and other related costs for the training of personnel assigned to the Air Force Reserve program and for the military personnel-type costs associated with the students enrolled in the Air Force Reserve Officers' Training Corps.

Before I present our fund requirements for the next fiscal year, may I digress a few moments to inform you of our accomplishments during this past year and our future programs.

ACCOMPLISHMENTS

Continuing efforts are being made to modernize our equipment and to improve the combat-ready status of our units.

Although the flying units show a decline in productive missions our totals are significant when you realize that many conversions and new missions have been undertaken. Total flying hours for 1971 were 144,283, and our crews flew over 9,803 productive missions throughout the world including Southeast Asia. Our military and tactical airlift units carried 21,028 tons of cargo logging over 38 million ton-miles in the process. We carried over 66,000 passengers and more than 45 million passenger miles during 1971.

The Air Force Reserve units continue to emphasize domestic actions. Many units have taken on continuing projects that will run for several years. Some of the projects undertaken include such actions as assisting in refurbishing the downtown center of Smyrna, Ga.; a unit in Ohio assisted in clearing and helped construct several buildings on a five-acre community park; a continuing project is that of air-lifting food and winter clothing to the Navajo Indians by a Utah unit, and our units also continue to have close cooperation with the Boy Scouts.

MAJOR OPERATION AND JOINT EXERCISES

During this past August, 10 of our C–130's participated in a joint Army-Air Force exercise conducted in Alaska called Ember Dawn. During this exercise we flew 29 missions for 217 hours, and airlifted 70 tons of cargo and 393 passengers.

In January, nine of the C–130's participated in Exercise "Brave Shield." This large-scale airborne maneuver was conducted in the Fort Stewart, Ga., area, and provided extensive airlift continuation training events primarily of personnel and heavy equipment drops and point-to-point airland missions.

Later on this year, we will participate in two other exercises. One exercise, called Gallant Hand will be conducted in the Fort Hood, Tex., area, and is designed to develop combat ready forces, test and establish doctrine and procedures, and integrate new equipment.

The other scheduled exercise, "Exotic Dancer," is a Navy directed land, sea, and air exercise designed to gain experience and training and to evaluate the capability of assigned forces to conduct military operations within the Atlantic commands area of responsibility.

It is anticipated that Air Force reservists assigned to C–130 and A–37 units will participate in six similar exercises during fiscal year 1973.

FORCE STRUCTURE

As I mentioned before, we are continuing to modernize our equipment. During fiscal year 1972, 12 of our flying units are converting to new missions and nine additional conversions are programed for fiscal year 1973. Following are the force structure changes included in the fiscal year 1973 President's budget:

(*a*) Three C–124's will convert to A–37's special operations groups and one C–124 will convert to a C–123 tactical airlift group.

(*b*) One of the A/C–119 special operations units will convert to a C–123 tactical airlift group.

(*c*) Two C–141 military airlift associate units will convert to C–5A associate units.

(*d*) Two HC–97 aerospace rescue and recovery units will convert to HC–130's aerospace rescue and recovery units.

(*e*) In addition to the above conversions, three additional units will be activated—one C–130 and two C–141 associate units.

By the end of fiscal year 1973 we will have 53 flying units as compared to 50 for fiscal year 1972.

I would like to mention at this time that subsequent to the formulation of this budget, a decision was made to convert three units to F–105 tactical fighter groups, in lieu of A–37 special operations groups. This revision in the force structure does not affect the total dollar requirements for the Reserve Personnel appropriation; however, it will have an impact on the "Operations and maintenance" appropriation.

Force Structure Comparison of Original and Revised Programs

Following is a comparison of the force structure as originally programed and the revised program.

(The table follows:)

FORCE STRUCTURE FOR AIR FORCE RESERVE—FLYING UNITS

[Fiscal years]

	1973 President's budget		Revised	
	1972	1973	1972	1973
Equipped units:				
F–105			1	3
C–124 mil alft	4	0	3	0
C–130 tac alft gps	17	18	17	18
C–123K tac alft gps	2	4	2	4
C–7 tac alft gps	2	2	2	2
A.R. & R.S	5	5	5	5
EC–121 A.E.W. & C	1	1	1	1
A–37 SOG	4	7	4	4
C/AC–119 SOG	1	0	1	0
Subtotal	36	37	36	37
Associate (group/squadron):				
C–141 mil acft	6/13	5/13	6/13	5/13
C–9A aeromed evac	1/1	1/1	1/1	1/1
C–5A mil alft	0/0	1/2	0/0	1/2
Subtotal	7/14	7/16	7/14	7/16
Total units	50	53	50	53

C–130 Tactical Airlift Training Unit and C–5 Associate Units

General Lewis. Additionally, there is one C–130 tactical airlift training unit.

Chairman Ellender. You referred to C–5A associate units. How many of those units do you have now and how many do you plan to have at the end of fiscal 1973?

General Lewis. We are programed to convert to two C–5 associate units in fiscal year 1973. We have none right now.

AVERAGE STRENGTH AND MILITARY AIRLIFT COMMAND SYSTEM

Chairman ELLENDER. Which of your units are engaged in the airlifting of men and cargo overseas, and how many individuals are engaged in this effort?

General LEWIS. The people in our program, Mr. Chairman, who fly overseas with the MAC system are associate units, and some of our 124 units. Our MAC Associate units have a programed end strength of 4,870 for fiscal 1972.

Chairman ELLENDER. That is about 10 percent of the force?

General LEWIS. Yes, sir. That is overseas. That is where we are today, sir, about 10 percent of our force.

Chairman ELLENDER. How many of these 4,870 men assigned to these Military Airlift Command units are engaged in actual flying and how many are assigned to maintenance and support activities?

General LEWIS. Of the 4,870, 1,380 are assigned to the air crews and 3,490 are maintenance and support personnel.

Chairman ELLENDER. I assume that you consider all of these people to be in a training status?

General LEWIS. That is correct, Mr. Chairman. They all train as they perform these oversea missions. However, this is a substantial contribution to airlift requirement.

GENERAL NONCOMBAT UTILIZATION OF RESERVE AND GUARD PERSONNEL

Chairman ELLENDER. General, I am sure you recall the criticism of this committee with respect to the failure of the Department of Defense to make greater use of the Reserve forces in meeting the requirement for additional personnel for the conflict in Southeast Asia. I discussed this with General Ryan yesterday.

We had spent huge sums in maintaining trained Reserve forces—the Guard and Reserve forces. Under the law it was possible for a young man of draft age to enlist in the Guard or Reserve and escape the draft. When these men were not called to active duty, and only a very few were, it was not fair to the taxpayers and it certainly was not fair for some of these men to escape service in Southeast Asia because they were in the Guard and Reserve.

Secretary Laird has expressed a policy whereby the Reserve forces will be called to active duty to meet any future requirements for increases in the Active Forces. I think this is a good policy, and I will be disappointed if it is not followed.

AIR RESERVE ACTIVE DUTY SUPPORT AS PART OF TRAINING

General LEWIS. Let me make this comment, please, sir. The Air Force Reserve, the majority of our people are in the flying program. In our flying programs, we do an awful lot of active duty support as a part of our training, productive training. In this regard, I think you will find that our units, our people, interphase with the active force almost on a daily basis and provide a lot of productive airlift, a lot of productive training as they interphase with the active establishment. I think we are quite unique in this.

VOLUNTARY FLIGHTS TO VIETNAM

Chairman ELLENDER. When one of your crews flies one of these oversea missions, how long are they gone?

General LEWIS. When one of our crews in one of the MAC associate units goes to Saigon on a flight, on a voluntary basis, they will be gone for 10 or 11 days.

Chairman ELLENDER. These people are included in the 4,870 assigned to the military airlift command associate units.

General LEWIS. That is correct, Mr. Chairman. We also have C–124 units that fly overseas in the MAC system, but those aircraft belong to the unit, and are not in the associate unit category.

Chairman ELLENDER. Of your total strength of 49,600, how many have been engaged in these types of activities?

General LEWIS. Approximately 10 percent of the reservists have been engaged in providing assistance to the active force. As a by-product of training, the reservists have produced tactical and military, strategic, airlift, rescue and recovery capability, augmentation when needed, and assistance with emergency situations.

Mr. Chairman, I would like to furnish additional information on this point for the record.

Chairman ELLENDER. Please, do.

(The information follows:)

NUMBER OF RESERVES USED TO SUPPORT THE REGULAR AIR FORCE

The Air Force Reserve continues to augment the active force on a daily basis. Following are some of the missions accomplished FY 1971:

a. Missions in support of Tactical Air Command. Included support of the army Airborne Jump School at Fort Benning, Georgia, and Fort Campbell, Kentucky. These and other missions, including the movements of cargo and passengers to meet TAC needs were flown by the Air Force Reserve to meet training requirements prescribed by TAC. The reservists airlifted 1,059 tons of cargo and 4,157 passengers. Over 100 tons of cargo were airdropped for TAC, and additionally 55,274 troops were airdropped. In FY 1971 we had over 9,000 reservists assigned to units in support of TAC.

b. Airlift support of the Military Airlift Command. Air Force Reserve airlift activities produced 1,711 missions in support of Military Airlift Command requirements (excludes associate program). This support included missions to Southeast Asia with our crews airlifting vital channel cargo to Vietnam, Okinawa, Japan, Thailand, and the Philippines as a by-product of training. We also flew 1,210 missions to other overseas areas including Germany, England, Panama Canal Zone, South America, Greece, Turkey, and Italy. The by-product accomplishments on these flights included the transport of 8,706 tons of cargo and 2,533 passengers. The Air Force Reserve Aerial Port Squadrons also supported MAC. As part of their training, these 1,150 reservists worked alongside their active duty counterparts at active aerial ports in support of worldwide commitments. They processed over 100,000 passengers, over 50,000,000 pounds of cargo, and provided fleet service for over 1,500 aircraft.

c. Aerospace rescue and recovery support. Approximately 1,033 reservists assigned to the Aerospace Rescue and Recovery units contributed 125 missions to the active force. These missions included search or emergency and evacuation or precautionary missions.

d. Associate units. In addition, our reservists in the Military Airlift Command Associate units flew 284,348 individual cumulative hours in operational productive capacities as aircrew members on MAC C–9 and C–141 aircraft. On the C–9 aeromedical evacuation flights, 13,444 patients were assisted by our reservists.

e. Ferry mission support. Air Force Reserve units supported the active force in ferrying various aircraft overseas. Reserve crews ferried 15 C–130 aircraft to the Far East. They also ferried 10 C–119 aircraft to the Far East and 5 to Ethiopia. In addition, two HU–16s were flown to Europe and three were ferried within the continental United States.

f. Training support. The Air Force Reserve operates the C–130 and C–119 Tactical Aircrew Training Squadron which train aircrew members for the active force, foreign countries as well as reserve forces.

g. Other professional support. Air Force Reservists with professional and technical skills such as physicians, dentists, lawyers, etc., performed special services important to active force objectives. Some of these services are:

(1) Approximately 85% of the students who entered the Air Force Academy in June 71 were counseled by members of the Air Force Reserve.

(2) During FY 1971, 183 reservists assigned to the Judge Advocate General Area Representation provided over 5,000 hours of legal services.

(3) Sixty-six Air Force Reserve Chaplains participated in the Chaplain Area Representative (CHAPAR) program and conducted 402 counseling cases and 1,304 visitations.

(4) The 5,800 reservists assigned to the Medical Service units contributed substantially to the active force in addition to fulfilling their own requirements. These activities included 20,458 physical examinations, 33,302 dental examinations, 64,131 immunizations, and 58,000 laboratory procedures.

REGULAR AIR FORCE OFFICER AND AIRMEN TRAINERS

Chairman ELLENDER. How many personnel are employed from the Regular Air Force to support the Air Force Reserve?

General LEWIS. In fiscal year 1972, this year, we have 1,072 people altogether, Mr. Chairman.

Chairman ELLENDER. How many of those are officers?

General LEWIS. Of those, officers are 279.

Chairman ELLENDER. And the rest are airmen?

General LEWIS. Yes, sir; 793 airmen.

Chairman ELLENDER. That is their year-round assignment?

General LEWIS. They are there full time; yes, sir.

Chairman ELLENDER. To train and support the 49,600 that you have?

General LEWIS. They are in support of that program. Also, they support the Active Force. For instance, the Ellington Air Force Base. That is an active duty base. It is an Air Force Reserve base, also, but we support the active establishment there, and we support NASA. A lot of these people are at Ellington Air Force Base.

We have them at the Reserve Personnel Center at Denver.

In our headquarters here in Washington, we have them; also at our headquarters at Robbins.

ACTIVE DUTY AND CIVILIAN SUPPORT PERSONNEL

Chairman ELLENDER. Please provide for the record the number of officers and enlisted personnel as well as civilians who are needed to support the Air Force Reserve in fiscal years 1972 and 1973.

General LEWIS. I will provide it for the record.

(The information follows:)

	End strength: Fiscal year—	
	1972	1973
Military	1,072	1,077
Officers	279	274
Enlisted	793	803
Civilian	9,733	10,728

Note: These personnel provide support for active-duty missions at Ellington Air Force Base, Tex., and the Air Reserve Personnel Center, Denver, Colo., in addition to those required for training of Air Force Reserve units.

Chairman ELLENDER. You may proceed.

NONFLYING UNITS

General LEWIS. In addition to the flying units, we have 283 nonflying units which have a wartime mobilization assignment to major commands. These nonflying units include aeromedical evacuation squadrons and flights, medical service units, aerial port squadrons, military airlift support squadrons, maintenance and supply squadrons, civil engineering squadrons/flights, air postal groups and censorship squadrons.

PERSONNEL STRENGTHS

During fiscal year 1971, the Air Force Reserve exceeded the Selected Reserve minimum average strength. Public Law 91–441 authorized an average strength of 47,921. Due primarily to the retention of five C–119 Tactical Airlift Groups previously scheduled for inactivation, the authorized strength was revised to 50,000. The actual average strength accomplished during fiscal year 1971 was 50,993.

For fiscal year 1972, Public Law 92–156 authorized an average strength of 49,634 for the Selected Reserve, and we expect to achieve this authorized average strength. With aggressive recruiting and force management throughout the Reserve, the strength should be attained.

For fiscal year 1973, we are programing a Selected Reserve average strength of 51,296 with an end strength of 53,811. This strength will provide for an average of 93 percent manning in all Reserve units, with an average of 96 percent manning in our flying units and 89 percent in our nonflying units.

Approximately 53 percent of the programed strength for fiscal year 1973 is required to support the 53 flying units, and 35 percent is required for our nonflying units.

Also included in the program average drill strength is an average of 2,027 for our nonprior service program, and 5,100 in the individual program. We also have programed for 2,390 individual reservists who will be paid only for their annual active duty tour.

FINANCIAL ASPECTS

The current fiscal year 1972 budget estimate for the Reserve personnel appropriation is $112.4 million. This revised requirement includes $6.4 million for the military pay raises which were effective November 14, 1971 and January 1, 1972; and $4.2 million for the increase in subsistence rate for the Reserve Officers' Training Corps which was approved by Public Law 92–171. It is proposed to finance these additional financial requirements for fiscal year 1972 by an appropriation transfer and supplemental appropriations.

PAY RAISES AND SUBSISTENCE INCREASE PROPOSED REPROGRAMING OF FUNDS

General DELUCA. Mr. Chairman. If I might keep your records and our records in balance, on your line 25 on this spread sheet, to the $108 million which includes pay raises add the $4.2 million to pay the increased subsistence from $50 to $100 monthly based on the Public

Law. This brings it to $112.4 million, as General Lewis just said, through reprograming and transfer authority from our resources.

Chairman ELLENDER. This will not involve additional funds?

General DELUCA. This will not mean additional money.

Chairman ELLENDER. Proceed.

BUDGET REQUEST INCREASE OVER 1972

General LEWIS. Our budget request for fiscal year 1973 is $131,442,000 and includes $115.8 million for the Reserve components program and $15.6 million for the Reserve Officers' Training Corps. The total appropriation request for fiscal year 1973 is $19 million more than the revised fiscal year 1972 requirements.

$10.5 million of this increase is attributable to the financing of the military pay raises including the increased subsistance rate for the AFROTC program for a full year. In addition to the pay raises, an additional $8 million is being requested for the Reserve program which is required to finance the average strength increase of 1,932 and associated schools and special training requirements for the conversions and new units and $0.5 million for increased AFROTC requirements. I will now discuss the major differences by budget projects.

PAY GROUP A

The reservists assigned to Pay Group A are authorized 15 days active duty training, 48 paid inactive duty drill periods, and an additional 36 drills are authorized for selected unit personnel flying status.

The budget estimate of $64.6 million requested in fiscal year 1973 for this budget project will provide for the pay and allowances, clothing, subsistance and travel costs for an average of 44,695 reservists.

The fiscal year 1973 estimate reflects an increase of $5.6 million over the revised fiscal year 1972 dollar requirement. $4.9 million of this increase is attributable to financing the military pay raises for a full year versus only part of a year in fiscal year 1972. An additional $700,000 is requested to finance the additional average strength of 779 reservists to be assigned to Pay Group A during fiscal year 1973.

OFFICER REDUCTION AND ENLISTED INCREASE IN PAY GROUP A

Chairman ELLENDER. For "Training, pay group A," the fiscal year 1973 request is for $64,629,000. A total of $59,017,000 was the fiscal year 1972 requirement.

Again this year I note that there is a gradual reduction in officer man-days and an increase in enlisted man-days. Please comment.

General LEWIS. Variances continue to occur between the officer and enlisted strengths between fiscal year 1972 and 1973 due to differences in new Reserve missions, which require a different mix of officer and enlisted personnel. This new mix is especially evident in the aircrew manning area. The new mission aircraft have a lesser or no requirement for aircrew navigators and lesser requirement for aircrew pilots.

SUBSISTENCE OF ENLISTED PERSONNEL IN PAY GROUP A

Senator YOUNG. I note that in pay group A one item for which a smaller amount is requested for fiscal year 1973, and that is subsistence for enlisted personnel. How does that come about?

General DELUCA. The subsistence rates are reviewed periodically by the Department of Defense based on actual experience and projected cost factors. DOD has approved a daily subsistence-in-kind rate of $1.44 for fiscal year 1973. A daily rate of $1.50 had been approved in computing the subsistence-in-kind costs included in the fiscal year 1972 request.

ADDITIONAL DRILLS FOR SELECTED UNIT PERSONNEL IN PAY GROUP A

Chairman ELLENDER. Please describe the requirement for 36 additional drills authorized for selected unit personnel on flying status.

General LEWIS. All rated officers and enlisted personnel assigned to unit authorization requiring flying status are authorized to participate in 36 additional drill periods per year, in order to maintain their flying proficiency.

PAY GROUPS B AND D

The fiscal year 1973 estimate includes $8.9 million for those reservists who are assigned to major air command mobilization augmentation positions in pay groups B and D. The reservists assigned to pay group B are authorized 15 days active duty training and 24 paid drill periods, whereas those assigned to pay group D receive pay only for the 15 days of active duty training.

The fiscal year 1973 estimate for these two pay groups requests an increase of $1 million over the fiscal year 1972 estimate; $0.6 million is required for an average strength increase of 378 reservists assigned to pay group B and 270 assigned to pay group D. The balance of the dollar increase is due to the military pay increases.

TRAINING, PAY GROUP B

Chairman ELLENDER. The fiscal year 1973 request for "Training, pay group B" is $6,410,000. The amount provided for fiscal year 1972 was $5,711,000. The justifications indicate a request for an increase in average strength for both officers and enlisted personnel. Please explain.

General LEWIS. There is an increase requested in the average strength for "Training, pay group B" personnel which is due to the different beginning strengths between the 2 years. Fiscal year 1972 has a beginning strength of 2,505 for officers and 1,335 for enlisted with an end strength of 2,874 for officers and 1,700 for enlisted. For fiscal year 1973, the beginning, end, and average strength is the same, 2,874 for officers and 1,700 for enlisted personnel. No increase is programed for pay group B personnel during fiscal year 1973.

RECRUITMENT IN PAY GROUP B

Senator YOUNG. Last year testimony indicated that as a result of improved counseling provided personnel separating from active duty it

was anticipated that there would be increased participation in the pay group B training category. Please comment on the success of this.

General LEWIS. The counseling program has had some success in recruiting personnel for pay group B positions. The net increase in this category during the past year was 202 officers and 188 enlisted personnel.

GENERAL RECRUITMENT IN RESERVE

Chairman ELLENDER. In reference to the broad spectrum of the entire Air Reserve would you comment on the recruitment program generally?

General LEWIS. Our primary thrust for recruiting is through unit commanders who, when geographically feasible, work in concert with the Active Force recruiting service; the secondary thrust is toward personnel separating from the Active Force. Efforts in these areas have thus far provided sufficient manpower for accomplishment of our mission. In moving toward a no-draft environment we are heavily involved in the preparation of the Air Force project volunteer objectives considered essential to maintain satisfactory levels of manning without benefit of draft motivation. We are supporting items for priority implementation including bonuses, additional survivor benefits, increased full-time recruiters, and expansion of the Air Force tuition assistance program to include Reserve Forces. Specifically, during recent months, we have worked with the Active Force in improving counseling of separatees concerning Reserve patricipation, placed reservists at three separation locations on a test basis to counsel Active Force separatees, and obtained approval for additional funds for recruiting and advertising. We are developing plans to establish a Reserve Forces Recruiting Command Post to provide information on Reserve assignments to interested personnel. We have requested authorization for additional fulltime recruiters, and are proposing the establishment of recruiting units to work with the Air Force Recruiting Service in bridging the gap between Active and Reserve recruiting efforts. Our emphasis on minority and female recruiting has been increased with favorable results.

We are attempting to be as objective as possible in selecting ways to recruit people and feel that we have dynamic programs under development for maintaining a viable Air Force Reserve in the future.

TRAINING, PAY GROUP D

Chairman ELLENDER. Pay group D consists of officers and enlisted personnel who receive no paid drills but participate in 15 days of active duty for training. For fiscal year 1973 the request is for $2,472,000. For fiscal year 1972 the amount provided was $2,119,000. Explain the difference in terms of personnel and costs and the reasons therefor.

General LEWIS. We are requesting an increase of $353,000 in fiscal year 1973 for pay group D; $112,000 of this increase is required for the military pay raise, and $241,000 is for the additional 206 officers and 64 enlisted personnel to be assigned to this program.

PAY GROUP F

General LEWIS. The funds requested for this project will provide for pay and allowances, including clothing and travel costs for our nonprior service program.

The purpose of this program is to train nonprior service personnel to fill specific unit vacancies not attainable from prior service enlisted sources. We plan to enter 4,200 into this program during fiscal year 1973 at an estimated cost of $11 million.

DURATION OF BASIC TRAINING

Chairman ELLENDER. How long is the training period?

General LEWIS. The normal period is 6 weeks basic training at Lackland. Some of these are selected for technical training school in addition to that but the minimum active duty tour is 4 months.

Chairman ELLENDER. That is included in your appropriation request?

General LEWIS. Yes, sir.

Chairman ELLENDER. They are all considered reserves and paid for under this appropriation?

General LEWIS. They are all part of our program, Mr. Chairman. We send them to basic training and then we get them back. Some of them go from basic training to tech schools.

Chairman ELLENDER. That is before or after they complete the training you offer?

General LEWIS. That is before we get them. We sign up a young man in a nonprior service program; we send him to basic training.

Chairman ELLENDER. Under this appropriation?

ACTIVE DUTY AND TECHNICAL SCHOOL TRAINING

General LEWIS. We pay for that. They come from basic training back to us and we finish their 4 months' active duty and some of them go to tech school and we pay for that, too. They all belong to us.

Chairman ELLENDER. How do you select personnel after they complete their basic training? Do you have any guidelines to select them?

General LEWIS. Yes, sir. If they have an identified skill requirement and there is a tech school that can furnish that skill training and there is space there for him, he will go to the tech school before he comes back to his unit.

If he does not have a requirement in that skill area or if there is no space in the tech school, he comes back and finishes up his 4 months in the OJT program. He trains right there on the job.

Chairman ELLENDER. This is all under your appropriation?

General LEWIS. Under our program, he must have an assignment in that unit to get in this program

6-YEAR MILITARY OBLIGATION

Chairman ELLENDER. When does he separate from the reserve?

General LEWIS. He has a 6-year military obligation.

DUTIES OF RESERVISTS

Chairman ELLENDER. After he receives the 4-month training and the specialty training you mentioned, if he can't qualify for a certain specialty, what then is done?

General LEWIS. He is just a regular reservist like the rest of us. He participates one week end a month plus a 15-day tour.

DISTANCE BETWEEN RESIDENCE AND TRAINING

Chairman ELLENDER. How far away from the training site do you permit a reservist to reside?

General LEWIS. With respect to those in Pay Group A it is 50 miles or an hour and a half driving distance.

TRANSPORTATION COSTS

Chairman ELLENDER. Who pays for that transportation?

General LEWIS. Nobody. He pays for it himself.

Chairman ELLENDER. I have heard some indication that they ought to be paid for that.

General LEWIS. They never have been paid.

Chairman ELLENDER. Have you had requests for such payment?

General LEWIS. Mr. Chairman, I have been in this program almost all my life. I have never heard anybody asking to be paid transportation to and from a unit training center.

Chairman ELLENDER. It would probably require legislation. We in Congress have received letters regarding it.

General LEWIS. I have never had that experience, sir.

TRAINING, PAY GROUP F

Chairman ELLENDER. Pay group F is made up of enlisted personnel who receive a minimum of 4 months of active duty for training. For fiscal year 1973 the request is for $10,987,000 for "Training, pay group F." For fiscal year 1972 the amount provided was $7,512,000. I notice in the justifications that although the average strength has increased considerably over that for fiscal year 1972, the end strength is quite a bit lower. What occasions this rather marked difference?

General LEWIS. Increase in the average strength for fiscal year 1973 over 1972 is due primarily to the carryover or end strength of the previous year. The beginning strength for fiscal year 1972 was 1,163 with an end of 2,250. The fiscal year 1973 beginning strength is 2,250 with an end strength of 1,925. The end strength in this program depends upon the monthly inputs into training of personnel during the fiscal year and their completion of training. We plan to enter into training more non-prior-service personnel during the latter part of fiscal year 1972 than during the latter part of fiscal year 1973, therefore, a greater number of personnel will be remaining in the program at the end of the year. The true measure of the pay group F program is the number of personnel entering training. In fiscal year 1972, the input is 4,048 and for fiscal year 1973 the input is 4,200.

PAY GROUP F ADDITIONAL FUNDS

Chairman ELLENDER. Please explain the reasons for the need for additional funds.

General LEWIS. We are requesting an increase of $3,475,000 for pay group F; $2.2 million of this increase is attributable to financing the military pay raises for a full year in fiscal year 1973. The balance of the increase is required for the additional input of 152 personnel into this program.

NO SIGNIFICANT CHANGES IN PROGRAM

Chairman ELLENDER. Are there any significant changes in this program you have not already described?

General LEWIS. No, sir. The pay group F program has been established to fulfill the non-prior-service needs caused by attrition and mission changes of the Air Force Reserve.

Chairman ELLENDER. Proceed.

SCHOOL AND SPECIAL TRAINING

General LEWIS. Our fiscal year 1973 request includes $28.2 million for the school and special training programs. This additional training is required to increase the mobilization capability and readiness that cannot be achieved during the annual 15 days active duty and drill periods.

In addition to the increase of $1.4 million required to finance the military pay raises for a full year, we are requesting an increase of $4.3 million for the school program and $0.6 million for the special training due to increased requirements associated with the three additional units and conversions to more modern aircraft.

All aircrew personnel assigned to units equipped with the newer aircraft are required to undergo transition training. These newer systems are more complicated and require more extensive maintenance and operating training than experienced with the older systems. We have also programed an increase in both special tours and school mandays as manning of reserve units under a curtailed draft requires increased efforts in recruiting.

SCHOOL TRAINING

Chairman ELLENDER. For "School training" the fiscal year 1973 request is $17,636,000. This is a substantial increase over the amount of $12,590,000 provided for fiscal year 1972. Would you describe this this program generally a little more than you have?

General LEWIS. School tours of active duty for training are authorized to provide that training required to maintain or increase the proficiency of reservists for performance of duty in their assigned positions in the Air Force Reserve. School training is accomplished through attendance in formal residence courses of instruction. This training cannot be accommodated during the 2-day-a-month inactive duty training periods or the 12- to 15-day annual tours of active duty. School training is primarily devoted to training of aircrews converting from one weapon system to another and for training of replacement aircrews that are newly assigned to meet losses. However, some school training is authorized to increase a reserve member's proficiency or professional military qualification but normally not to qualify initially for a unit/mobilization position. When such training is authorized, the member must agree to remain in his unit/mobilization position for a period of 1 to 3 years, depending upon the length of the course.

In addition to the increased training requirements, our budget estimates include the cost of the military pay raises.

Chairman ELLENDER. The justifications indicate that your man-day program will increase substantially in fiscal year 1973. I assume that is the primary cause of the increased request. Please explain the need for these additional personnel and funds.

General LEWIS. The increase in fiscal year 1973 over 1972 is due primarily to force structure changes and an increase in undergraduate pilot training.

The Air Force Reserve is being equipped with more modern and sophisticated weapon systems. These force structure changes cause an increase in training required due to an increase in the number of units flying C–141, C–130, C–123, C–5, HC–130, and AC–130 aircraft. In addition, the number of associate unit crews authorized for the C–141 is increased 25 percent in fiscal year 1973. All aircrew personnel assigned to units affected are required to undergo transition training into these more modern systems. These systems are complex requiring more extensive maintenance and operation training than was experienced with the older systems. For example, to qualify a pilot in the C–124, which we are phasing out, requires an average of 65 man-days versus an average of 190 man-days in the C–141.

In fiscal year 1973, we will be giving increased emphasis to recruiting due to the approach of a zero draft and seek to increase manning in our units, particularly in our aerial port units. We have included in our fiscal year 1973 program requirements for supporting the increased emphasis in our recruiting effort and the additional training load resulting from increased manning.

Finally, the undergraduate pilot training program is increased from 51,225 man-days in fiscal year 1972 to produce 55 pilots to 81,444 in fiscal year 1973 to produce 150 pilots.

SPECIAL TRAINING

Chairman ELLENDER. The next item is "Special training" for which $10,614,000 is requested in fiscal year 1973. The fiscal year 1972 amount is $9,345,000. Would you describe what the term "Special training" includes?

General LEWIS. Special training includes that training which cannot be accomplished during unit training assemblies, the annual tour of active duty for training, or within the school training program. The two special training categories are training and support of training.

A training tour is authorized to maintain or increase a member's mobilization readiness. The level of readiness required is specified by the gaining Major Air Command. This type of tour includes: Flying airlift, rescue, and gunnery missions; dropping paratroopers; flight simulator training; participation in joint exercises; and proficiency training for loadmasters, pararescuemen, maintenance, and supply personnel.

A tour in support of training is authorized in direct support of training programs which are the sole responsibility of the Air Force Reserve. Such tours include: advance and rear cadre for annual encampments, ferrying of our aircraft; aircrew instructors; runway and range control; and recruiting personnel for our Reserve units.

ADDITIONAL FUNDS FOR SPECIAL TRAINING

Chairman ELLENDER. Explain the need for the additional funds requested for fiscal year 1973.

General LEWIS. The need for additional funds requested for fiscal year 1973 is due primarily to force structure changes. These force structure changes bring into the Air Force Reserve new units equipped with more modern, more sophisticated equipment. Such new units are the HC–130 for aerospace rescue and recovery and the C–5 military airlift associate units. We will also have additional units equipped with the C–123, C–130, as well as C–141 associate units.

In fiscal year 1973, we seek to increase the manning in both our flying and nonflying units. This includes such things as additional crews in our C–141 and C–5 units and additional manning in our aerial port units. These additional people will increase our training load.

Finally, with the approach of a zero draft environment, we recognize the need for additional emphasis on recruiting. We have programed for an increased effort in this area.

The increase of $1,269,000 for fiscal year 1973 includes $616,000 for military pay raises and $653,000 for the increased training requirements.

SPECIAL TRAINING COST INCREASES

Senator YOUNG. Do these same reasons apply to the rapid increase in the cost of the program over the past 2 years?

General LEWIS. Yes, sir; the modernization of the Air Force Reserve has accelerated under the total force concept. This is directly reflected in the rapid acquisition of more sophisticated weapon systems by the Air Force Reserve. Operation of these complex systems requires that a very high degree of competence be achieved and maintained by all our reservists. Therefore, we have seen a dramatic increase in our requirements for special training.

Also, as I stated before the costs reflect an increase due to the military pay increase.

SPECIAL TOURS

Senator YOUNG. Please describe the special tour involved in the Arctic indoctrination flights.

General LEWIS The Arctic and overwater indoctrination flights provide navigation training in a polar environment and worldwide overwater flights.

Chairman ELLENDER. I note that special tours vary in length from 1 to 68 days. Please describe the mission, number of personnel, length and cost of the longest special tour programed for fiscal year 1973.

General LEWIS. The 68-day tour is for the clinical externship program. These tours provide training for appointees in the medical service early commissioning program. We have included in our fiscal year 1973 budget estimate an amount of $165,100 for 55 students to attend these 68-day tours.

ADMINISTRATION AND SUPPORT

The $3.1 million requested for Administration and Support will provide pay and allowances for an average of 104 Air Force Reserve officers serving under sections 175, 265, 8019, and 8033 of title 10,

United States Code, and for death gratuities, pay and allowances while hospitalized or disabled and the Government's contribution to the servicemen's group life insurance program.

PCS TRAVEL INCREASE

Chairman ELLENDER. What is the reason for the large increase in permanent change of station travel?

General LEWIS. The additional funds required for travel is due to an increase in the number of section officers coming on duty and the number estimated to be leaving during fiscal year 1973.

GENERAL INCREASE FOR ADMINISTRATION

Chairman ELLENDER. Justify the need for the increased funds.

General LEWIS. The additional funds requested in the fiscal year 1973 estimate are required for the increase in average strength of 13 section officers and to provide for the military pay raise.

PERSONNEL IN PAID STATUS

Chairman ELLENDER. At this point in the record there will appear the tabulation entitled "Air Force Reserve personnel in paid status."

(The information follows:)

AIR FORCE RESERVE PERSONNEL IN PAID STATUS

Pay group, paid drills, and paid days of active duty for training	Fiscal year 1971 (actual)			Fiscal year 1972 (current program)		Fiscal year 1973 (budget request)	
	Begin	Average	End	Average	End	Average	End
A, 48 drills, 15 days:							
Officers	8,345	8,400	8,255	7,881	7,629	7,586	7,880
Enlisted men	33,254	36,336	36,922	36,035	35,741	37,109	39,432
B, 24 drills, 15 days:							
Officers	2,452	2,437	2,505	2,683	2,874	2,874	2,874
Enlisted men	1,455	1,340	1,335	1,513	1,700	1,700	1,700
F, no drills, 4 months minimum: Enlisted men	4,703	2,480	1,163	1,522	2,250	2,027	1,925
Pay drill and nonprior service:							
Officers	10,797	10,837	10,760	10,564	10,503	10,460	10,754
Enlisted men	39,412	40,156	39,420	39,070	39,691	40,836	43,057
Total	50,209	50,993	50,180	49,634	50,194	51,296	53,811
D, no drills, 15 days:							
Officers	1,935	1,887	1,887	1,974	1,974	2,180	2,180
Enlisted men	127	110	110	146	146	210	210
Other paid status:							
Officers	1,935	1,887	1,887	1,974	1,974	2,180	2,180
Enlisted men	127	110	110	146	146	210	210
Total	2,062	1,997	1,997	2,120	2,120	2,390	2,390
Total paid participants:							
Officers	12,732	12,724	12,647	12,538	12,477	12,640	12,934
Enlisted men	39,539	40,266	39,530	39,216	39,837	41,046	43,267
Total	52,271	52,990	52,177	51,754	52,314	53,686	56,201

SECTION OFFICERS

Senator YOUNG. The justification on page 119 refer to Reserve officers performing full-time active duties under sections 175, 265, 8019,

and 8033 of title 10 of the United States Code. Would you please supply these citations for the record?

General LEWIS. I'll be happy to.

(The information follows:)

Section 175. *Reserve Forces Policy Board.* One member of this board will be a reserve officer of the Army, Navy, Air Force or Marine Corps who is a general officer or flag officer designated by the Chairman of the Board with the approval of the Secretary of Defense.

Section 265. *Participation of Reserve Officers in Preparation and Administration of Policies and Regulations.* Within such numbers and in such grades and assignments as the Secretary may prescribe, each armed force shall have officers of its reserve components on active duty at the Seat of Government and at headquarters responsible for reserve officers.

Section 8019. *Appointment of Chief of Office of Air Force Reserve.* There is in the executive part of the Department of the Air Force and Office of Air Force Reserve which is headed by a chief who is the adviser to the Chief of Staff on Air Force Reserve matters.

Section 8033. *Policies and Regulations for Government of Reserve Components of the Air Force.* (h) There shall be not less than ten officers of the Air National Guard of the United States and the Air Force Reserve on duty with the Air Staff, one-half of whom shall be from each of those components. These officers shall be considered as additional members of the Air Staff while on that duty.

SECTION 265 OFFICERS

Chairman ELLENDER. Of the total of 107 of these officers, I note that 98 of them are section 265 officers, and that this number is gradually increasing. Please explain.

General LEWIS. Sections 265, 8019, and 8033(e), title 10, United States Code, provide the statutory authority for Reserve officers in Air Force staff positions. The positions were determined on the basis of the Reserve program requirement and the required Reserve participation in policy and decision making regarding the Reserve program. These positions were requested and justified by the directorates or commanders to which assigned. The number of 265 positions in the Office of the Air Force Reserve and Headquarters Air Force Reserve is based on 40 percent of the total officers authorized. The gradual increase of officers in this category is attributed to a steady buildup to the 40-percent manning level.

SOUTHEAST ASIA SERVICE

Chairman ELLENDER. Last year, as I recall, I asked about the use of Reserve personnel in Southeast Asia. Have any Air Reserve personnel been utilized in Southeast Asia in the past year?

Geneal LEWIS. Yes, Air Force Reserve C–124 and C–141 associate aircrews have transited Southeast Asia airports during the past year in performing the strategic airlift mission. Such flights, especially in the case of Reserve C–141 associate aircrew members, have been accomplished on a regular basis throughout the year. Minimum ground times are normally associated with these scheduled military airlift stops in Southeast Asia. Air Force Reserve personnel have not served in Southeast Asia on a permanent basis during the last year.

FLIGHT TIME

Senator YOUNG. How much actual flight time does the average Reservist log in the course of a year?

General Lewis. The actual flying time each Reservist will log in a year is dependent upon his unit aircraft and mission. Gaining commands establish minimum training requirements for their flight crews. In the course of a year, the average Reservist will log the time established for his type aircraft. I will submit for the record minimum flying hours by type aircraft.

(The information follows:)

Type:	Hours	Type:	Hours
A-37	135	EC-121	180
C-7A	180	F-105	135
C-119	165	HC-97	175
C-123	180	HC-130	180
C-124	240	HH-34	135
C-130	180	HU-16	175
C-141	240	C-9	240

Chairman Ellender. What is the average cost per hour of flying?

General Lewis. The average cost per flying hour that we use in budgeting is the same standard cost factor used by the Active Air Force. It is computed from Air Force-wide experience by each type of aircraft and includes aviation fuel, base material support and depot maintenance. I will submit a list of costs for each type of aircraft assigned to Air Force Reserve.

(The information follows:)

Aircraft	*Average cost per flying hour*
C-123	$171
C-130	283
C-7A	87
A-37A/B	128
EC-121	387
AC-119	225
HC-97	275
HU-16	157
HH-34	75
HC-130	283
C-124	348
T-29	98
C-121	385
F-105	553

AUTHORIZED STRENGTH

Chairman Ellender. For fiscal year 1972, the authorized paid drill average strength for the Air Force Reserve was 49,634. How close to this figure do you believe you will come at this time?

General Lewis. We will make every effort to achieve the authorized average strength for fiscal year 1972. It will not be an easy task; however, with an intensive recruiting program, we should be successful. We have initiated a test recruiting program in which recruiters are placed at the major ports of entry to attempt to recruit these people who are discharged upon their return to the CONUS.

AUTHORIZED AVERAGE PAID DRILL STRENGTH

Chairman ELLENDER. What is the authorized average paid drill strength requested for fiscal year 1973?

General LEWIS. 51,296.

DIFFERENCES IN PROGRAMS

Senator YOUNG. What are the major differences between these two program years?

General LEWIS. In addition to the changes in force structure, the strengths for fiscal year 1973 are based on an overall unit manning percentage of 93 percent versus 89 percent for fiscal year 1972. Flying units in fiscal year 1973 are programed at 96 percent manning versus 93 percent in fiscal year 1972 and nonflying units at 89 percent in fiscal year 1973 versus 82 percent in fiscal year 1972.

CHANGES IN PERSONNEL STRENGTH

Chairman ELLENDER. Please provide for the record a step-by-step tabulation of all major changes in personnel strength in the past year.

General LEWIS. I will be glad to supply that for the record.

(The information follows:)

	Average drill strength	End drill strength
Fiscal year 1972:		
Public Law 92-156	49,634	48,387
Revision approved by OSD		+1,807
Revised strength fiscal year 1972	49,634	50,194
Fiscal year 1973:		
Adjustments from fiscal year 1972:		
Activations	+216	+1,109
Unit conversions	−1,221	+692
Manning adjustments	+2,667	+1,816
Strength authorization requested	51,296	53,81

REPROGRAMING OF FUNDS

Chairman ELLENDER. In the past year have you reprogramed any funds?

General DELUCA. For fiscal year 1972 we have requested that $4,248,000 be transferred from the appropriation, "Other procurement, Air Force," to the Reserve personnel appropriation in order to finance the increased costs for subsistence allowance in the ROTC program. This increase of $50 per month to $100 was authorized by Public Law 92-171.

CHANGES IN BUDGET SUBMISSION

Chairman ELLENDER. Describe any changes made by the Department of Defense or higher authority in the submission of the original budget.

General DELUCA. Our original fiscal year 1973 budget estimate was adjusted by the Department of Defense to include the military pay increase authorized by Public Law 92-210—$6,242,000—and the

increased AFROTC subsistence costs authorized by Public Law 92–171—$5,382,000. The Department of Defense also approved an additional amount of $1 million for the all-volunteer force. This provided $700,000 for the Air Force Reserve program and $300,000 for AFROTC.

STATE OF READINESS

Senator YOUNG. Please comment on the state of readiness of the Air Force Reserve.

General LEWIS. Combat readiness in the Air Force Reserve today reflects the impact of recent actions taken to upgrade our units to more modern weapon systems. Since December of 1969, 52 percent of our flying units have converted to new aircraft and/or missions. Other conversion actions are programed for the remainder of fiscal year 1972 and fiscal year 1973. We currently have 50 flying units. As of January 31, 1972, 29 units—58 percent—were combat ready in varying degrees. Of these 29 units, 12 were fully combat ready, 12 were substantially combat ready and five were marginally combat ready. The remaining 21 units were not combat ready.

PAY COST INCREASES

Chairman ELLENDER. Please describe the effect of recent pay cost increases on this budget.

General DELUCA. The revised fiscal year 1972 estimate includes an additional requirement of $5,344,000 for the pay raise which was effective November 14, 1971—Public Law 92–129—and $1,124,000 for the military pay raise which was effective January 1, 1972—Public Law 92–210.

The fiscal year 1973 estimate includes the costs of these two pay increases which are $9,564,000 for Public Law 92–129 and $6,242,000 for Public Law 92–210.

AIRBORNE EARLY WARNING CAPABILITY

Chairman ELLENDER. For fiscal year 1972, the Air Force was directed to absorb within the budget framework funds required for the augmentation of the airborne early warning and control capability and the new Reserve C–130 unit. Please indicate what was done about this in fiscal year 1972 and also indicate how the matter has been handled in the estimates for fiscal year 1973.

General LEWIS. As directed, the $900,000 requested for this program change was absorbed within the total Reserve personnel, Air Force appropriation for fiscal year 1972.

The amount appropriated for fiscal year 1972 was applied to the total forces and the resources available were spread across all the units and training activities to maintain a balanced funding level. This was handled by recosting the updated program estimates which reflect the current operating experience in terms of the office/enlisted mix, the flying and nonflying ratios, longevity and grade structure, all of which affect pay rates.

This budget estimate for fiscal year 1973 includes support for continuing the augmentation of the airborne early warning and control capability and the new Reserve C–130 unit.

RESERVE OFFICERS' TRAINING CORPS

This appropriation request also includes certain costs associated with the Reserve Officers' Training Corps. These funds will provide for uniforms, subsistance allowances, and pay while attending field training and associated travel costs.

The mission of the college-level Air Force ROTC program is to commission second lieutenants in response to Air Force requirements. In fiscal year 1973, the Air Force ROTC will be offered at 183 colleges and universities. This includes the establishment of 10 new AFROTC units. Contract negotiations have been continuing with Princeton University. We are optimistic that the negotiations will be concluded favorably. This would increase the number of units to 184.

The programed beginning enrollment of 26,434 AFROTC cadets includes 17,277 in the general military (basic) course and the remaining in the professional officer (advance) course. Included are 6,500 cadets in the scholarship program. AFROTC male enrollments have continued to decrease. As a result, we do not expect to meet our objective of 4,500 AFROTC graduates in either fiscal year 1973 or 1974.

SUMMARY OF RESERVE OFFICER CANDIDATE STRENGTH

Chairman ELLENDER. Please provide for the record a summary tabulation of Reserve officer candidate strength for fiscal years 1971, 1972, and 1973.

Major PETERSON. I will do that.

(The information follows:)

SUMMARY OF RESERVE OFFICER CANDIDATE STRENGTH

	Begin fiscal year		
	Fiscal year 1971 actual	Fiscal year 1972 actual	Fiscal year 1973 estimate
Aerospace studies:			
100	12,093	11,530	12,381
200	6,171	4,903	4,896
300	4,750	4,247	4,842
400	5,066	4,755	4,315
Total	28,080	25,435	26,434

Note: The estimated increase in AFROTC enrollment is expected to result from the establishment of new AFROTC units.

NEGOTIATION OF CONTRACT WITH PRINCETON UNIVERSITY

Chairman ELLENDER. What is the nature of the contract you have with Princeton?

Major PETERSON. Sir, we have negotiated a contract. Secretary Borda has been working with Dean Rudenstine, of Princeton. The contract was forwarded to Secretary Borda. The contract, itself, appeared acceptable but the letter accompanying it indicated that perhaps we were not going to have the academic status for the AFROTC program. Consequently, Secretary Borda is writing back to him to request clarification. The contract will not be signed until the point of academic status and academic rank for the professor of aerospace studies is settled.

Chairman ELLENDER. Suppose a contract is effected, what is your obligation?

Major PETERSON. Then we would enroll students this fall, starting the fall of 1972. We have no student enrolled and we have no officers assigned at the present time.

Chairman ELLENDER. At the present time there are no students enrolled at Princeton?

Major PETERSON. That is right. We have no students enrolled in the ROTC program at Princeton.

Chairman ELLENDER. Is this the only college or university where you have negotiations?

Major PETERSON. Yes, sir; this is the only one where the AFROTC unit is scheduled for disestablishment and we are continuing contract negotiations.

Chairman ELLENDER. What purpose will that serve if you do effect a contract?

Major PETERSON. You see, we never disestablished there. We were scheduled for disestablishment and they came back to the Air Force asking us to stay. So, we are now determining if we should stay or get out.

ROTC WITHDRAWALS

Senator YOUNG. Last year there was included on page 172 of the Air Force hearings a tabulation giving the names of colleges and universities that have withdrawn from the ROTC program, including the date of disestablishment, and the reason therefor. I wish you would bring that up to date. For any withdrawals in the past year it would be helpful if you would include an appended statement detailing the reason for the "failure of contract negotiations" and "mutual agreement."

Major PETERSON. There have been no further disestablishments other than those listed last year. The disestablishment of Princeton University was canceled pending the final outcome of negotiations between Princeton and the Air Force. Academic rank of the AFROTC officer in charge and academic status of the program are the main points of contention.

ROTC ACCESSIONS

Senator YOUNG. Also include in the record a list of new schools in the past year and those contemplated for fiscal year 1973, if any.

(The information follows:)

NEW AFROTC DETACHMENTS IN FISCAL YEAR 1972

Troy State University, Troy, Alabama.
Alabama State University, Montgomery, Alabama.
Arkansas A&M College, College Heights, Arkansas.
Valdosta State College, Valdosta, Georgia.
Southern Illinois University at Edwardsville, Edwardsville, Illinois.
Parsons College, Fairfield, Iowa.
Grambling College, Grambling, Louisiana.
University of Southern Mississippi, Hattiesburg, Mississippi.
Mississippi Valley State College, Itta Bena, Mississippi.
University of Missouri at Rolla, Rolla, Missouri.
College of Santa Fe, Santa Fe, New Mexico.
College of A&MA, University of Puerto Rico, Mayaguez, Puerto Rico.
Baptist College at Charleston, Charleston, South Carolina.

Newberry College, Newberry, South Carolina.
Angelo State University, San Angelo, Texas.
Sul Ross State University, Alpine, Texas.
Southern Utah State College, Cedar City, Utah.
Norwich University, Northfield, Vermont.

NEW AFROTC DETACHMENTS IN FISCAL YEAR 1973

Fayetteville State University, Fayetteville, North Carolina.
Southeast Missouri College, Cape Girardeau, Missouri.
Samford University, Birmingham, Alabama.
Pan American University, Edinburg, Texas.
Northern Arizona University, Flagstaff, Arizona.
Wilkes College, Wilkes-Barre, Pennsylvania.
Florida Technological University, Orlando, Florida.
Lamar State University of Technology, Beaumont, Texas.
Embry Riddle Aeronautical University, Daytona Beach, Florida.
Livingston University, Livingston, Alabama.

DISSENT IN ROTC PROGRAMS

Senator YOUNG. If you have had any substantial problems at the colleges and universities in the past year related to the ROTC, I wish you would either describe them now or place a statement about them in the record.

Major PETERSON. There were 16 incidents of major damage or injury during academic year 1970–71 as compared to 55 the preceding year, resulting in a 71 percent decrease. Campus activity appears to have returned to normal this school year notwithstanding the fact that there have always been isolated incidents on the campus. There has been only one serious incident this academic year which occurred at St. Michael's College, Winooski, Vt., where the AFROTC offices were set afire.

RESERVE OFFICER CANDIDATES

Chairman ELLENDER. At this point in the record there will appear a summary of Reserve officer candidates requirements by project.

(The information follows:)

SUMMARY OF REQUIREMENTS BY PROJECT

[In thousands]

Title	Fiscal year— 1971 actual	1972 estimate	1973 estimate
Senior ROTC	$5,380	$7,079	$7,672
Scholarship program	3,289	6,066	7,346
Junior ROTC	282	474	594
Total program requirements	8,951	13,619	15,612

SENIOR ROTC STUDIES

Chairman ELLENDER. Please describe generally the senior ROTC aerospace studies 100, 200, 300, and 400.

Major PETERSON. AS100, 200, 300, and 400 refer to the freshman, sophomore, junior, and senior years of the AFROTC program. The

freshman and sophomore years are called the general military course (GMC). Although some variation exists between schools, the GMC generally consists of 1 hour of class and 1 hour of practical leadership training each week. The general military course examines the role of the U.S. military forces in the contemporary world, with particular attention to the U.S. Air Force, its organization and mission. The junior and senior years are called the professional officer course (POC). Students in the POC are under contract whereas only the scholarship students in the GMC are under contract. The professional officer course is devoted to an analysis of the development of air power and aerospace power, and concepts of Air Force leadership and management. The POC generally consists of 3 hours of class and 1 hour of practical leadership training.

SENIOR ROTC INCREASE

Chairman ELLENDER. For "Senior ROTC" the request for fiscal year 1973 is $7,672,000. The amount provided for fiscal year 1972 was $7,079,000. The average enrollment programed for senior ROTC will increase from 17,947 in fiscal year 1972 to 18,314 in fiscal year 1973. What is the reasoning behind this contemplated increase?

Major PETERSON. The new AFROTC detachments established this school year will be more fully enrolled and the 10 new AFROTC units approved for fiscal year 1973 will have enrolled students for the first time. In addition, the program for women increased 80 percent this past year from fall 1970. We anticipate a further increase for fiscal year 1973. The fact that no AFROTC detachments are scheduled for disestablishment should also have a favorable effect on AFROTC enrollments.

SENIOR ROTC SUBSISTENCE

Chairman ELLENDER. Justify the increased funding request, including the effect of the increase in the subsistence allowance from $50 to $100 a month.

Major PETERSON. Sir, the $593,000 additional fund requirement for fiscal year 1973 is due primarily to the full year cost of Public Law 92–171 which increased the subsistence allowance from $50 to $100 per month as of November 14, 1971, and military pay raises effective during 1972.

The increased subsistence allowance added $165,000 to our request. The pay raises impacted on our summer training programs. Cadets in the 4-year ROTC program normally attend a 4-week field training program after completion of their sophomore year. Those in the 2-year ROTC program must complete a 6-week basic field training course in lieu of the first 2 years of ROTC college training. Cadets attending the 4-week field training program receive one-half of a second lieutenant's pay while those attending the 6-week program are paid at the rate of an E–1. Thus Public Law 92–129 which authorized pay raises effective November 14, 1971, and the President's Executive order increasing pay effective January 1, 1972, added $402,000 to our fund requirement. The balance of $26,000 covers increased travel and ration requirements for these field training programs.

SCHOLARSHIP PROGRAM

Chairman ELLENDER. For the "Scholarship program" the fiscal year 1973 request is $7,346,000. For fiscal year 1972 the amount provided was $6,066,000. The justifications indicate that the enrollment in this program will increase from an average of 5,777 in fiscal year 1972 to 6,376 in fiscal year 1973. Please indicate what this increase is intended to accomplish.

Major PETERSON. Public Law 92-166, November 24, 1971, authorizes 6,500 AFROTC scholarships and provides that 20 percent may be appointed from persons in the 2-year AFROTC program. The scholarships will be used to bolster AFROTC enrollment. Four-year scholarship are offered only to those applicants who are qualified for pilot or navigator training. Three- and two-year scholarships are offered to both flying and nonflying candidates. The scholarships are used to increase AFROTC production since current data indicate that AFROTC production objectives will not be met for fiscal year 1972 or 1973.

Chairman ELLENDER. Describe the necessity for the increase in funds requested.

Major PETERSON. Sir, the increase of $1,286,000 reflects mainly the full-year cost of the 1,000 additional scholarships authorized by Public Law 92-166 and Public Law 92-171 which increased subsistence allowance from $50 to $100 per month.

The 1,000 additional scholarships were issued in mid-fiscal year 1972 and will be issued for a full year in fiscal 1973. The average enrollments in this program therefore, will increase from 5,777 in fiscal year 1972 to 6,376 in fiscal year 1973. All scholarship students are authorized the $100 per month subsistence. This combination of increased student enrollments and increased subsistence added $1,183,000 to our fund request.

The military pay raises which became effective during fiscal year 1972 also impacts on the field training program under this project as explained previously. These pay raises increased our fiscal year 1973 requirement by $97,000.

Chairman ELLENDER. Would you either state or provide for the record a description of the scholarship program? I would hope you would indicate both the nature of the program and benefits provided to the individual.

Major PETERSON. The AFROTC scholarship provides tuition, fees, textbooks, and a $100 subsistence allowance. The AFROTC annual production objective consists of 3,000 flying officers and 1,500 nonflying officers. Consequently, the 4-year AFROTC scholarships are limited to pilot and navigator qualified applicants. High school seniors may apply to AFROTC Headquarters, Maxwell AFB, Ala. 36112. Applicants must enroll at a college or university hosting the 4-year AFROTC program. Selections are made by a central selection board based on the "whole man" concept. Those applicants who fail to receive a 4-year AFROTC scholarship are encouraged to enroll in AFROTC in a nonscholarship status. Freshman and sophomore non-

scholarship cadets can apply for a 3- or 2-year scholarship to be activated at the beginning of their sophomore or junior year. Applications are accepted from both flying and nonflying applicants. The AFROTC scholarships are used to bolster AFROTC production. Selections are made by use of a central selection board. Financial need is not one of the criteria used in the selection process. Three- and 2-year AFROTC scholarships are available to women.

JUNIOR ROTC PROGRAM

Chairman ELLENDER. Proceed.

General LEWIS. A separate division of the Air Force Reserve Officers' Training Corps is the junior program. The objectives of the junior ROTC program are to develop informed and responsible citizens, strengthen character, promote an understanding of the basic elements and requirements for national security, and to develop an interest in the military service as a possible career. We have included in our estimate 25,850 cadets from 235 units to be enrolled in the junior ROTC program in fiscal year 1973.

The fiscal year 1973 estimate for the AFROTC program is $15.6 million, including $594,000 for the junior AFROTC.

Chairman ELLENDER. How long do they remain in the junior ROTC program? Is this a kind of lecture program?

Major PETERSON. We have no commitment. This is more or less citizenship training. We have found through experience that 44-percent of the people who participate in the junior ROTC program end up in some form of military program. Many graduates either enter senior ROTC, enlist, or go to one of the service academies. So, we are getting a benefit.

DESCRIPTION OF THE JUNIOR ROTC PROGRAM

Chairman ELLENDER. For "Junior ROTC" the fiscal year 1973 request is $594,000. Funds required for fiscal year 1972 were $474,000. Please describe this program.

Major PETERSON. The Junior ROTC program is currently offered at 194 high schools across the Nation. The program is scheduled to expand to 235 units in fiscal year 1973, and 275 units in fiscal year 1974. The program is only open to boys. The objectives are to develop informed and responsible citizens, promote an understanding of the basic elements for national security, and to develop an interest in the military service as a possible career. AFROTC units are established at the request of the high school. Geographic distribution and size of the student body are two of the main criteria used in the selection process. Retired USAF personnel are used to staff the JROTC units. No active duty personnel are assigned. The school pays the retired personnel the difference between the retired pay and the pay the instructor would receive on active duty less proficiency and hazardous

duty pay. The Air Force reimburses the school for one-half of the cost.

REASON FOR REQUESTED INCREASE

Chairman ELLENDER. What is the reason for the requested increase?

Major PETERSON. The number of active Junior ROTC units is programed to increase from 194 in fiscal 1972 to 235 units in fiscal 1973. Associated with this increase is an increase in the average number of students. The average enrollment is anticipated to rise from 21,038 in fiscal 1972 to 25,850 in fiscal 1973. The increase in cost results from the additional number of uniforms required to support this enrollment.

JUNIOR ROTC GRADUATE PARTICIPATION

Senator YOUNG. Can you provide the committee with statistics as to the number of Junior ROTC graduates who continue in the military program?

Major PETERSON. Yes, sir.

(The information follows:)

Accessions of cadets who completed all or some of AFJROTC, academic year 1970-71

Total cadets graduating from high school (1,834 completed all 3 years of program)	3,520
Enrolled in AFROTC	229
Enrolled in other ROTC	[1] 211
Service academy appointments:	
USAF	47
Other	[1] 37
Enlisted in USAF	[1] 536
Enlisted in other services	[1] 355
AFRes, ANG, other	[1] 143
Total	1,558

[1] Approximate.

Approximately 44.2% of the graduates of the junior program enrolled in the senior programs, enlisted in one of the armed services, or obtained appointments to one of the Academies.

CHANGES IN JUNIOR ROTC

Chairman ELLENDER. Describe any changes in units in this program in the past year or any in fiscal year 1973, including additions and subtractions.

Major PETERSON. The program has expanded from 160 units in fiscal year 1971 to 194 units in fiscal year 1972. A further addition of 41 units is programed for fiscal year 1973. This action will raise the number of AFJROTC units to 235. I will submit a complete listing of the AFJROTC units which were disestablished in fiscal year 1972, or scheduled for disestablishment in fiscal year 1973.

(The information follows:)

DISESTABLISHED

Name	Date	Reason
Fayetteville High School, Fayetteville, Ark	July 1, 1971	Low enrollment/lack of interest.
Biddeford High School, Biddeford, Maine	do	Financial and facility problem.
LaSalle-Peru Township High School, LaSalle, Ill	do	Low enrollment.
Trinity High School, Louisville, Ky	do	Cost of instructors, low enrollment
Edmunds High School, Sumter, S.C	Aug. 1, 1971	Consolidation of school system.
Lakeview High School, St. Clair Shores, Mich	do	Low enrollment.
Oklahoma Aerospace Academy, Burns Flat, Okla	Oct. 15, 1971	Bankruptcy.

SCHEDULED FOR DISESTABLISHMENT

Arcadia High School, Arcadia, Calif	July 1, 1972	Low enrollment.

ALLOCATION OF FUNDS

Chairman ELLENDER. Proceed.

General LEWIS. In summary, the fiscal year 1973 estimate for the Reserve Personnel Appropriation is $131,442,000 and includes $15.6 million for the Reserve Officers' Training Corps. The balance, or $115.8 million, will provide training for an average strength of 51,296 reservists participataing in drill pay status, 2,390 who are paid only for annual duty tour, and supporting schools, special tours, and administrative type costs.

Mr. Chairman, this concludes my statement.

I will be happy to answer any other questions the committee may have.

JUNIOR ROTC PROGRAM

Chairman ELLENDER. With reference to the junior program, how many schools participate, and how many students are enrolled?

Major PETERSON. We have 194 schools at the present time, fiscal year 1972. We have 20,000 students enrolled at 194 units. We are programed to expand in fiscal year 1973 to 235 units and expect the junior ROTC enrollment to increase approximately 25,000.

FURNISHING OF UNIFORMS TO HIGH SCHOOL VOLUNTARY PARTICIPANTS

Chairman ELLENDER. This $594,000 is used to buy uniforms for them?

Major PETERSON. Yes, sir; each of the cadets has a uniform he wears while he participates.

Chairman ELLENDER. They do not get paid?

Major PETERSON. They get no pay.

Chairman ELLENDER. It is all on a voluntary basis?

Major PETERSON. Yes, sir.

SCHOOL SELECTION PURSUANT TO PUBLIC LAW 88-647: GEOGRAPHICAL DISTRIBUTION AND MALE ENROLLMENT REQUISITE

Senator YOUNG. How are the schools selected?

Major PETERSON. Public Law 88-647 establishes that there should be a geographical distribution. This is one of the main concerns. The school should have a male enrollment which will support 100 students.

The male enrollment and geographical distribution are the two main items of concern.

Senator YOUNG. Do you have at least one in every State?

Major PETERSON. No, sir. There are several States that we are not located in. Last year, for the 1972 selection cycle, we made a special effort to identify schools in these States but we have not identified schools or received applications from all States.

REIMBURSABLE PROGRAM

Senator YOUNG. Please provide a list of all reimbursable items in the fiscal year 1973 program.

General LEWIS. For fiscal year 1973 we have included $850,000 for the reimbursable program; $802,000 of this amount is for the reserve officers in the selective service program, and $48,000 is the estimated amount to be derived from sale of meals to officers from enlisted messes.

REIMBURSABLE OBLIGATIONS

Chairman ELLENDER. In the tabulation on page 115 of the justifications there is a breakdown of reimbursable obligation: Personnel compensation, personnel benefits, travel and transportation, and supplies and materials. Please indicate the nature of these.

General LEWIS. This tabulation reflects by object classification the costs of the pay, allowances and travel of the reserve officers to be reimbursed by selective service, and the amount for sale of meals to officers from enlisted messes.

Chairman ELLENDER. Thank you.

SUBCOMMITTEE RECESS

It is now 12:35 p.m. We will recess until 2 p.m.

(Whereupon, at 12:35 p.m., the subcommittee was recessed, to reconvene at 2 p.m. on the same day.)

(Afternoon Session, 2 O'Clock, Thursday, February 17, 1972)

DEPARTMENT OF DEFENSE

Department of the Air Force

National Guard Personnel, Air Force

STATEMENT OF MAJ. GEN. FRANCIS S. GREENLIEF, CHIEF, NATIONAL GUARD BUREAU

ACCOMPANIED BY:

MAJ. GEN. JOSEPH R. DeLUCA, DIRECTOR OF BUDGET, HEADQUARTERS, U.S. AIR FORCE

MAJ. GEN. JAMES A. HILL, DIRECTOR OF AEROSPACE PROGRAMS, DCS/PROGRAMS AND RESOURCES

BRIG. GEN. JOHN J. PESCH, DEPUTY DIRECTOR OF AIR NATIONAL GUARD

COL. WILLIS D. MUIR, CHIEF, AIR COMPTROLLER DIVISION, NATIONAL GUARD BUREAU

BUDGET REQUESTS

Chairman Ellender. The subcommittee will come to order.

We will now hear General Greenlief on "National Guard Personnel, Air Force," and "Operation and Maintenance, Air National Guard."

For "National Guard personnel, Air Force," the budget estimate for fiscal year 1973 is $169,359,000, which includes $9,159,000 for the January 1, 1972, pay raise.

For "Operation and Maintenance, Air National Guard," the budget estimate for fiscal year 1973 is $461,743,000, which includes $6,743,000 for the January 1, 1972, pay raise.

PROGRAM AND FINANCING

At this point in the record there will appear certain programing and financing information from the justifications.

(The information follows:)

DEPARTMENT OF DEFENSE—MILITARY, NATIONAL GUARD PERSONNEL, AIR FORCE

PROGRAM AND FINANCING (IN THOUSANDS OF DOLLARS)

	1971 actual	1972 estimate	1973 estimate
Program by activities:			
Direct program: Reserve component personnel	$122,586	$149,883	$169,359
Reimbursable (total)	377	400	400
Total obligations	122,963	150,283	169,759
Financing:			
Receipts and reimbursements from:			
Federal funds	−232	−177	−177
Non-Federal sources [1]	−145	−223	−223
Unobligated balance lapsing	314		
Budget authority	122,900	149,883	169,359
Budget authority:			
Appropriation	118,600	134,620	160,200
Transferred from other accounts	4,300		
Appropriation (adjusted)	122,900	134,620	160,200
Proposed supplemental for Military Pay Act increases		10,980	
January 1972 pay increase supplemental/amendment		4,283	9,159

[1] Reimbursements are derived from sale of meals to officers from enlisted messes (10 U.S.C. 9621).

Note: The amounts shown as January 1972 pay increase supplemental/amendment are not distributed to each individual appropriation in the fiscal year 1973 President's budget, but are reflected as a one-line defense-wide contingency amount. The amounts shown above are estimates, pending final determination of the amounts to be requested when supplemental and amended estimates are formally transmitted.

RETIREMENT OF GENERAL WILSON AND INTRODUCTION OF ASSOCIATE

Chairman ELLENDER. The principal witness will be Major General Francis S. Greenlief, Chief of the National Guard Bureau.

You may proceed, General.

General GREENLIEF. Mr. Chairman and members of the committee, it is a privilege to appear before you for the first time as Chief of the National Guard Bureau to present the air National Guard requirements for the coming fiscal year. Over the years, you have been accustomed to the appearances of Gen. Winston P. Wilson who is now retired. It will be difficult to emulate General Wilson's Air National Guard expertise; however, I want to assure you that despite this green uniform, I have hopefully learned my Air National Guard lessons while serving as Deputy Chief of the National Guard Bureau under General Wilson. I look forward to the continued confidence and support this committee has given to the Air National Guard in the past.

I have with me today, on my left, Gen. John Pesch, Deputy Air Director of the Air National Guard.

BUILDING OF CAPABLE AND RESPONSIVE FORCE

The Air National Guard today is building to the most capable and responsive Air Reserve Force this Nation has ever produced. Within the total force concept, the demands and responsibilities placed upon the Air Guard dictate an even stronger and more ready force in the future.

Mr. Laird's directive of August 1970 called for modernization of Guard and Reserve Forces to increase their readiness, reliability, and timely response capability. Under this criterion—which the National Guard fully supports—we must be ready to deploy worldwide to in-

tegrate with the Active Forces whenever emergency situations require such augmentation.

Gentlemen, we in the National Guard are convinced the dollars spent on the Air Guard provide the most cost-effective defense for our national security. Further, we also believe that the stability and community-oriented composition of our forces contributes greatly in sustaining faith and confidence of our American citizens in their military establishment. Our guardsmen are the grassroots civic leaders in the communities in which our units are located. This is the source of the National Guard's strength, as it has been since the birth of this Nation.

In my presentation, I will discuss the mission of the Air Guard, force modernization, recent achievements, future forces, and lastly, our fund requirements.

MISSION

The dual Federal-State status of the Air National Guard provides each State with a trained, disciplined force for use in civil emergencies, and affords an equitable apportionment of Federal resources for defense purposes. Its mission includes commitments both to the Federal and State Governments.

Our Federal mission is to maintain combat-ready units, equipment, and personnel for immediate use by the Active Forces whenever and wherever they may be required.

The State mission is to provide trained personnel and selected equipment to assist in maintenance of law and order, preservation of the peace, and protection of life and property within the various States.

The funding provided by the Congress gives us the resources to develop and sustain trained and disciplined military units that are ready and capable to perform the Federal and State missions.

MODERNIZATION

In fiscal year 1971, the Air Force began a major modernization of the Air National Guard Forces. This fiscal year and next will see the continuation of this transition so that by the end of fiscal year 1973 over 60 percent of our Air Guard flying units will have converted to later-model aircraft. Obsolete weapons systems, such as the F–84, F–86, RB–57, and RF–84 will have been replaced by F–4, A–37, RF–4, and C–130 aircraft. Additionally, communications units are receiving newer equipment. This modernization program will result in a vastly increased Air National Guard capability.

EFFECTIVENESS RATINGS

With few exceptions, the Air Guard training standards are identical to those of active units, with the same criteria used to rate their combat capability. The active Air Force is responsible for inspecting and rating the Air Guard units. Major air commands conducted 184 operational readiness and management effectiveness inspections of Air National Guard flying units between January 1971 and December 1971. The overall pass rate averaged 96 percent.

MOBILIZATION

Chairman ELLENDER. General, can you tell us at this point the extent to which these units were used in recent conflicts?

General GREENLIEF. Yes, sir. We mobilized 14 flying units with a strength of 11,000 personnel during the Vietnam callup. During the Korean conflict 46,000 Air National Guardsmen and 56 flying and nonflying units were mobilized. In the Berlin crisis, 22,000 Air Guardsmen and 18 flying units were mobilized.

Chairman ELLENDER. That is out of how many?

General GREENLIEF. The total strength of the Air National Guard varied each time. The need or the determination as to how many units were to be mobilized and used was, of course, an Air Force and administration decision. All of our units were available for service.

Chairman ELLENDER. General, I assume you recall the position of this committee with respect to the failure of the Department of Defense to use the Guard and Reserve forces to meet the requirement for additional personnel for the Southeast Asia conflict.

General GREENLIEF. Yes, sir. I am, Mr. Chairman.

Chairman ELLENDER. During the last year were any of the Air National Guard units called to active duty?

1972 MISSIONS IN DIRECT SUPPORT OF AIR FORCE

General GREENLIEF. In the last year, none of our units have been mobilized to serve, as such. They have, however, in the Air Guard performed many missions in direct support of the Air Force.

Chairman ELLENDER. Such as what?

General GREENLIEF. We fly in direct support of the Air Force, specifically in our Creek Guardlift program, where we provide intratheater airlift for the Air Force in Europe. In our Aerospace Air Defense Command units, where we have 17 units with a force of about 14,000 people, we fly 24-hour-a-day, 7-day-a-week runway alert programs for the active Air Force. These units are as much a part of the active Aerospace Command Force as are the regular Air Force units.

CREEK PARTY PROGRAM

We have a Creek Party program in which our KC–97 aircraft, in our aerial refueling units, maintain aircraft on station in Europe all the time, and provide refueling for regular Air Force fighters flying in Europe. All the units in these forces participate on a rotation basis.

Senataor YOUNG. That is what the notation under "Training, Paygroup A" for "Operation Creek Party per diem and travel allowances" refers to?

General GREENLIEF. Yes. This notation refers to fiscal year 1973 anticipated reimbursements from the Air Force for the per diem and travel allowances of Air National Guard personnel who are being paid from the Military Personnel, Air Force appropriation, while performing an air refueling mission in support of Operation Creek Party in Europe.

JCS EXERCISES

In addition, our tactical fighter units provide forces required by the Air Force in the conduct and participation of JCS exercises.

We have another category of nonflying units that very actively provide for Air Force missions. That is our electronic installation units, where our men, on a training basis, do installation work on communications equipment for the Air Force. We accomplish required tasks for the Air Force, utilizing our training time. We call this live scheme training.

In addition, we are available to the Air Force on a day-by-day basis to allow for the capability for rapid expansion to meet world-wide requirements.

STATE SERVICES

In addition, our Air Guard units, because of the dual State-Federal nature of the National Guard, are available for and do provide State service.

Chairman ELLENDER. In that connection, what have you done for the States?

General GREENLIEF. In the civil disturbance area which is primarily a National Guard function, the Air Guard has a role. We provide a 35-man security force to secure our bases where they are located close to where a civil disturbance may occur. In addition, a 200-man team provides a highly trained tactical force for use on the streets, just as our Army Guard troops. In addition, our Air Guard units provide airlift capability, and on many occasions deliver needed supplies to a flood-stricken area or storm-ravaged area.

On a number of occasions, we have airlifted feed to cattle, not in your part of the country, but in my part of the country, where they get stranded by the snow.

Chairman ELLENDER. That is done at whose expense?

General GREENLIEF. The State duty?

Chairman ELLENDER. Yes.

General GREENLIEF. That is done at State expense.

Chairman ELLENDER. Carrying feed to the cattle?

General GREENLIEF. Yes, sir.

CURRENT STRENGTH

Chairman ELLENDER. What is your planned strength for fiscal year 1973?

General GREENLIEF. For fiscal year 1973, our programed average strength is 87,614.

REGULAR AIR FORCE OFFICERS, AIRMEN AND CIVILIAN ADVISERS

Chairman ELLENDER. How many officers, or enlisted airmen, and civilians are required from our regular forces to train and support the Guardsmen?

General GREENLIEF. Sir, by the end of fiscal year 1972, there will be 258 officers and 682 airmen authorized for a total of 940 from the regular Air Force who support our units as advisers. In fiscal year 1973, the number increases slightly due to the conversion program of our units. Then the number will be 270 officers and 808 airmen.

Chairman ELLENDER. 270 officers?
General GREENLIEF. Yes, sir.
Chairman ELLENDER. As compared to 258?
General GREENLIEF. Yes, sir.
Chairman ELLENDER. These personnel are not paid out of your budget?
General GREENLIEF. No, sir.
Chairman ELLENDER. That is furnished to you by the——
General GREENLIEF. Air Force Personnel appropriation.

POSSIBLE TRAINING BY GUARD PERSONNEL

Chairman ELLENDER. Could any of this be done by your personnel, instead of utilizing the regular Air Force?
General GREENLIEF. It could be, but I would prefer that it be this way, the way it is now organized.
Chairman ELLENDER. I am asking you if it could be done. I am sure the committee would be interested in finding out whether or not we could have some of these services performed by some of your people.
General GREENLIEF. Mr. Chairman, I don't believe the same mission could be performed by our people because the purpose of the regular Air Force officers is to advise our units. An objective view outside our force insures that we, in fact, do the training required by the Air Force, meet the Air Force standards, and also provides to our units the expertise, knowledge, and experience that exists in the regular Air Force officer that would not exist to that degree in our units. Therefore, I don't believe we would provide this same service with our own people.
Chairman ELLENDER. You may proceed.

AEROSPACE DEFENSE FORCES

General GREENLIEF. Air Guard Aerospace Defense forces flew 80,800 hours in fiscal year 1971, which included 24-hour, 7-day-a-week runway alert duty, annual flying training requirements, and the support of ADC/NORAD exercises. Our participation in the alert program is a prime example of how a peacetime, nonmobilized force can play a vital role in the augmentation of the active force. In this case, air crews are ordered to active duty, on a volunteer basis, and are under the operational control of NORAD during their active duty.
In Hawaii, the Air Guard provides the only fighter interceptor defense and radar surveillance for the islands.

TACTICAL FIGHTER FORCES

Our tactical fighter units participated in two JCS exercises in fiscal year 1971; however, with the increased reliance upon the Air National Guard, we will participate with the active force on a much larger scale in the future. Since July 1971, our fighters have been part of five exercises. Plans call for our units to be included in four additional exercises during the balance of fiscal year 1972.
The final plans for fiscal year 1973 are not yet complete; however, we expect to play an important role in at least 12 JCS and Army/Air

Guard exercises during this period. We are convinced that this type of training is most effective in the development of first-line units in both the Army and Air Guard.

TACTICAL RECONNAISSANCE FORCES

For the last 18 months, RF–101 and RF–4G aircraft have been replacing the obsolete RF–84F and RB–57 aircraft in our tactical reconnaissance force. During this period, participation in exercises and civil support for aerial search and photography missions have been somewhat limited due to transition training into the new equipment. In fiscal year 1971, an RF–84F unit deployed to Alaska for two exercises, and in the first half of this fiscal year one of our RF–101 units took part in an exercise in Alaska and one in the Ft. Campbell, Ky., area.

AERIAL REFUELING FORCES

Our refueling units are in their fifth year of the Creek Party mission in Europe. This is the first full-time overseas mission performed by a Guard or Reserve unit while in a training status. Air and ground crews from our KC–97 tanker units perform their annual training on a rotational basis at Rhein Main Air Base, Germany, providing air-to-air refueling for Air Force fighter planes in Europe. As one detachment completes their 15 days' training, they are replaced by another. This is a continuous operation, 365 days a year. A total of 631 Creek Party missions were flown during fiscal year 1971, while 363 missions were flown during the first half of fiscal year 1972. This joint Air Guard/Air Force mission has produced highly qualified air and ground crews in the Air National Guard. It has also promoted better morale and motivation of our people while contributing to the combat capability of the active forces.

TACTICAL AIRLIFT FORCES

Two years ago the ANG activated its first two C–130 Tactical Airlift units, and by fiscal year 1973 the fleet will have grown to 10 squadrons equipped with the C–130 aircraft, having both long- and short-range capability for delivering personnel or cargo. The C–130, with its short runway capability, has been the major support aircraft in Southeast Asia.

The new tactical role will allow little availability for these aircraft to airlift troops and cargo to Guard and Reserve training sites. The Tactical Air Command requires our maximum participation in JCS exercises and other tactical airborne missions. This training will consume most of the unit's time and resources.

SPECIAL OPERATIONS GROUPS

Our three Special Operations Groups participate in joint training with the Active Army and Army National Guard Special Forces throughout the year. Their most significant activity was in exercise Flintlock IV during September and October 1971, where elements from our three groups joined with NATO-based ground and air units in combined maneuvers. Commendations for this participation have

been received from the commanders of U.S. Air Force in Europe and the Tactical Air Command.

TACTICAL AIR SUPPORT

The Air Guard Tactical Air Support units grew from three to five during fiscal year 1971. They are equipped with 0–2's, a light and highly maneuverable pusher-puller, two-engine aircraft. Their mission is to provide forward air control and observation for the ground forces. They are the link between the ground forces and the tactical fighter and reconnaissance units which provide the air-ground support. During the past fiscal year, they have participated in seven exercises. These units train throughout the year with the Army National Guard, with each flying group supporting one Army Guard Division.

TACTICAL ELECTRONIC WARFARE

Our one Tactical Electronic Warfare Group, equipped with EC–121 aircraft, supported the active Air Force in Southeast Asia from July 1970 through December 1970. This unit also participated in 10 exercises during calendar year 1971, supporting JCS, NORAD, Navy and Tactical Air Command exercises.

MILITARY AIRLIFT FORCES

In fiscal year 1971, our airlift units flew 4,900 missions, carrying 81,000 military troops and 14,000 tons of cargo. During the first half of fiscal year 1972, approximately 2,300 missions were flown, airlifting over 49,000 military troops and 9,100 tons of cargo. We supported the active military forces, in addition to providing airlift for domestic emergencies involving civil disorders and natural disasters.

Our aeromedical airlift units supported Operation Creek Guardlift in Europe during 1971. This mission, implemented in April 1971, and although not a medical air evac mission, is a passenger and cargo airlift in support of active forces and operates over Mediterranean and European mainland routes. It has been performed as part of the Guardsmen's annual training, satisfying airlift needs and ANG training at the same time.

TACTICAL FORCE PLANNING GROUPS

Our two tactical force planning groups, one in White Plains, N.Y., and the other in St. Louis, Mo., each planned and directed a series of training exercises for Air Guard tactical forces. In July 1971, the year's largest training exercises, Guard Thunder and Guard Strike III, generated nearly 1,800 tactical sorties. Three ANG tactical air control systems in the Northeast and Midwest were part of this exercise. This was a joint Army/Air National Guard venture and was extremely successful. We plan to continue this program in the future.

TACTICAL CONTROL UNITS

During calendar year 1971, our tactical control units further improved their readiness capability. Of significance was the reorgani-

zation of the tactical control groups. The objective was to aline ANG tactical control units identical with that of the Active Air Force. This was completed with little disruption or degradation of mission capability.

Another important change is the program to equip the ANG with two 407L tactical control systems from Air Force assets. This equipment is computerized and highly sophisticated. It requires an extensive modification of our training programs and concept of operation, plus an increase in air technician manning. The conversion of the first unit is planned for June 1972. Associated with the 407L program is the activation of two new tactical control groups in the Air Guard Force.

During exercises Guard Thunder and Guard Strike III in July 1971, units participated in a tactical theater environment. The training, closely observed by the Tactical Air Command, confirmed the capability of these units to meet Active Air Force mission requirements.

COMMUNICATION UNITS

Improvement to the operational capability of our mobile communications units began in fiscal year 1971. We now have six groups alined with six tactical control groups. This gives us six complete tactical air control systems.

We continued the support of Air Force communications functions on a worldwide basis. Air Guardsmen utilized 11,000 man-days in the installation and maintenance of ground communications-electronics equipment in Europe, Hawaii, Japan, and Korea. This live training support of active requirements increases the skill and motivation of our people.

TRAINING COMPLEX

The Air National Guard NCO Academy, which has just been recognized by the USAF with the Outstanding Element Award, is an Air Force accredited school for leadership training of Air National Guard noncommissioned officers. It will be in its fifth year of operation in fiscal year 1973. The academy continues to produce graduates who are highly qualified as middle managers of our complex units. We are making this program available to as many of our noncommissioned officers as possible. It is our intention to make this a mandatory requirement for promotion to the top three grades.

In addition to the NCO Academy, we have established a leadership school for our younger airmen. This program has also been extremely successful, and we believe will be highly effective in retention programs and personnel management.

Our newest addition is the Officer Preparatory Academy. This school provides a 6-week course of training, modeled after the active Air Force Officer Training School, to pilot and navigator applicants prior to commissioning. This training has been very beneficial in indoctrinating these young men to their responsibilities as Air National Guard officers.

PROGRAMED FORCES

The Air National Guard did not change in total number of flying units; however, changes in mission areas have occurred or are programed between now and the end of fiscal year 1973.

The 17 air defense units at the end of fiscal year 1971 will increase to 19 by the end of fiscal year 1972 and to 21 at the end of fiscal year 1973.

Our 27 tactical fighter units at the end of fiscal year 1971 will increase to 33 by the end of fiscal year 1972. We are scheduled for an end strength of 36 tactical fighter units in fiscal year 1973. The tactical reconnaissance force had 11 units at the end of fiscal year 1971. At the end of fiscal year 1973, our reconnaissance force will consist of six units.

FORCE RECONFIGURATION TO MEET AIR FORCE REQUIREMENT

Chairman ELLENDER. Why was that done?

General GREENLIEF. It is because the Air Force is changing its structure to meet what it considers to be the worldwide requirement. Since the Air National Guard is part of the total force, we must be configured to provide those forces required by the Air Force.

Chairman ELLENDER. Here you are increasing it. Why is it necessary to increase it?

General GREENLIEF. Sir, I cannot answer for the Air Force. Our share of the increase is part of the total package. However, there are pluses and minuses throughout our entire program.

Chairman ELLENDER. You have 27 tactical fighter units for 1971, and you will increase them to 33 in 1972. You are scheduled to strengthen them to 36.

General GREENLIEF. Yes, sir.

SUPPLEMENTAL FORCE TO COMPENSATE FOR SERVICE REDUCTIONS

Chairman ELLENDER. It seems to me that these improvements in the Guard and Reserve Forces stem from the fact that under the all-volunteer force concept the Active Duty Forces will be smaller. How do you feel about this?

General GREENLIEF. I don't see it that way, sir. As I understand and see what is occurring, it is that all of the military services are reducing in size.

Chairman ELLENDER. To be complemented by the Guard and by the Reserves.

General GREENLIEF. Yes, sir. Those reductions in size and, therefore, reduction in the capability of the Active Forces, are being supplemented by the Reserve components, in this case the Air Force placing greater reliance on the Guard. This is what Mr. Laird's memorandum of August 1970 addressed.

MIX OF INCREASES AND REDUCTIONS

In the Air Guard program in total, there is a reduction in strength in fiscal year 1973 as opposed to an increase. Within our force figures, and in responding to the Air Force requirements, there are pluses and minuses in types of units and weapons systems to produce for them the balanced force they require.

Chairman ELLENDER. What was the total you had in 1972?

General GREENLIEF. Sir, the total number of flying units was 92, and it remains 92 throughout the fiscal year 1973 period.

Chairman ELLENDER. You say the mix has been changed.

General GREENLIEF. The mix has been changed, sir.

Chairman ELLENDER. You have here three more tactical fighter units than you had in 1972.

General GREENLIEF. Yes, sir.

Chairman ELLENDER. What has been reduced to take the place——

General GREENLIEF. The tactical reconnaissance force had 11 units at fiscal year 1971. At the end of fiscal year 1973, our reconnaissance force will consist of only six units, a reduction of five.

Chairman ELLENDER. How does that affect personnel?

General GREENLIEF. Sir, that is a reduction of five tactical reconnaissance groups. They would average a strength of around 800. As you will see, we started with 92 units and we end with 92. These are offsetting the increases that you mentioned, sir, in the tactical fighter force.

STRENGTH REDUCTION

Chairman ELLENDER. Am I to understand that the National Guard will have the same overall number of units?

General GREENLIEF. They will have the same number of flying units. There is a slight reduction in strength.

Chairman ELLENDER. To what extent?

General GREENLIEF. The average strength in fiscal year 1973 goes down to 87,614; whereas, the average strength program for 1972 was 88,191.

Chairman ELLENDER. That is a difference of about 600.

General GREENLIEF. Sir, it is a slight reduction of 577, while we maintain the same number of units.

COST INCREASE RESULTING FROM PAY RAISE

Chairman ELLENDER. How about the cost?

General GREENLIEF. The costs are increased in this appropriation because of the increase generated by the pay raises, sir.

REGULAR AIR FORCE TRAINERS

Chairman ELLENDER. How about the number of personnel you utilize from the Regular Force? To what extent has that been changed?

General GREENLIEF. If you are addressing, sir, the Regular Air Force personnel in support of the Air Guard, that is an increase of 138. This relates primarily to an increase in F–106 units in the Aerospace Defense Command. This is because of the greater complexity of the weapons system.

Chairman ELLENDER. You mentioned 258 officers. What number did you use last year?

General GREENLIEF. This is the number authorized this year, 258 officers, 682 airmen, a total of 940. In 1973, the number becomes 270 officers, 808 airmen, for a total of 1,078.

Chairman ELLENDER. You say that is due to increased complexity?

General GREENLIEF. It is due to the modernization program of our air fleet, a greater complexity of weapons systems.

PERSONNEL NECESSARY FOR OPERATION OF AIRCRAFT

Chairman ELLENDER. In other words, you need more people to operate the same number of planes; is that right?

General GREENLIEF. Yes, sir. In the case of the F–106, sir, the [deleted] problem goes along with it.

Chairman ELLENDER. Please explain.

General GREENLIEF. That plus the requirement for Active Air Force personnel to maintain [deleted] components.

Chairman ELLENDER. Proceed.

General GREENLIEF. Our other tactical forces totaled 24 units at the end of fiscal year 1971, with an end strength of 27 units at the end of fiscal year 1972. By the end of fiscal year 1973, we will have 29 units.

The strategic and aeromedical airlift units had 13 units at the end of fiscal year 1971. They will have six units at the end of fiscal year 1972, and are due to phase out by the end of fiscal year 1973.

Since preparation and submission of the budget, several adjustments to the forces have taken place and are incorporated above. Resource and fund impacts were negligible.

AIRCRAFT DECREASE

Chairman ELLENDER. Is the reason for the decrease in airlift predicated on reduced activities on Southeast Asia?

General GREENLIEF. Sir, I cannot answer that. The Air Force is determining the requirement for the airlift.

General HILL. No, sir; it is not primarily related to Southeast Asia. These units were C–121, piston aircraft. There is sufficient jet capability in the Active Force to provide for the air evacuation requirement from overseas to the continental United States, and within the United States with the C–9 and the C–141. That sufficiency of aeromedical airlift goes for peacetime, and our wartime contingency requirements, as we presently visualize them, negate or nullify the requirement for the C–121 obsolete piston aircraft, so we are putting those units into something more modern, but which is still required for the total force.

Chairman ELLENDER. Are there plans to continue the airlift to Southeast Asia?

General GREENLIEF. We are not now engaged in airlift to Southeast Asia, and we are phasing this program out completely.

ZERO DRAFT AND RECRUITMENT

Senator YOUNG. General, as we approach zero draft, will the Air National Guard be able to maintain a full complement?

General GREENLIEF. Sir, I am happy to say in the Air National Guard we have been doing quite well. We have had a net gain of 1,560 this fiscal year. We are gaining at the net rate of 222 a month. I am confident we will attain the end strength programed for this year.

Senator YOUNG. Do you have empty slots?

General GREENLIEF. Yes, sir; we are about 1,500 short of our programed end strength. We are building up. We were about 3,000 short at the beginning of the fiscal year. We have shown a net gain of 1,560.

ARMY NATIONAL GUARD RECRUITMENT

Senator YOUNG. Is that true of the Army National Guard?

General GREENLIEF. Regrettably, no, sir. In the Army Guard side, we have a different problem. From July through October, we lost an average strength of 3,500 a month. In November, it jumped to the point that we lost about 4,100. Then in December, a month that is traditionally a very slow recruiting month, we cut our loss rate to 2,969. In January, we further cut our loss rate.

This is a direct product of program losses that were based on enlistment 6 years ago. I believe on the Army Guard side, with the incentive of the additional pay raise, and what I believe to be an improved public attitude, a lessening of an antimilitary attitude, and improved leadership and training on our part, that we probably will be able to come back to strength. I have severe doubt that we could maintain an average strength of 400,000 year in and year out in the Army Guard without additional incentives.

COMBAT READINESS STATUS

Senator YOUNG. Isn't the entire National Guard, both Army and Air National Guard, in a higher state of combat readiness than has been previously achieved?

General GREENLIEF. In the Army Guard, sir?

Senator YOUNG. In the Air National Guard and Army.

General GREENLIEF. In the Air National Guard we are not in as high a state of combat readiness as we have been, and that is because of the conversion program. Last year we had 34 unit conversions. When you convert a unit from one weapons system to another, there is almost an immediate drop in readiness while you requalify your personnel in a more complex weapons system.

Senator YOUNG. Are these newer planes more combat capable than the older aircraft?

General GREENLIEF. Yes, sir. On a given day, if you had a unit that was C–1 equipped with RF–84 aircraft, and tomorrow you equip that unit with RF–4C's, it would go down to C–4 because of lack of training. We have to retrain our people, and when they get their training they will not only have a higher C rating, but they will be far more combat capable.

Senator YOUNG. I don't think you would want to get into an air war with the older aircraft.

General GRENLIEF. Sir, I support the idea of conversion to modern aircraft. I recognize there will be a period of time we will have a loss in C rating but the ultimate result will be much improved capability.

Senator YOUNG. I think the Reserve and National Guard system is better now than it has been in the past.

ARMY NATIONAL GUARD COMBAT READINESS

General GREENLIEF. In the Army Guard we are more ready primarily as a result of the increased amount of modern equipment we are receiving, particularly in aircraft.

Senator YOUNG. Has the National Guard reorganization contributed to increased readiness?

General GREENLIEF. Yes, sir; it is just about completed.

Senator YOUNG. Thank you.

RECOGNITION OF COLONEL MUIR

Mr. Chairman, I am happy to have a colonel from my hometown here, a very fine officer, Colonel Muir.

Could I ask why you decided to stay in the National Guard?

Colonel MUIR. I believe in it. I still do.

Senator YOUNG. How many years have you served in the National Guard?

Colonel MUIR. Twenty-five years, sir.

AIR NATIONAL GUARD PERSONNEL

General GREENLIEF. Our most valuable asset is our people. As I mentioned earlier, our Guardsmen are from the grassroots of our Nation, and part of mainstream America, National Guardsmen are located geographically throughout the Nation numerically in proportion to the civilian population. With this distribution, we in the National Guard Bureau receive a feedback from the field that gives us a better prespective of the requirements of our units and the attitudes of our people.

With zero draft a fact of life, we no longer have long lines of draft-motivated men pounding at our doors. However, we are convinced that we can sell the Air Guard to the young men and women of this country. It will take a combination of ingredients. We will no doubt need other incentives that will offer these men a better life for themselves and their families. The Department of Defense and Air Force are evaluating several options. Our training programs have been excellent, but we will have to do even better to motivate and convince our young people that they are needed in the service of their country.

I have previously mentioned some of our programs, such as live training, travel to other countries, and motivation through professional schools such as the Air Guard's NCO Academy. We will continue to improve the quality of our units to promote esprit de corps and a sense of purpose and meaning in the Air Guard program.

RECRUITING

In January of this year, we initiated an "In-Service Recruiting" program. We selected highly motivated and dedicated non-commissioned officers and placed them at Active Air Force installations for the purpose of recruiting men and women being released from active duty into the Air Guard. We are very optimistic that this program will be successful.

In our fiscal year 1973 personnel budget, we have included $1.9 million for training recruiters and for performing actual recruiting duties. This will significantly improve our recruiting capabilities.

Our plans call for placing some of our highly motivated officers and airmen on short tours of active duty. They will be trained in recruiting techniques and will provide recruiting service for their units in the local area.

MINORITY PARTICIPATION

The National Guard's objective is to increase the number of minority group participants in our membership, but unfortunately we have been less than successful during the past several years. Last fall I established new goals to increase black and other minority group membership in the National Guard. With this in mind, we are seeking the help of responsible minority groups and are working very closely with their leaders to develop a program that recognizes their goals and aspirations. I am optimistic that we will show significant progress over the next year.

DOMESTIC ACTION

We urge our Guardsmen to become involved in patriotic and other civic programs in an effort to help build a better America. "Operation Patriotism" is being fostered by our Air National Guard NCO Academy Graduate Association. Currently, we have 45 chapters with a goal of one at each Air Guard installation. These chapters of NCO graduates have become the focal point for community action and patriotic endeavor. They are being promoted through programs such as posters, essay contests, flag ceremonies and speaker bureaus.

An example of a very effective civic action program was at Fort Wayne, Ind. Members of the ANG hospital unit performed physical examinations, and conducted health classes for migrant workers and their families in the Allen County area. The program was extremely successful and brought praise from local and State civic leaders.

In other areas of the country, Guardsmen have established athletic clinics for ghetto children and conducted summer recreation programs. Environmental assistance has been provided to scores of communities across the land. These endeavors have been significant and bring credit upon our officers and airmen.

CIVIL DISTURBANCE TRAINING

In 1971, the Department of Defense directed that the National Guard establish a training program that would give us the capability to respond to civil disturbances. At each Air Guard flying base, we have formed a 35-man civil disturbance security team to augment our regular security personnel in the protection of aircraft and facilities in event of disturbances near our installations. In addition, we have formed civil disturbance "quick reaction" teams at 67 of our bases to augment the Army National Guard in off-base situations. The size of each team is approximately 200 men.

In many areas of the country, the National Guard has the only trained leaders and manpower readily available to augment local law enforcement agencies to maintain law and order. During emergencies, the Air Guard can also provide airlift, communications, and medical services, as well as the security manpower assistance, to local and State authorities.

Chairman ELLENDER. Describe the need for and cost of the two to four drills authorized for civil disturbance training.

General GREENLIEF. Mr. Chairman, Air National Guard Civil Disturbance training has been authorized in those States where a requirement has been specified to augment the Army National Guard in dealing with civil disturbances. All Air National Guard personnel assigned civil disturbance duties require 16 hours (four drills) of annual refresher training in accordance with prescribed Army and Air Force directives. The training requirements also include 8 hours (two drills) of leadership training annually for specified individuals, such as platoon leaders and task force commanders. The total cost of this training is $1,259,000 in fiscal year 1973.

1973 REQUIREMENTS

Gentlemen, I will spend the remainder of my time on the fiscal aspect of our fiscal year 1973 program.

The programed end strength for the Air National Guard in fiscal year 1973 is 88,876, with an average of 87,614. This is a slight decrease from our programed end and average strength in fiscal year 1972. We are requesting $169.4 million in this appropriation to support this drill strength. It will provide pay and allowances for officers and airmen on active duty training, school training, special tours of active duty in support of active forces exercises, clothing, subsistence, travel and other personnel expenses.

The fiscal year 1973 appropriation request compares with $149.9 million in fiscal year 1972. The increase of $19.5 million is primarily the result of pay raises. The fiscal year 1972 amount includes a $15.3 million supplement for the recent military pay raises. This supplemental is urgently needed to sustain our on-board manning and combat readiness training.

I will now discuss the scope of the Air National Guard activity, including an explanation of the difference in costs between fiscal year 1972 and fiscal year 1973.

ANNUAL FIELD TRAINING/UNIT TRAINING ASSEMBLIES (P521)

Each year our members are required to perform 15 days of annual active duty training and attend 48 unit training assemblies. Aircrews on current flying status are authorized 36 additional flying training periods each year to produce the flying proficiency which is essential to combat readiness. This program is $9.1 million more in fiscal year 1973. It includes the full-year cost of the recent military pay raise, and the increased requirement for commercial transportation to and from annual training, due to the decline of our in-house strategic airlift capability in fiscal year 1973. These requirements are partially offset by a slight decrease in average drill strength from that programed for fiscal year 1972.

AIRCRAFT CREWS AND MAINTENANCE PERSONNEL

Chairman ELLENDER. Do these people do the actual flying?

General GREENLIEF. They are the actual crews of the aircraft, plus the men who maintain the aircraft—engines, airframes, electronics—they supply all the backup required to keep the airplane in the air.

AIRCRAFT UTILIZATION

Chairman ELLENDER. How many aircraft are assigned to the Air National Guard, and how many of these are ready to fly on a given day?

General GREENLIEF. We have 1938 aircraft assigned to the Air Guard. About 5 percent of these are in depot maintenance and not available. We estimate that a fully combat ready unit will have about 71 percent of their aircraft available to fly each work day.

Our maintenance manning and our supply manning are geared to generate enough flying hours to meet our training requirements. Given additional manning, additional parts, fuel, et cetera, we could generate more flying hours. We only man our technician force at a level sufficient to produce those flying hours required to meet the training requirements.

TRAINING PERIODS

Chairman ELLENDER. Earlier you indicated that those people in pay group A are required to perform 15 days of annual active duty training, and attend 48 unit training assemblies. How long do they remain at one of these 48 training assemblies?

General GREENLIEF. Normally for a continuous period of over 8 hours, which constitutes two 4-hour training assemblies.

Chairman ELLENDER. Do these training assemblies involve both flying and ground activities?

General GREENLIEF. Yes, sir; there is both flying and nonflying activity. Both training and training support activity and administrative activity that must go on to keep the units operating.

15 DAY ANNUAL DUTY TRAINING PERIODS

Chairman ELLENDER. Do you stagger the 15 days, or do they all come at once?

General GREENLIEF. Sir, they vary with different types of units. In a tactical fighter unit, for example, they will normally deploy from their home base to a training site where they will be working on ranges. That will be 15 days at one time. However, in a military airlift unit, we are on what we call a year-round training plan.

A flying crew will come on for the length of time required to fly the mission. If they have, for example, a 5-day mission in support of the Air Force, they leave their jobs for the 5 days, fly the 5 days, and return home. If they did that three times a year, they would meet the 15-day requirement.

We also use these members to assist the full-time technician mechanics, supply people and administrators, so that they are contributing their training time to the day-to-day operation of the unit.

AIR FORCE ADVISERS: CONTINUITY OF SERVICE

Chairman ELLENDER. Do you operate your bases only when you have training activities going on?

General GREENLIEF. The base will normally operate 5 to 6 days a week, depending on the schedule arrangement, to meet its mission requirement. The full-time, day-to-day operation of the base is accom-

plished by our technician force. That provides the facility at which all our other people come to do their training.

TECHNICIAN FORCE

Chairman ELLENDER. They are year-round jobs?

General GREENLIEF. Yes, sir.

Chairman ELLENDER. Are they civilians?

General GREENLIEF. They are technicians. They are required to be military members of the National Guard employed in a specialty which is also their military specialty. This is our technician force that we will address in the O&M budget.

Chairman ELLENDER. How many have you there, as a rule?

General GREENLIEF. Sir, it depends on the type of facility, the type of unit. If we have a unit of about 800 military people, of that number, 180 might be full-time personnel. They are military members, but they are employed full-time by the Guard as technicians.

Chairman ELLENDER. What are these people doing when there is no one there participating in training activities? I know there must be times when you don't have anybody there fulfilling training responsibilities.

General GREENLIEF. It would be very, very rare, sir, for this reason: Visualize a flying unit, any type of flying unit, and the air crew who fly the aircraft, they attend the assemblies, plus the 36 flying training periods. They are out and performing that flying training period on other than a scheduled drill.

For example, last weekend was a two-day training period, the whole unit was there, a pilot who had the requirement to do the 36 additional flying training periods may also come out Wednesday afternoon to continue his flying proficiency training. The work at the base requires full-time people to maintain aircraft in a flyable condition, both to meet our training requirement and the mobilization requirement of the Air Force, plus to perform all the other services that are required by the reason of having people—supply, maintenance, administration, recordkeeping—and reporting which is ever present. This is the force that we need full-time to operate a base, and support the flying hours to meet the Air Force's requirement for operational readiness.

Chairman ELLENDER. General, from what you say I take it you are convinced that these technicians are fully occupied.

General GREENLIEF. Sir, these people are fully occupied. When I address O. & M., I will discuss the manning levels we have and the deficit position of our technician hiring as related to workload.

Chairman ELLENDER. You may proceed.

NON-PRIOR-SERVICE BASIC AND TECHNICAL TRAINING PROGRAM

General GREENLIEF. Air Guardsmen receive their initial basic training at Lackland Air Force Base, along with recruits of the regular Air Force. About 70 percent of the recruits enter technical training school immediately upon completion of basic military training. The remainder complete their active duty through home-station "on-the-job training." During fiscal year 1972, we will enter 9,360 nonprior service individuals into basic training. In fiscal year 1973, we will

enter 11,240, thus increasing this program $7.2 million. Also included is the full-year impact of the recent military pay increases. The fiscal year 1973 program provides the minimum number of nonprior service personnel to sustain our drill strength requirements.

SCHOOL TRAINING

During fiscal year 1972, 4,300 officers and airmen will be enrolled in school training at active military installations. In fiscal year 1973, 5,200 will participate. The cost increases by $2.7 million in fiscal year 1973 and is directly attributable to training requirements generated by aircraft conversions, recruiter training, and, again, the full-year impact of the pay raises. The school training will improve the skills of Air guardsmen through attendance at formal USAF courses of instruction. This is essential to reestablish the combat capability that will temporarily decline as a result of conversions to new weapons systems. These courses include flight training, technical training, and professional training.

SPECIAL TRAINING

This program provides the Air guardsmen with training not in other programs. It includes overwater training flights, readiness, conversion, and simulator training. It also provides man-days for runway alert in support of the Aerospace Defense Command, and our participation in JCS exercises. Fiscal year 1973 costs will increase a nominal $0.2 million.

ADMINISTRATION AND SUPPORT

This program provides for the pay and allowances of ANG officers serving under sections 265, 8033, 8496 of title 10, and section 708 of title 32, United States Code. It also includes death gratuities for survivor's benefits, disability pay, and the employer's contributions to the Service Group Life Insurance program. Fiscal year 1973 costs will increase $0.3 million primarily due to the full-year cost of the pay increases.

AIR NATIONAL GUARD SECTION OFFICERS

Chairman ELLENDER. On page 152 of the justification, there is a tabulation of Air National Guard section officers. This shows that an average of 56 Air National Guard officers perform full-time active duty under section 265 of title 10, United States Code; six under section 8033; and 36 under section 8496. A total of four perform active duty under section 708 of title 32. Please indicate for the record the functions covered by these sections.

General GREENLIEF. There is a distinction between the various types of Air National Guard section officers performing full-time duty with the Air Force.

Under the provisions of 10 U.S.C. 8033, there is a legal requirement for not less than 10 officers of the Air National Guard and Air Force Reserve to serve on the Air Staff, one-half of whom shall be from each of these components. These officers are considered as additional members of the Air Staff. The current Air Force policy requires an equal representation from the Air Guard and Air Force Reserve respectively

when such officers are assigned to a specific Air Staff directorate. At the present time, six Air Guard, and six Air Force Reserve officers, are on duty under 10 U.S.C. 8033.

The number of officers performing active duty under 10 U.S.C. 265 are as prescribed by the Secretary of the Air Force. They may be assigned at the seat of government or to a command headquarters in the field. These officers are also considered as additional members of the staff to which they are assigned. They participate in preparing and administering the policies and regulations affecting the Air Guard and Air Force Reserve. There is no requirement for equal component representation.

Sixty percent of the officers assigned to the National Guard Bureau are from the Active Air Force, with the remaining 40 percent from the Air Guard. The Air Guard officers serve on a 4-year, full-time active duty tour under the provisions of 10 U.S.C. 8496. These officers are members of the staff of the Chief of the National Guard Bureau.

Each State has a full-time active duty National Guard officer assigned as the U.S. property and fiscal officer. He serves under the provisions of 32 U.S.C. 708. He is a qualified commissioned officer appointed by the Governor subject to the approval of the Secretary concerned. His specific responsibilities require that he receipt and account for all Federal funds and property of the United States that are in the possession of the National Guard. There are currently four Air National Guard officers and 48 Army National Guard officers serving on full-time active duty: One in each State, the District of Columbia, and the Commonwealth of Puerto Rico.

General GREENLIEF. In conclusion, sir, I have covered the current status of the Air National Guard and the requirements for the forthcoming fiscal year. I believe that the past performance of our units has fully justified the previous programs approved by the Congress. Given the funding we have requested for fiscal year 1973, we can continue as an important component of the defense forces. We in the Guard appreciate your past confidence and earnestly request your future support.

I am prepared to answer questions you may have concerning the proposed requirements for fiscal year 1973.

REIMBURSABLE OBLIGATIONS

Senator YOUNG. In the tabulation on the program and financing there is an item of $400,000 in reimbursable obligations. Please explain.

General GREENLIEF. Yes sir, officers using Air National Guard enlisted dining facilities reimburse the government for the cost of the meals. This amounts to $223,000. The balance of $177,000 is reimbursement received from the Active Air Force O. & M. appropriation for the per diem and travel allowance costs associated with Active Air Force man-days utilized by Air Guardsmen to partially support Operation Creek Party.

SUMMARY OF REQUIREMENTS BY PROJECT

Chairman ELLENDER. At this point there will appear a summary of requirements by project.

(The information follows:)

PROGRAM 520: NATIONAL GUARD PERSONNEL

SUMMARY OF REQUIREMENTS BY PROJECT

[In thousands of dollars]

Project number and title	Fiscal year 1971 actual	Fiscal year 1972 estimate	Fiscal year 1973 estimate
(1)	(2)	(3)	(4)
Direct program:			
521 Training, pay group A	$96,885	$109,858	$118,963
522 Training, pay group F	9,075	16,989	24,218
523 School training	6,813	10,015	12,672
524 Special training	7,160	10,089	10,340
525 Administration and support	2,653	2,932	3,166
Total direct program	122,586	149,883	169,359
Reimbursable program: 521 Training, pay group A (total reimbursable program)	377	400	400
Total program:			
521 Training, pay group A	97,262	110,258	119,363
522 Training, pay group F	9,075	16,989	24,218
523 School training	6,813	10,015	12,672
524 Special training	7,160	10,089	10,340
525 Administration and support	2,653	2,932	3,166
Total obligations	122,963	150,283	169,759

PERSONNEL SUMMARY

Chairman ELLENDER. The record will also show at this point the "Personnel summary" that appears in the justifications.

(The information follows:)

PERSONNEL SUMMARY

Authorized paid days of active duty for training	Pay group	Authorized paid drills	Fiscal year 1971 (actual) Begin	Fiscal year 1971 (actual) Average	Fiscal year 1971 (actual) End	Fiscal year 1972 (current year) Average	Fiscal year 1972 (current year) End	Fiscal year 1973 (budget request) Average	Fiscal year 1973 (budget request) End
15 days:									
Officers	A	48	10,872	11,105	11,210	11,450	11,739	11,351	11,350
Enlisted			74,778	73,307	72,609	73,262	74,032	72,193	73,709
4 months minimum: Enlisted	F	0	4,197	2,844	1,870	3,479	3,215	4,070	3,817
Total paid participants:									
Officers			10,872	11,105	11,210	11,450	11,739	11,351	11,350
Enlisted			78,975	76,151	74,479	76,741	77,247	76,263	77,526
Total			89,847	87,256	85,689	88,191	88,986	87,614	88,876

AIR NATIONAL GUARD SECTION OFFICERS

[Air National Guard officers performing full-time active duty under secs. 265, 8033, and 8496 of title 10, and sec. 708, title 32, U.S. Code]

	Fiscal year 1971 (actual) Begin	Fiscal year 1971 (actual) Average	Fiscal year 1971 (actual) End	Fiscal year 1972 (current year) Average	Fiscal year 1972 (current year) End	Fiscal year 1973 (budget request) Average	Fiscal year 1973 (budget request) End
Sec. 265 officers	51	53	54	55	56	56	56
Sec. 8033 officers	6	6	6	6	6	6	6
Sec. 8496 officers	27	28	28	33	36	36	36
Sec. 708 officers	4	4	4	4	4	4	4
Total	88	91	92	98	102	102	102

PAY COST INCREASES

Senator YOUNG. Please describe the effect of recent pay cost increases on this budget.

General DE LUCA. Sir, in fiscal year 1972, the effect of the November 14, 1971, pay increase was $10,980,000 and the January 1, 1972, pay increase impact was $4,283,000 for a total of $15,263,000. In fiscal year 1973, the effect will be $18,115,000 and $9,159,000 respectively, for a total of $27,274,000.

PAY GROUP A TRAINING

Chairman ELLENDER. The first project is "Training, pay group A" for which $118,963,000 is requested. For fiscal year 1972 the amount provided is $109,858,000. Pay group A provides for 48 authorized paid drills and 15 paid days of active duty for training. Please describe what this increase in the request is needed for.

General GREENLIEF. The increase is required to support the full-year cost of the recent military pay raises, $6 million; the increased requirement for commercial transportation to and from annual training due to the decline of Air National Guard in-house strategic airlift capability in fiscal year 1973, $3.6 million; and annual training man-days for the newly established Project Volunteer recruiting program, $0.7 million. These requirements are partially offset by a slight decrease of $1.2 million due to a reduction in average drill strength from that programed for fiscal year 1972.

Chairman ELLENDER. Describe the necessity for and cost of the 36 additional flying training periods for personnel on flying status.

General GREENLIEF. Yes, sir, Air National Guard aircrews receive the same number of weekend drill period (48 per year) and annual training (15 days) as all other Air Guard members. Most of the 48-unit training assemblies are taken up by general military training and required ground training. The 36 additional flying training periods are required to insure the training and proficiency in the aircraft assigned, to produce combat ready aircrews. The cost of these additional flying training periods for the Air National Guard during fiscal year 1973 will be $9,461,000.

Senator YOUNG. Were personnel utilized for such purpose in fiscal year 1972 as of this date?

General GREENLIEF. Yes, sir. On a number of occasions. Two of the more significant occurrences were at Albuquerque, N. Mex. in July 1971 when 795 man-days were utilized to stabilize conditions during a massive civil disturbance, and again in the District of Columbia in October 1971 when 2,331 man-days were used during antiwar demonstrations. In addition, Air National Guard forces are often alerted and placed in a standby status but are not committed.

PAY GROUP F TRAINING

Chairman ELLENDER. For "Training, pay group F" the fiscal year 1973 request is $24,218,000. The fiscal year 1972 total was $16,989,000. These personnel perform a minimum of 4 months initial active duty for training. All are enlisted personnel.

The justifications indicate that the number entering such training has increased from 6,287 in fiscal year 1971 to 9,360 in 1972 and to an estimated 11,240 in 1973. Total man-days have increased from 1,111,430 in fiscal year 1971 to 1,357,278 in 1972 and to an estimated 1,628,994. I assume that the increase in the appropriation requested is largely the result of the larger number of personnel. Is that correct?

General GREENLIEF. Approximately $4.8 million of the increased cost from fiscal year 1972 is associated with the full year impact of the two recent military pay raises. The balance of the increase is the result of a larger number of nonprior service individuals who will enter training during fiscal year 1973 to sustain our drill strength requirements.

Chairman ELLENDER. Please explain the reason for this increase in personnel and resulting cost.

General GREENLIEF. The increase of 1,880 nonprior service individuals who will enter training in fiscal year 1973 will provide the minimum number of basic trainees necessary to sustain our drill strength requirement and is based on anticipated losses of 6-year obligors. The cost associated with the increased personnel is $2,400,000.

SCHOOL TRAINING

Chairman ELLENDER. The next item is "School training" for which $12,672,000 is requested in fiscal year 1973. For fiscal year 1972, the amount provided was $10,015,000.

I note that the total number of officers and enlisted personnel participating in school training has risen from 3,692 in fiscal year 1971 to an estimated 5,140 in fiscal year 1973; and that total man-days have increased during the same period from 195,289 to 333,365 in fiscal year 1973. What is the justification for this additional requirement?

General GREENLIEF. Sir, the Air National Guard accomplished numerous aircraft conversions late in fiscal year 1971 and additional conversions are taking place in fiscal year 1972 and fiscal year 1973. As a result, transition training requirements resulting from these conversions have to be met during these 2 fiscal years. Additional requirements in fiscal year 1973 were also generated by increasing the U.S. Air Force approved undergraduate pilot training production rate from 145 to 280. Also included in the fiscal year 1973 budget is a provision for 447 individuals to attend recruiting courses to meet the requirements of an all volunteer force. These increased requirements account for approximately $2 million of the increase requested.

Senator YOUNG. Have any other factors increased the appropriation request?

General GREENLIEF. Yes, sir. The full year impact of the two recent military pay raises has increased the appropriation request for this program in fiscal year 1973 by $700,000.

SPECIAL TRAINING

Chairman ELLENDER. For "Special training" the request for fiscal year 1973 is $10,340,000, a slight increase over the $10,089,000 provided for fiscal year 1972. Distinguish between "School training" and "Special training."

General GREENLIEF. School training provides training which will improve the skills of Air Guardsmen through attendance at formal Air Force courses of instruction. These courses include flight training, technical training, and professional training.

Special training provides the Air Guardsmen with training not included in other programs. It includes overwater training flights, readiness, conversion, and simulator training. This program also provides man-days for runway alert in support of the Aerospace Defense Command and Air National Guard participation in exercises.

Senator YOUNG. Describe a typical aerospace defense alert.

General PESCH. A typical Air National Guard/Aerospace Defense Command unit maintains four aircraft on 24-hour alert. Our participation in the alert program is a prime example of how a peacetime nonmobilized force can play a vital role in the augmentation of the active force. In this case air crews are ordered to active duty, on a volunteer basis and are under the operational control of NORAD during their active duty. During each 24-hour-alert period, the alert force participates in actual or simulated identification/interception missions. In addition to flying, command post exercises/checks are frequently accomplished to insure a high degree of readiness is maintained.

Chairman ELLENDER. The justifications indicate that you had no JCS exercises in fiscal years 1971 and 1972, but that such are planned for fiscal year 1973. I note that you plan to utilize 4,336 officers and enlisted personnel in these JCS exercises and that this will entail 65,040 man-days. Describe what is planned.

General GREENLIEF. Yes sir. Our Air National Guard units have participated in JCS exercises for a number of years including fiscal years 1971 and 1972. The personnel costs have been borne jointly by the active Air Force and the Air Guard. About 70 percent of the man-days were funded by the Air Force and 30 percent from the Air Guard account.

In fiscal year 1973 we have included in our budget the 70 percent that was formerly funded by the Air Force and will continue to utilize annual training man-days to support the 30-percent balance.

After a period of reduced ANG participation during fiscal year 1968 through fiscal year 1971, our forces now have an important role in fiscal years 1972 and 1973 exercises. In the first half of fiscal year 1972, we participated in five exercises. Plans call for our participation in four additional exercises during the balance of fiscal year 1972, and participation in 12 exercises in fiscal year 1973.

Chairman ELLENDER. What is estimated to be the total cost of these exercises?

General GREENLIEF. Sir, the total estimated for JCS exercises during fiscal year 1973 is $4.3 million. Approximately $1.5 million of this amount will be absorbed within our annual training program. The balance will be performed as special training, and will cost $2.8 million including the recent military pay increases.

Senator YOUNG. Describe what is meant by "Conversion/other special training."

General GREENLIEF. Yes, sir. Conversion to a different aircraft usually results in a very complex training requirement. It entails retraining pilots and other aircrew members as well as mechanics, radio-electronics, armament, and other ground support personnel.

Converting units are allocated additional special training man-days to accomplish this retraining in order to become combat proficient in a minimum period of time.

Other special training provides the Air Guardsmen with training not in other programs. It includes overwater training flights, readiness, and simulator training.

ADMINISTRATION AND SUPPORT

Chairman ELLENDER. For "Administration and support" the fiscal year 1973 request is $3,166,000. The amount provided in fiscal year 1972 was $2,932,000. Please provide the number of officers, enlisted personnel, and civilians engaged in this activity for fiscal years 1972 and 1973.

General GREENLIEF. Sir, the Air National Guard will have 102 officers performing active duty by the end of fiscal year 1972 and throughout fiscal year 1973. There are no enlisted personnel nor civilians engaged in this activity.

Chairman ELLENDER. Justify the need for this increase in the appropriation.

General GREENLIEF. Yes, sir; $127,000 of the increase from fiscal year 1972 to 1973 is associated with the full-year cost of the pay raises. The balance, $107,000, is necessary to support four additional section officer man-years for Air National Guard officers who entered active duty during fiscal year 1972 and will remain on duty throughout fiscal year 1973.

REPROGRAMING OF FUNDS

Chairman ELLENDER. Please provide for the record all instances of fund reprograming that have taken place in the past year.

General DELUCA. Sir, no reprograming has taken place in the past year.

AUTHORIZED STRENGTH

Senator YOUNG. Please provide for the record a 3-year tabulation of authorized strength and authorized strength attainment insofar as is possible.

General GREENLIEF. Sir, I will be happy to do so.

(The information follows:)

	Fiscal year—		
	1970 actual	1971 actual	Jan. 31, 1972
Authorized average strength	86,624	87,878	88,191
Average strength attained	85,618	87,256	86,294

CHANGES IN PERSONNEL STRENGTH

Chairman ELLENDER. Please provide the committee with a step-by-step tabulation of all major changes in personnel strength in the past year.

General GREENLIEF. Sir, our authorized strength for fiscal year 1972 is 88,191. This has been decreased to 87,614 for fiscal year 1973, a re-

duction of 577, as the result of OSD approved changes to the force structure. This is the only major change.

CHANGES IN BUDGET SUBMISSION

Chairman ELLENDER. Describe any changes that were made by the Department of Defense or higher authority in the submission of the original budget.

General GREENLIEF. Sir, the following changes were made to the submission of the original fiscal year 1973 budget:

Original budget submission	$166,000,000
January 1, 1972, military pay increase	+9,200,000
Recruiting all volunteer force	+1,900,000
Strength reduction related to force changes	−3,500,000
Special training man-day reduction	−4,200,000
Total President's budget	169,400,000

COMBAT CAPABILITY STATUS

Senator YOUNG. Last year the Air National Guard furnished a tabulation showing the combat capability status of the various units activated relatively recently. The tabulation indicated that you had some problems. Please update this tabulation, including a definition of these symbols used under "Status" and providing additional remarks, if needed, as to what has been done with respect to the problems previously cited.

General PESCH. Sir, since last year, the majority of the units to which you refer have converted to new aircraft so that a comparison of their current combat capability status with that of last year would not be meaningful. We do not expect a unit to attain a satisfactory readiness rating after a year after new aircraft are received because of the retraining requirements. Of the 14 units shown in last year's tabulation, currently two are C–1, fully ready, three are C–2, substantially ready, two are C–3, marginally ready, and six are C–4, not ready. One unit is an Air Guard combat crew training group and therefore is not rated.

During a 3-year period beginning in fiscal year 1971, we will have had conversions in over 60 percent of our units. Prior to this time, 68 percent of our units were C–1 or C–2. We have declined during this period to 39 percent ready but by the end of fiscal year 1973, we forecast 74 percent of the units will be C–1 or C–2. With the more modern weapon systems in the inventory, our overall combat capability and reaction to emergencies will be vastly improved.

PRIOR- AND NON-PRIOR-SERVICE PERSONNEL

Chairman ELLENDER. I wish you would provide for the record a tabulation showing prior- and non-prior-service personnel strengths.

General GREENLIEF. I shall be glad to.

(The information follows:)

	January 1971	January 1972
Prior service personnel	31,091	34,608
Nonprior service personnel	55,514	52,641
Total	86,605	87,249

FLYING ASSIGNMENTS

Chairman ELLENDER Of the total number of military personnel in the Air National Guard, how many have flying assignments?

General PESCH. Sir, as of December 31, 1971, 5,398 officers and 2,282 airmen were on flying status.

TRAINING BY REGULAR AIR FORCE PERSONNEL

Chairman ELLENDER. How many Regular Air Force officers and enlisted men were utilized in fiscal year 1972 for Air National Guard purposes?

General PESCH. Sir, by the end of fiscal year 1972, there will be 940 Air Force personnel assigned as advisers to our units, 44 assigned to the National Guard Bureau, and 62 located at major air commands for a total of 1,046.

Chairman ELLENDER. How many are estimated for this purpose in fiscal year 1973?

General PESCH. Sir, in fiscal year 1973, 1,078 Regular Air Force personnel will be assigned as unit advisers, 44 will be assigned to the National Guard Bureau, and 60 will be located at major air commands for a total of 1,182.

STATEMENT OF MAJ. GEN. FRANCIS S. GREENLIEF, CHIEF, NATIONAL GUARD BUREAU

ACCOMPANIED BY:

MAJ. GEN. JOSEPH R. DeLUCA, DIRECTOR OF BUDGET, HEADQUARTERS, U.S. AIR FORCE

MAJ. GEN. JAMES A. HILL, DIRECTOR OF AEROSPACE PROGRAMS, DCS/PROGRAMS AND RESOURCES

BRIG. GEN. JOHN J. PESCH, DEPUTY DIRECTOR OF AIR NATIONAL GUARD, NATIONAL GUARD BUREAU

COL. WILLIS D. MUIR, CHIEF, AIR COMPTROLLER DIVISION, NATIONAL GUARD BUREAU

BUDGET REQUEST

Chairman ELLENDER. The next appropriation to be considered is "Operation and maintenance, Air National Guard," for which the fiscal year 1973 request is $461,743,000.

PROGRAM AND FINANCING

At this point in the record there will appear certain program and fianncing information from the justifications.

(The information follows:)

DEPARTMENT OF DEFENSE, MILITARY

OPERATION AND MAINTENANCE, AIR NATIONAL GUARD

PROGRAM AND FINANCING (IN THOUSANDS OF DOLLARS)

	1971 actual	1972 estimate	1973 estimate
Program by activities:			
Direct program:			
1. Operation of aircraft	42,985	46,984	47,959
2. Logistical support	57,686	70,545	81,640
3. Training support	265,446	304,196	329,407
4. Medical support	560	700	730
5. Servicewide support	2,012	1,957	2,007
Total direct program	368,689	424,382	461,743
Reimbursable (total)	6,692	8,440	8,006
Total obligations	375,381	432,822	469,749
Financing:			
Receipts and reimbursements from:			
Federal funds	−6,493	−8,340	−7,906
Non-Federal sources[1]	−199	−100	−100
Unobligated balance lapsing	3,148		
Budget authority	371,837	424,382	461,743
Budget authority:			
Appropriation	358,037	413,428	455,000
Transferred from other accounts	13,800		
Appropriation (adjusted)	371,837	413,428	455,000
Proposed supplemental for wage-board increases		8,100	
January 1972 pay increase supplemental/amendment		2,854	6,743

[1] Reimbursements are derived from utilities and services furnished to private contractors (10 U.S.C. 2481).

Note: The amounts shown as January 1972 pay increase supplemental/amendment are not distributed to each individual appropriation in the fiscal year 1973 president's budget, but are reflected as a 1-line defense-wide contingency amount. The amounts shown above are estimates, pending final determination of the amounts to be requested when supplemental and amended estimates are formally transmitted.

PRESENTATION FORMAT

Chairman ELLENDER. You may proceed.

General GREENLIEF. Mr. Chairman and members of the committee:

Since I covered the program and accomplishments of the Air National Guard in my presentation of the "National Guard Personnel, Air Force" appropriation, with your concurrence, I will not repeat them here. I will speak only of the air technician program and the financial requirements for the "Operation and maintenance, Air National Guard" appropriation for fiscal year 1973.

AIR TECHNICIAN PROGRAM

I wish to express our gratitude to the Congress for its prompt response to the request from the Department of Defense to raise the National Guard technician ceiling. Your agreement during the Senate/House Appropriation Committee Conference to add $11.1 million to our appropriation to fund 924 man-years for this fiscal year was extremely helpful to our program. This will allow us to reach a vitally needed end strength of 20,900 in fiscal year 1972.

Air Guard technicians are essential to the accomplishment of our day-to-day tasks and are the full-time cadre that prepare and execute most of our training programs during military training periods.

Our technician force must be adequately manned to support the complex weapons systems and equipment for which we have been programed. Air technician manning was in a deficit position at the beginning of fiscal year 1972. This was caused by an unprecedented number of aircraft conversions in fiscal year 1971, coupled with the congressional ceiling which restricted us to 42,500 technicians, of which 18,135 were allocated to the Air National Guard.

At this time, the Air Guard requirement was 22,476 for an 81-percent manning level. The August 1971 change to our ceiling helped eliminate part of the deficit. However, additional force changes further increased our requirements to 23,452 in fiscal year 1972 and 23,505 in fiscal year 1973. Based on these additional requirements and the dollars available, our average manning will be restricted to 81 percent in fiscal year 1972 and 88 percent in fiscal year 1973.

FLYING UNIT TECHNICIANS

Chairman ELLENDER. Could you tell us at this point how many technicians are assigned to a typical flying unit?

General GREENLIEF. About 180 to 190. It varies, sir, with the complexity of the weapons system, both the aircraft and the armament it has. There, of course, would be a different mix in our electronic installation units, a different type of mix in our air defense units, where we stand runway alert.

F-100 EQUIPPED FIGHTER UNIT

Chairman ELLENDER. Will you tell me what you consider a typical flying unit? How many technicians are required to man one?

General GREENLIEF. Sir, a typical one is an F-100 equipped Tactical Fighter unit, and there we would find a technician requirement of 215.

Chairman ELLENDER. How many planes?
General GREENLIEF. That would be a UE of 24 aircraft.
Chairman ELLENDER. They are employed 40 hours a week?
General GREENLIEF. Yes, sir.

TECHNICIAN DUTIES

Chairman ELLENDER. What do they do during the 40-hour period?
General GREENLIEF. Sir, they do a wide variety of things.
Chairman ELLENDER. You can give them work. The point is, is it necessary?
General GREENLIEF. Yes, sir; it certainly is. Our reason for being is to put these aircraft in the air for mobilization with the Air Force.
Chairman ELLENDER. When you say "mobilization," you mean in case of war?
General GREENLIEF. Yes, sir. That is why we exist; a war or any other use that the Air Force would require of us on active duty.
Chairman ELLENDER. What other missions would there be?
General GREENLIEF. We support them in their JCS exercises. Where they have an inadequate number of tactical fighters to participate in an exercise, we fly those missions for them.
Chairman ELLENDER. Where would that occur—in this country?
General GREENLIEF. Yes, sir. They are conducted here in this country, in Alaska, and they have been conducted in Turkey and some foreign countries.
Chairman ELLENDER. In Europe?
General GREENLIEF. Yes, sir.
Chairman ELLENDER. Is anything being done by the National Guard in carrying on those exercises for the division that was removed from Europe several years ago in the Reforger program?
General GREENLIEF. No, sir.
Chairman ELLENDER. You are familiar with the Reforger program?
General GREENLIEF. Yes, sir.

INSTRUCTOR PILOTS TO FLY TRAINING SUPERVISORS

To answer your question, sir, the National Guard has nothing to do with the Reforger program, but we have technicians who will be flying training supervisors. These are fully qualified, professional pilots who serve as instructor pilots, to insure that the remainder of the pilots in our unit are fully qualified by Air Force standards to fly the aircraft as prescribed.

AIRCRAFT MAINTENANCE

We maintain the aircraft to the same standards as those of the active Air Force. It takes a lot of maintenance hours to keep these sophisticated aircraft in the air.

SUPPLY PROGRAM

There is a supply program that must support all of this to provide for the aircraft. Then, because we need the people to make the unit operate, of course, there are a lot of activities that are required, both supply and administration, to keep our people equipped, administered, keep their records so that upon mobilization they are in prepared to serve.

Chairman ELLENDER. Those people who do that are not the technicians?

General GREENLIEF. Yes, sir. They are technicians.

ADMINISTRATIVE WORK

Chairman ELLENDER. They do administrative work?

General GREENLIEF. Yes, sir. Our technicians do training work, maintenance work, administrative work, supply work, and some security force work.

Chairman ELLENDER. They are not qualified as mechanics.

General GREENLIEF. No, sir. We have a wide spectrum. Generally speaking, all of the functions that have to be performed in an active Air Force unit to keep it operational must also be performed in an Air Guard unit to a lesser degree. That is why we would only have 215 people employed, as compared to an active Air Force unit that might have 800-plus doing the same thing at an accelerated rate, of course.

Chairman ELLENDER. Of the 215 assigned a typical flying unit, how many of those technicians would be in the administration field?

MAINTENANCE—OTHER PERSONNEL RATIO

General GREENLIEF. Sir, 20 percent are performing supply functions, administrative functions and command functions related to the support of the whole unit. Something over 80 percent is directly related to aircraft hours.

Chairman ELLENDER. What percentage are occupied in maintaining aircraft?

General GREENLIEF. About 80 percent.

Chairman ELLENDER. So the term "technician" includes those assigned to administrative duties as well as aircraft maintenance duties?

General GREENLIEF. Yes, sir. That is the formal title of the employee as provided for in the law.

TECHNICIAN PAY SCALE

Chairman ELLENDER. How about their pay? Is it fixed by what work they perform?

General GREENLIEF. Yes, sir.

Chairman ELLENDER. A mechanic, I presume, would get more than somebody in administration?

General GREENLIEF. Generally speaking; yes, sir. The grade determination is made by the Army and the Air Force on civil service standards. We have job descriptions that describe what the man will perform.

Chairman ELLENDER. But you call them all technicians?

General GREENLIEF. Yes, sir. You have various categories of technicians with specific job titles. But the grades are Civil Service grades determined by the Civil Service System.

MIX OF OFFICER AND ENLISTED PERSONNEL

Chairman ELLENDER. Are they enlisted personnel?

General GREENLIEF. It is a mix of officer and enlisted. Predominantly, they are enlisted personnel.

Chairman ELLENDER. Of the Air National Guard?

General GREENLIEF. They must be members of the Air National Guard. They are then employed in our program full time in a job skill that relates directly to their military skill.

TECHNICIAN'S PAY

Chairman ELLENDER. On page 137 of the justification, I notice that the greatest increase is as a result of the increase in the technician man-year authorization. The increase is almost $30 million. On page 138, however, where you explain this increase in a bit more detail, I notice that the rate of pay used in reaching your estimated pay costs for these technicians is $11,320. Now is this the same basis that you used last year? Would you please explain how you arrived at the $11,320 figure?

General GREENLIEF. The fiscal year 1972 average for base pay is $11,097. The increase to $11,320 was computed by adding the cost of annualization of the fiscal year 1972 graded and wage pay increases and anticipated fiscal year 1973 step increases.

OTHER VARIABLES

Senator YOUNG. Lower on page 138, I notice an item titled "Other Variables" for which you are requesting $1.2 million. Would you please tell the committee what is included in this item and how the estimate figure was reached?

General GREENLIEF. Other variables include Sunday pay, night differential, hazardous duty pay, and annual premium pay. The estimate was computed by using cost data experienced in fiscal year 1972 where the cost for each variable was so much per man-year and by applying the resultant factors to the fiscal year 1973 man-year program.

SEVERANCE PAY

Chairman ELLENDER. Still further down in the explanation of the air technician request breakdown, I see that you are requesting funds for severance pay and PCS moves. I hope you will explain this item to us.

General GREENLIEF. Severance pay is a normal item that must be covered in the budget. Involuntary separation of air technicians occurs when an officer technician is separated because of the provisions of the Reserve Officers Promotion Act of 1954; when any technician fails to be medically qualified for military assignment; or when other action, such as a reduction in force, causes involuntary separation.

AMOUNT OF SEVERANCE PAY

Senator YOUNG. Do you expect the severance pay item to be as large next year as it is this year? Why?

General GREENLIEF. Next year's severance pay is estimated to be about the same for this year. This is a normal item and usually does not vary significantly from year to year.

DATA ON PCS MOVES

Chairman ELLENDER. Please define PCS moves for technicians.

General GREENLIEF. PCS moves are authorized when an air technician is transferred to another base and when the reassignment action promotes the efficiency of the service.

Chairman ELLENDER. You may proceed.

General GREENLIEF. Technicians, who are also members of the military unit, are 100 percent of our daily work force, with about 97 percent assigned to field activities in direct support of the mission. Any reductions to our programed manning level would degrade our combat readiness, and seriously impair flying safety conditions. The ANG must continue to recruit and retain our highly qualified technicians to preclude reduction in mission capabilities.

I will discuss the specific dollar requirements later.

BUDGET REQUEST

The fund request for this appropriation is $461.7 million. This compares with $424.4 million in fiscal year 1972. The amount for fiscal year 1972 includes an $11 million supplemental for pay raises not previously incorporated in the fiscal year 1972 appropriation.

Increases in operation and maintenance costs are required to support full-year costs of modernizations occurring in fiscal year 1972, and those scheduled for fiscal year 1973, plus the additional technician manning authorized by Public Law 92–119. I will identify major changes as each portion of the appropriation is discussed.

TECHNICIANS

Chairman ELLENDER. Are those additional technicians in the modernization program in the same category as the technicians you have been discussing?

General GREENLIEF. Yes, sir; more of the same kind of folks.

PERMANENT EMPLOYEES OTHER THAN TECHNICIANS

Chairman ELLENDER. In addition to the 42,500 technicians that you speak of, how many permanent employees do you have?

General GREENLIEF. There are permanent employees in the National Guard Bureau on our staff at the Pentagon. In addition, we have nontechnician employees who are funded by 75 percent Federal funds and 25 percent State funds.

Then, there are some employees funded totally by the State. Those are in the category of security guards and caretaker-type personnel, as opposed to mission-oriented technician personnel in the unit.

SERVICE CONTRACT TO PROVIDE BASE SUPPORT: FEDERAL AND STATE COSTS

Chairman ELLENDER. Please give the percentage of Federal and State personnel.

General GREENLIEF. In the service contract to provide for the base support, utilities, heat, light, water, base security, the kind of thing that you have to have just to keep the base open. This is by contract between the Federal Government and the State. The Federal Government pays 75 percent of the cost; the State pays 25 percent of the cost. These employees are not technicians.

Chairman ELLENDER. The money for that part to be paid by the Federal Government is included?

General GREENLIEF. Yes, sir; it is specifically addressed.

Chairman ELLENDER. Have you such contracts with each State?

General GREENLIEF. Yes, sir; a contract with the State is involved.

Chairman ELLENDER. Proceed.

OPERATION OF AIRCRAFT

General GREENLIEF. This program provides for the purchase of aviation fuel. Aviation fuel will cost $48 million in fiscal year 1973, $1 million more than in 1972. Although the fiscal year 1973 flying hour program is slightly less, the cost is greater because of a price increase and the higher fuel consumption of higher performance aircraft in our inventory.

Chairman ELLENDER. Does this request for fuel, used solely to train personnel, conform with the regulations requiring an officer to fly so many hours?

General GREENLIEF. Yes, sir; to support the flying training program.

Chairman ELLENDER. The analysis that you provide on pages 130 and 131 of the justification very clearly illustrates how you arrived at the estimate you have for aircraft fuel and oil. We will insert those pages for the record at this point.

(The information follows:)

The following tabulation shows the programed flying hours by type of aircraft, cost per flying hour, and the total dollar requirement for fiscal year 1973.

JET ENGINE AIRCRAFT

Type and model aircraft	Aircraft hours	Cost per hour	Total cost
F-101	26,488	$137.76	$3,648,987
F-102A	42,954	81.01	3,479,704
F-106	12,498	112.41	1,404,900
F-4	4,188	154.30	646,208
F-100	112,208	110.21	12,366,444
F-104	4,320	90.92	392,774
F-105	33,373	154.30	5,149,454
A-37	5,400	42.43	229,122
RF-4	13,930	154.30	2,149,399
B-57	4,000	91.47	365,880
T-33	16,650	38.37	638,860
T-39	400	37.47	14,988
Total jet	276,409		30,486,720

RECIPROCATING ENGINE AIRCRAFT

KC-97	37,903	244.98	9,285,477
U-10	5,265	4.24	22,324
C-119	6,735	72.15	485,930
EC-121	4,600	113.54	522,284
O-2	52,943	4.24	224,478
C-123	2,800	82.76	231,728
C-130	37,700	88.17	3,324,009
C-97	234	127.33	29,795
C-124	5,744	125.21	719,206
C-121 (Aeromed)	8,650	111.41	963,697
C-54	8,343	55.17	460,283
VT-29	18,215	39.26	715,121
C-121	800	111.41	89,128
Total reciprocating	189,932		17,073,450
Total jet and reciprocating	466,341		47,560,180
Nonflying aircraft fuel and oil for jet engine block test			399,301
Total requirements	466,341		[1] 47,959,481

[1] Rounded to $47,959,000.

OPERATION OF AIRCRAFT COMPARISON WITH FISCAL YEAR 1972

Chairman ELLENDER. With regard to the analysis that was just inserted, would you please furnish the committee with the comparative figures for fiscal year 1972 and also indicate the number of each type of aircraft that is used as a basis for your calculations? In furnishing the information that I have just requested, I wish that you would supply an explanation for the record of any items that show wide deviation from last year's figures.

General GREENLIEF. I will do that.

(The information follows:)

The following chart shows significant cost increases for those aircraft types being added to the inventory as the result of programmed conversions (F–106, F–4, F–100, and C–130). As these aircraft are gained, older types such as the F–84, RF–84, RB–57, RF–101 and C–121 (Aeromed) will either be completely phased out or reduced in number, thus significant cost decreases are shown for these types. Although the F–105 inventory increases only slightly and the KC–97 inventory remains the same, cost for each of these aircraft will increase considerably since a higher utilization rate is planned for both aircraft in fiscal year 1973.

Deviations are also shown for support aircraft. The T–33 is being reduced in number, while the C–54 is being replaced by the modern T–29/C–131 and the U–3 is being phased out altogether.

OPERATION AND MAINTENANCE, AIR NATIONAL GUARD

Type of aircraft	Aircraft inventory			Total cost	
	Actual, June 30, 1971	Planned, June 30, 1972	Planned, June 30, 1973	Fiscal year 1972	Fiscal year 1973
F–101	123	126	127	$3,824,075	$3,648,987
F–102A	227	225	224	3,787,119	3,479,704
F–106		36	72	222,840	1,404,900
F–4		12	20	160,566	646,208
F–100	419	520	552	9,531,519	12,366,444
F–104	20	18	18	315,385	392,774
F–105	102	105	115	3,264,842	5,149,454
A–37	50	57	72	395,270	229,122
RF–4	34	59	119	1,231,006	2,149,399
B–57		14	14	208,518	365,880
T–33	118	112	49	1,029,776	638,860
T–39	1	2	2	14,856	14,988
F–84	129			365,713	
RB–57	16			253,848	
RF–84	31			226,769	
RF–101	148	16	16	3,660,091	
KC–97	77	77	77	6,315,390	9,285,477
U–10	28	18	18	19,323	22,324
C–119	27	27	27	419,995	485,930
EC–121	4	4	4	451,352	522,284
O–2	79	125	150	83,856	224,478
C–123	8	8	8	218,653	231,728
C–130	42	81	80	2,280,879	3,324,009
C–97	23	19	9	993,351	29,795
C–124	70	35		4,334,492	719,206
C–121 (Aeromed)	37	21		1,665,644	963,697
C–54	57	45	14	1,040,997	460,283
T/VT–29/C–131	3	37	38	74,714	715,121
C–121	6	6	6	77,024	89,128
U–3	53			28,808	
C–47	6				
Total aircraft inventory	1,938	1,805	1,831		
Nonflying aircraft fuel and oil				487,383	399,301
Total requirements				46,984,054	47,959,481

LOGISTICAL SUPPORT

General GREENLIEF. This program provides for the purchase of logistical support, including aircraft airframe repair, engine overhaul, and repair of major end items and components. The requirements for fiscal year 1973 are $81.6 million, an $11.1 million increase. This is primarily because of greater numbers of airframes scheduled for repair and higher repair costs of the more complex engines in our inventory.

Chairman ELLENDER. Is any of this work done by maintenance people who are on the base, or do you contract for that work?

General GREENLIEF. We do maintenance at the base up to the level that we are capable. More advanced maintenance is done by the Air Force Logistics Command.

ORGANIC AND CONTRACT SUPPORT

Chairman ELLENDER. Describe the utilization of the $81.6 million.

General GREENLIEF. This is for AFLC organic and contract support. Organic support is that provided by AFLC air materiel areas with in-house resources. Contract support is that provided by industry through AFLC.

ENGINE OVERHAULS

Senator YOUNG. Will you state where the engines are overhauled?

General GREENLIEF. They are overhauled either in-house at air materiel areas or by contracts negotiated by the Air Force Logistics Command.

Our units only have the capability to do minor engine repair.

MAJOR AND MINOR ENGINE OVERHAULS

Senator YOUNG. Is engine overhaul work done in North Dakota?

Colonel MUIR. Sir, we do minor engine repair. The major engine overhaul that requires precision tools and precision equipment and things we do not possess, is done either organically or by contract that the Air Force lets, the Air Force Logistics Command lets, with various contractors. You might say we do the minor, and the Air Force Logistics Command takes care of the major overhauls.

General PESCH. The major maintenance done on the J–57 engines that you have in your airplanes is done at depot level.

PROJECT 431, DEPOT MAINTENANCE

General GREENLIEF. The type of maintenance that is done outside of our units is Project 431, Depot Maintenance. The cost there in fiscal year 1973 is $81,640,000. That is for the depot maintenance. That is made up of aircraft repair and modification, engine overhaul, major end items of repair, exchangeable items, and in-service engineering.

Chairman ELLENDER. How much of the $81,600,000 is in-house work?

General GREENLIEF. The $81,640,000 is all for depot maintenance. That is all by Air Force outside our units. The project provides funds which will reimburse the Air Force for this maintenance.

Chairman ELLENDER. Is any part of that used to pay technicians?

General GREENLIEF. None, sir. The technicians do the work at base level, sir, but their labor costs are not included in these costs.

Chairman ELLENDER. Why do you separate the costs?

General GREENLIEF. Sir, I cannot really answer that except that this is the format we are directed to prepare the budget in. We submit personnel costs in one project and costs of maintenance in another. We could identify the maintenance man-days provided by the technician force to come up with a cost, but we do not have such a cost now, sir.

Chairman ELLENDER. Separating personnel costs from other costs lends itself to misinterpretation.

General GREENLIEF. I understand what you are saying, sir. The way in which it is done, and perhaps General DeLuca can help me explain why the format is as it is, it puts out personnel cost in the technician program; these arts and materials costs in this depot maintenance program. It breaks it out in the budget by organic maintenance and contract maintenance. Why we are not asked to provide dollar cost for manpower here, I cannot answer.

General DELUCA. The contract maintenance that General Greenlief shows is that when the Air National Guard wants any depot-level work done, they, in effect, contract with the Air Force Logistics Command, which runs depot maintenance on an industrial fund basis. The Air Force Logistics Command either does the work organically in its own depots, or does it under contract with commercial vendors.

MAINTENANCE CONTRACT WITH AIR FORCE LOGISTICS COMMAND

Chairman ELLENDER. Is it done by people in the Air Force?

General DELUCA. It is done by maintenance people in the Air Force Logistics Command depots, who are paid by the Air Force.

Chairman ELLENDER. Is this being done on a reimbursible basis?

General DELUCA. Exactly. The Guard pays the Air Force to do that work.

Chairman ELLENDER. The work is all done within the Air Force complex.

ENGINE OVERHAUL

General DELUCA. It is all done within the Air Force complex, Mr. Chairman, except that certain of the engines we overhaul with the private sector of industry under contract.

Chairman ELLENDER. Who initiates this, the Air Force or the Guard units?

General DELUCA. The Air Force does it.

Chairman ELLENDER. Suppose the Guard has 50 engines it needs to repair.

General DELUCA. They are sent to either our Air Force Logistics Depot, or we tell the Guard which contractor to ship them to.

Chairman ELLENDER. Why is that not a function of the Guard? Why must it go through you?

General DELUCA. Because it is a fourth- and fifth-echelon of depot-level maintenance. As was said before, they can only do at squadron level or base level certain things on a cold section or hot section of the

engines. When it gets down to a teardown and reassembly, then that is done at depot level. That is what the depot structure is for.

The limiting factor is still the precision tools and the skill level of people they are required to have. The same system is used in the Army, where in the Army Guard they maintain their own equipment up to the level capability of their tools and skill. Beyond that, the Army does it and is reimbursed for it.

Chairman ELLENDER. My questions are an attempt to determine if there are too many levels to go through in order to have a job done. That means more administration, more costs, more people.

General GREENLIEF. The best way I could explain that would be the major type of overhaul that we send to the Air Force is a fairly seldom kind of maintenance. In other words, we perform base-level maintenance all the time. For us to be equipped with tools and skilled people that perform this higher level of maintenance, we would not have enough of that kind of work to keep our people busy. Therefore, we send it to a central point where they are servicing many units.

It would be costly and unproductive for us to try to maintain a capability that we seldom use, as opposed to one that we constantly use.

SCHEDULING AND CONTRACTING WORK

Chairman ELLENDER. Why would it not be cheaper for you to do it directly; choose your own out-of-house people?

General DELUCA. The Guard would be contracting on a very small scale, lacking volume. When we let these contracts at the Air Force Logistics Command, and wet let them with a major engine overhaul contractor, we actually let a total contract for so many engines all year, like 500 or 800. We schedule them in based on the computed mean time between overhauls for engines.

So there is a scheduling problem and a contracting problem. The Guard would be in the retail business and would be scheduling three or four or 60 engines a year, and that would not be economical. AFLC does the overhaul work or contracting. The Guard becomes a part of the total workload of the Air Force on engine overhaul.

Chairman ELLENDER. Is there any out-of-house work that is being done by the Guard that doesn't go through the Air Force?

General GREENLIEF. I do not believe so.

Chairman ELLENDER. Is it all done in that same manner?

General DELUCA. Yes, sir. We are his depot level overhaul contractor. We either do it ourselves or get it done for him.

Chairman ELLENDER. And you do the actual contracting?

General DELUCA. Yes, sir.

Chairman ELLENDER. And whatever it costs you, you charge to him?

General DELUCA. That is correct.

DEPOT MAINTENANCE COMPARISON OF FISCAL YEARS 1973 AND 1972

Chairman ELLENDER. On page 133 of the justification you indicate that an additional $10 million will be needed for the depot maintenance operations of the Air National Guard in fiscal year 1973, but the backup figures you provide on page 134 only give the breakdown for the year of the request. Would you please provide the committee with a table comparing the amount provided for fiscal 1972 with the requested amounts for 1973?

When you do furnish this information, since we will not have the opportunity to hear you at a later date, would you also explain the major increases and decreases that the table will undoubtedly show. The net increase is $10 million and I would like you to tell us specifically what this increase wil be used for.

General GREENLIEF. I will be glad to.

(The information follows:)

Subproject	Fiscal year 1972			Fiscal year 1973		
	AFLC in-house	AFLC by contract with industry	Total	AFLC in-house	AFLC by contract with industry	Total
431.01 Aircraft repair/modifications [1]	12,476	23,249	35,725	25,230	19,599	44,829
431.02 Engine overhaul [2]	11,969	7,526	19,495	11,596	8,395	19,991
431.03 Other major end items repair/modifications [3]	50	475	525	50	600	650
431.04 Exchangeable items overhaul [4]	4,000	7,500	11,500	5,108	7,662	12,770
431.05 Area support [3]	500	0	500	600	0	600
431.06 In-service engineering	0	2,800	2,800	0	2,800	2,800
Total	28,995	41,550	70,545	42,584	39,056	81,640

[1] This Increase is primarily required for the IRAN/MOD of aircraft introduced into the inventory in fiscal year 1972 and those scheduled to enter in fiscal year 1973.
[2] The number of jet engines will ncrease due to conversion to twin engine aircraft (F-4 and RF-4).
[3] The number of special vehicles requiring overhaul has increased due to ANG force changes.
[4] There will be an increase in number of reparable items to be returned to AFLC as a result of conversions to more complex aircraft in fiscal year 1972 and fiscal year 1973.
[5] More depot assistance will be required for such items as the installation and repair of new flight simulators and other equipment associated with new aircraft.

ORGANIC AND CONTRACT MAINTENANCE

Senator YOUNG. In the table on page 134, you break down the organic and contract maintenance. You told us earlier about the relationship between the Air National Guard and the Air Force Logistical Command and how equipment is sent to the AFLC for repair but, in the case where the AFLC does not have the inhouse capability to repair the equipment, how does the AFLC go about selecting contractors to take care of this need? There is an estimated $39 million involved here and I think a full explanation would be appropriate.

General GREENLIEF. Upon determination that specific equipment is to be repaired contractually, the responsible depot solicits from qualified contractors proposals for accomplishing the work. Contractors are ultimately selected who demonstrate a technical responsiveness and that they have the responsibility, that is, capability, facilities/resources, to perform and produce a quality product within the timespan specified. Contracts are subject to review at the headquarters, AFLC level prior to final approval.

Chairman ELLENDER. All right, proceed.

TRAINING SUPPORT

General GREENLIEF. Training support provides for base operation and maintenance. This includes air technician pay, service contracts, travel and transportation, rental and services, supplies and equipment, and major repairs and minor construction. The training support program reflects a requirement of $329.4 million, or $25.2 million more than fiscal year 1972.

In the air technician program, we are requesting $255.7 million in fiscal year 1973 to support 20,529 civilian man-years, which includes 416 nonair technicians. This is an increase of $29.3 million from fiscal year 1972.

Air technician man-years will increase by 1,567 from the fiscal year 1972 level. The technician man-year increase equates to $19.3 million. Full-year costs of the fiscal year 1972 pay raise accounts for $6.7 million.

Chairman ELLENDER. I notice under "Training support" that you have, in addition to supplies and equipment, major repairs. Please describe this item.

General GREENLIEF. Facility repairs, sir; hangars, shops, our real property.

Chairman ELLENDER. That is not connected with the plane itself?

General GREENLIEF. No, sir.

Senator YOUNG. Are runways included?

General GREENLIEF. Yes, sir.

Chairman ELLENDER. The total amount for the training support and so forth is $329.4 million?

General GREENLIEF. Yes, sir.

Chairman ELLENDER. That is for how many training areas?

General GREENLIEF. That is 86 bases which support 92 flying units and 57 nonflying facilities. For example, an electronic installation unit.

Chairman ELLENDER. Proceed.

General GREENLIEF. The 416 nontechnicians are the civilian work force at Selfridge ANG Base, Mich., where we assumed host responsibilities July 1, 1971. In fiscal year 1972, we reimbursed the Air Force for their services from Other Services account. In fiscal year 1973, we will pay the salaries directly and have transferred $4.8 million into the civilian pay account for that purpose.

The fiscal year 1973 cost of Service Contracts is higher by $0.5 million. This recognizes a slight increase in base maintenance and utilities. The operation and maintenance of our bases is unique. The States enter into an agreement with the Federal Government whereby the States share approximately 25 percent of the base operation and maintenance facility cost, and the Federal Government 75 percent of the cost. This arrangement creates cost consciousness on the part of each State and assists in holding Federal costs to a minimum.

Transportation of materiel is $0.6 million greater because of increased commercial transportation to support field training due to the phaseout of ANG organic strategic airlift capability in fiscal year 1973.

Communications service requirements decrease $0.2 million in fiscal year 1973. This is the result of the removal of certain teletype equipment.

Other services will decrease $3.7 million. The transfer of $4.8 million to the civilian pay account is offset by increases of $0.2 million for additional engineering and technical representatives to converting units; $0.1 million for aeronautical charts and publications, and $0.8 million for Project Volunteer recruiting and advertising.

Selfridge Base, Mich.

Chairman Ellender. Why was Selfridge Air Force Base in Michigan turned over to you?

Major General Greenlief. Sir. Selfridge was an active Air Force base. They were closing the base out and moving their activities out. The base was required to support the flying training of Air National Guard units, Air Force Reserve units, some elements of the Army Air Defense Command; I believe there may be a Navy unit there, as well.

The Air National Guard was chosen as the agency to operate the field and support all those activities.

Chairman Ellender. Is the Air Force supporting it?

General Greenlief. No, sir; we operate it. The costs are in our budget, sir.

Chairman Ellender. That is for 1973?

General Greenlief. Yes, sir.

Nontechnician Civilian Work Force

In 1972, out of our other accounts we reimbursed the Air Force. In 1973, we are going to pay the salaries directly out of our account. Therefore, we transferred $4.8 million out of our other services account into our civilian pay account to pay these same 416 people. They are not, however, technicians. They are not required to be a part of our units. What they are doing is operating the base.

Chairman Ellender. Why don't you have the same requirement for those personnel as you have for the others?

General Greenlief. The reason our technicians must be members of the units is that they are mobilizable members of the units; they go when the unit is deployed. This group of civilians is on the base to support the tenants. For example, one of the Air National Guard units might be mobilized and deployed but the base still has to operate for all the other tenants. Therefore, they are not members of the technician program.

Chairman Ellender. Are there as many men employed there now as there were when the Air Force occupied it?

General Greenlief. I don't know what the Air Force manning was. I would guess ours is much less. We can supply that for the record, sir.

(The information follows:)

Compare Manning of Selfridge Air Force Base, ANG vs. Regular AF

The base operating support manning of Selfridge AFB as an active Air Force base and as an Air National Guard Base is summarized in the following table:

	Support manning Fiscal year 1971 Active Air Force base	Authorizations current Air National Guard
Civilian personnel	583	[1] 416
Active military	[2] 806	
Air Guard technicians	[3] 112	[3] 112

[1] Primarily for tenant unit support.
[2] Partially used for internal organizational support.
[3] Full-time Guard technicians assigned to Guard units in support functions integral to the units.

It must be noted that the current level of activity at Selfridge is not the same as when operated by the Air Force. The concept of operation has changed. Numerous support functions provided by the Air Force are no longer provided and have been transferred to other agencies. The Guard does not provide the level of support previously afforded by and for full-time active duty Air Force units. For example, they do not provide commissary, medical, military personnel administration, messing, or legal support for military tenants. The Army has assumed responsibility for operation of the commissary, personnel services, and certain of traffic management activities to support the remaining complement of active duty personnel of all Services at Selfridge and in its environs. The Army also provides very limited medical support. Each of the remaining active duty units of the several Services, still tenanted in and around the base and utilizing the messing facility, provide manning on a pro-rata basis.

In summary, any comparison of USAF and Air Guard manpower concerned with base operating support activities at Selfridge must be viewed in the context of the significantly different mission requirements and the Army support now being provided.

UTILIZATION OF SELFRIDGE, MICH.

Chairman ELLENDER. When did you start making use of that facility?

General GREENLIEF. July 1971, is when we assumed the responsibility, sir.

Chairman ELLENDER. Prior to that time, was it entirely in the hands of the Air Force?

General GREENLIEF. Yes, sir; our Air National Guard units were at Wayne Major in Detroit. We were not at Selfridge.

Chairman ELLENDER. What became of the Wayne base?

General GREENLIEF. We moved from Wayne, which is the municipal airport for Detroit.

It is a commercial airport where we were renting facilities. We are no longer paying that rent now that we have moved into Selfridge.

Chairman ELLENDER. Is Selfridge large enough to accommodate you and the other components?

General GREENLIEF. We are there with two groups; the Air Force Reserve is there. There is a Naval Air Reserve unit there. The Army Air Defense Command has its headquarters there. I don't know the total strength of all those units but it is a rather busy place, sir. The Marines are there, also.

ALLOCATION OF EXPENSES

Chairman ELLENDER. How are the expenses allocated? Do you pay a certain portion?

General GREENLIEF. We, as the host, bear the cost of operating common-use facilities Our tenants are charged for the costs they generate.

Chairman ELLENDER. You say you have somebody from the Air Force there. Who is it?

General GREENLIEF. Sir, the active Air Force units are a radar squadron, a communications squadron, and a weather detachment.

Chairman ELLENDER. Is it all Air Force?

General GREENLIEF. No, sir. The Air Force Reserve has a tactical airlift wing, a tactical airlift group, and a rescue and recovery squadron. The Navy, Marines, and Coast Guard each have units there and the active Army has its headquarters of the Air Defense Command on the base.

Chairman ELLENDER. Are you paid by the tenants?

General GREENLIEF. Yes, sir; they pay certain costs, depending on their utilization of facilities.

Chairman ELLENDER. Who determines how much they should pay?

General GREENLIEF. Sir, it is in accordance with agreements made between the Air National Guard and tenant units.

Chairman ELLENDER. How much are you asking for your part in operating this base?

General GREENLIEF. $7.2 million.

TOTAL COST OF OPERATION

Chairman ELLENDER. What is the total cost of operation?

General GREENLIEF. I do not know that but we can provide that figure for the record.

Chairman ELLENDER. You may provide that.

(The information follows:)

TOTAL COST OF OPERATING SELFRIDGE INCLUDING REIMBURSEMENTS FOR OTHER GOVERNMENT AGENCIES

The total cost of operation, charged to or reimbursed to the Air National Guard Appropriation, is estimated at $7,960,000 for fiscal year 1972. This includes a direct cost of $7.2 million, plus reimbursements from other government agencies, which will be about $760,000. We are asking for the same amount for FY 1973.

Chairman ELLENDER. Proceed.

General GREENLIEF. The supply and equipment costs decrease $0.9 million in fiscal year 1973 due primarily because a major portion of equipment procurement for aircraft conversions will be completed in fiscal year 1972.

In the areas of travel and per diem, rental of automatic data processing equipment, and rental of other equipment, we are holding the line in fiscal year 1973 and requesting no increase from fiscal year 1972 levels.

Major repair and minor construction requirements decrease $0.4 million due to accomplishment of one-time projects at Selfridge in fiscal year 1972.

MEDICAL SUPPORT AND SERVICE-WIDE SUPPORT

The fiscal year 1973 requirements in the medical support program, which includes medical equipment, supplies, and medical care in non-Air Force facilities, increases a nominal $30,000 over the fiscal year 1972 program. The servicewide support program, which encompasses command administration costs, will increase by $50,000 because of the January 1972 pay raises.

SUMMARY AND CONCLUSION

In conclusion, I believe that the funding requested will enable our units to continue as a viable part of our defense forces. I early request your continued confidence in, and support of, the Air National Guard.

I am prepared to answer questions concerning the proposed operation and maintenance program for fiscal year 1973.

SERVICE CONTRACTS AND LEASES

Chairman ELLENDER. Taking the rest of the items you specify on page 138 and 139 in the order you present them, I notice there is an increase of $500,000 for service contracts and leases. Would you please explain that increase?

General GREENLIEF. Changeover to more modern aircraft generated a higher cost in facilities operation, specifically in the cost of utilities.

NUMBER OF SERVICE CONTRACTS

Chairman ELLENDER. The justification indicated that 146 Air Guard installations are serviced by these contracts. How many installations are being serviced by these contracts and leases in fiscal year 1972? Is there a difference in the number? If so, indicate why.

General GREENLIEF. In fiscal year 1972 the ANG was supporting 145 installations by service contracts and leases. In fiscal year 1973 we are adding the 129 Tac Control Squadron at McCollom ANG Station, Georgia for a total of 146.

TRANSPORTATION OF THINGS

Chairman ELLENDER. Skipping down now to the item regarding "Transportation of things," would you please explain the $700,000 increase in this item? Exactly what is this increase due to?

General GREENLIEF. This increase is for commercial transportation to support field training due to the programed reduction of ANG organic airlift availability in fiscal year 1973.

RENTAL OF ADP EQUIPMENT

Senator YOUNG. Your first item on page 139, Rental of ADP Equipment, provides for the "rental of punch card accounting machines and U–1066/1068 remote equipment to tie to the UNIVAC 1050–II Air Force Standard Supply System." Would you please explain to the committee what this equipment is for?

General GREENLIEF. Punch card accounting machines serve a two-fold purpose. They are used in daily operations, as well as for training, to accomplish workloads that were previously done manually. Functional records at base level are mechanized, management data captured, and punch card reports created to meet National Guard Bureau and Air Force requirements.

Each ANG supply account is given computer support by an Air Force "Host Base." Supply transactions at the ANG Base are transmitted to an active AF installation for processing on the "Host Base" UNIVAC 1050 II Computer. Transmission of data is by the use of UNIVAC 1066/1068 remote terminal equipment.

U–1066/1068 EQUIPMENT

Chairman ELLENDER. When was the U–1066/1068 equipment installed and what has been the utilization rate since that time?

General GREENLIEF. In November 1969 three ANG supply accounts were satellited on Air Force Supply Computers. Four additional ac-

counts were satellited in June 1970. The remaining 79 accounts were satellited on a phased schedule during 1971 with the last account converted in January 1972.

The utilization rate of this equipment averages 90 percent of the in-line time made available to ANG satellites.

INCREASED RENTAL OF OTHER EQUIPMENT FUNDING

Chairman ELLENDER. With regard to the Rental of Other Equipment, I notice that the 1973 request is the same as the 1972 funding provided, but that the 1972 funding was almost 20 percent higher than that in 1971. Based on the actual expenditures to date in 1972, which I would like you to furnish for the record, how much do you think will be required for the full fiscal year 1972?

General GREENLIEF. As of 29 February 1972 the ANG had obligated $188,406 for this account. At this time we estimate that obligations will approximate $230,000 for fiscal year 1972.

REDUCTION IN OTHER SERVICES FUNDING

Senator YOUNG. With regard to the $3.7 million reduction in the Other-Services area, I wish you would pinpoint for the committee where these reductions are being made and explain the reason for their being made at this time.

General GREENLIEF. The Air National Guard assumed the responsibility of operating Selfridge ANG base July 1, 1971; however, during the first year of operation the Aerospace Defense Command (which previously operated the base) continued to pay the civilian work force with the Guard reimbursing ADC from the "Other Services" account. In fiscal year 1973 the Guard will handle the payroll and we have transferred funds from "Other Services" into "Personnel Compensation" for this purpose. The decrease to "Other Services" is $4.8 million. This decrease is offset by the following increases. (1) $.2 million for 7 additional Engineering and Technical representatives to converting units, (2) $.1 million additional for procurement for aeronautical charts and publications and (3) $.8 million for recruiting and advertising for Project Volunteer.

NEED FOR CLOTHING

Chairman ELLENDER. I have just one question with regard to your request for equipment. On page 141 of the justification, you indicated that $939,000 is needed for clothing, and so forth, and that "70 percent of these funds are required for replacement items." Likewise with regard to power tools, and so forth, 80 percent is for replacement items. Would you please explain the need for that amount requested that is for more than replacement purpose?

General GREENLIEF. New clothing issues are necessitated by Air Force directives changing authorized clothing items for safety improvements such as NOMEX fire protective flying suits for all crew members, and antistatic clothing units for all ground-crew personnel.

The increased number of personnel associated with conversions to more sophisticated aircraft generated requirements for the initial issue of additional tools and equipment.

PROJECT PRIORITY LISTING

Senator YOUNG. I presume that the projects for which funding is requested are the highest priority items from a list of many more. If that is the case, would you please furnish the total backlog figure for both last year and this in "Alteration, additions and minor construction"?

General GREENLIEF. Yes, sir. We are requesting funds for our highest priority items. The total backlog figure for fiscal year 1972 is $3.1 million and for fiscal year 1973 $4.0 million.

ESTIMATING FACTORS MEDICAL EQUIPMENT

Chairman ELLENDER. Turning now to page 114, Medical Equipment and Supplies, the factors used in estimating the supplies for base dispensaries and for field training supplies differ from those used in estimating those same expenses. This year the factors are $3.54 and $0.84 per man respectively, while last year the corresponding figures were $1.32 and $0.64 respectively. Would you please explain the difference?

General GREENLIEF. Next year there will be an increased requirement for medical supplies for support of the ANG physical examination program. The number of physical examinations to be administered ANG personnel will increase significantly with the increase in tactical units. The frequency of examinations under Tactical Air Command directives is yearly for flying class III crew members whereas in other commands a biannual requirement exists. Also a recent change in ANG regulations requires that a physical examination be given to all airmen being separated. Until now a physical exam has not been required for separating members. Dut to changes in Air Force physical standards publications, additional medical tests are now being given ANG members during routine physical examinations. Each of these tests will necessitate usage of additional medical supplies. With the additional tactical airlift units more funds will be required next year for the procurement of medical supplies to be included in an air transportable dispensary for each unit.

MEDICAL EQUIPMENT REDUCTION

Chairman ELLENDER. On the equipment side, aside from the 1-year items that occurred in fiscal year 1972, $228,000 was requested to replace "currently authorized medical equipment" in 92 locations. The request for 1973 simply provides "for medical equipment for Air National Guard dispensaries" involving 91 funded accounts and is for $123,000. Why is there a marked reduction although the number of locations remains relatively constant?

General GREENLIEF. Although annual equipment replacement programs for accounts involving many items and large sums of money normally do not vary significantly from year to year, small accounts such as this, where relatively few items of equipment are involved, do vary. Our surveys show that obsolete and unserviceable equipment in our dispensaries currently being replaced require $228,000 in fiscal year 1972. The number of unserviceable items requiring replacement in fiscal year 1973 will decrease. The requests for both years are for

the same purpose: to replace "currently authorized medical equipment" as it becomes unserviceable.

In fiscal year 1972, the 92 locations referred to the number of dispensaries being operated. During fiscal year 1973, 91 dispensaries will be in operation because two Air National Guard units will be colocated at Lockbourne AFB, Ohio.

CHANGES IN FACTORS FOR MEDICAL CARE

Senator YOUNG. On page 145 I notice that the factor used in estimating the cost of medical care in fiscal year 1973 is $9.34 and that this factor is applied to 12,740 personnel requiring medical care. Compared with the figures you provided last year, the factor has increased from $8.52 in 1972 to $9.34 in 1973, while the number of personnel to whom the factor is applied decreases from 13,380 in 1972 to 12,740 in 1973. What is the reason for the change in the factor and how was the present factor arrived at?

General GREENLIEF. The reason for the change in the factor is the rising cost of medical care in civilian hospitals. The factor was arrived at by analyzing our experience for its first half of the current fiscal year.

INCREASE IN TRAVEL EXPENSE

Chairman ELLENDER. I have one last question before we move on to the next appropriation. In regard to the Command Administration request on page 147 of the justification, would you please explain the $50,000 increase in the travel request over fiscal 1972? It represents an increase of 33 percent. Perhaps if you broke it down and compared it to last year, we would get a better picture.

General GREENLIEF. Travel requirements of personnel assigned to the National Guard Bureau have increased considerably because of the major force modernization of the Air National Guard. Additional visits to our units are required to insure that conversions to new aircraft are accomplished in a safe, efficient, and cost-effective manner. In addition, the increased emphasis placed on the Air Guard under the total force concept environment requires frequent meetings with major air command staff members to coordinate training and operational matters.

This account is broken down into travel and per diem cost. The budget requests for fiscal years 1972 and 1973 were:

	Fiscal year—	
	1972	1973
Travel cost	66,400	88,500
Per diem cost	83,600	111,500

Chairman ELLENDER. Thank you very much.

STATEMENT OF MAJ. GEN. JOSEPH R. DeLUCA, DIRECTOR OF BUDGET, HEADQUARTERS, U.S. AIR FORCE

ACCOMPANIED BY:

MAJ. GEN. JAMES A. HILL, DIRECTOR OF AEROSPACE PROGRAMS, DCS/PROGRAMS AND RESOURCES, HEADQUARTERS, U.S. AIR FORCE
MAJ. GEN. HOMER I. LEWIS, CHIEF OF THE AIR FORCE RESERVE
COL. RALPH J. SWOFFORD, DIRECTORATE OF INTELLIGENCE SYSTEMS, ASSISTANT CHIEF OF STAFF, INTELLIGENCE
COL. GEORGE K. BARSOM, CHIEF, EDUCATION PROGRAMS DIVISION, DIRECTORATE OF PERSONNEL PROGRAMS
COL. RICHARD J. CAREY, CHIEF, POLICY DIVISION, DIRECTORATE OF PERSONNEL PLANS
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DANIEL P. COLLINS, DIRECTORATE OF COMMAND CONTROL AND COMMUNICATIONS, DCS/PROGRAMS AND RESOURCES
LT. COL. DON F. RETTBERG, FLYING HOUR & PROGRAM ANALYSIS BRANCH, DIRECTORATE OF AEROSPACE PROGRAMS

BUDGET REQUEST

Chairman ELLENDER. The next appropriation to be considered is "Operation and maintenance, Air Force," for which the fiscal year 1973 estimate is $6,202,405,000, which includes $80,005,000 for the January 1, 1972, pay raise.

PROGRAM AND FINANCING

At this point in the record there will appear certain program and financing information from the justifications.

(The information follows:)

DEPARTMENT OF DEFENSE—MILITARY

OPERATION AND MAINTENANCE, AIR FORCE

PROGRAM AND FINANCING (IN THOUSANDS OF DOLLARS)

	1971 actual	1972 estimate	1973 estimate
Program by activities:			
Direct program:			
1. Strategic forces	1,017,458	1,044,952	1,034,459
2. General purpose forces	1,064,481	976,884	878,583
3. Intelligence and communications	519,091	550,677	590,451
4. Airlift and sealift	193,639	188,305	177,566
5. Guard and Reserve	155,872	172,495	190,195
7. Central supply and maintenance	2,343,705	2,311,389	2,124,490
8. Training, medical, and other general personnel activities	700,057	780,258	807,570
9. Administration and associated activities	187,134	195,821	193,268
10. Support of other nations	147,017	151,357	205,823
Total direct program	6,328,454	6,372,138	6,202,405
Reimbursable (total)	436,783	480,203	481,414
Total obligations	6,765,237	6,852,341	6,683,819
Financing:			
Receipts and reimbursements from—			
Federal funds	−311,539	−402,565	−410,793
Trust funds	−79,683	−50,848	−50,848
Non-Federal sources [1]	−40,107	−19,773	−19,773
Unobligated balance available, start of year	−12,471	−7,017	
Unobligated balance transferred from other accounts		−65,600	
Unobligated balance available, end of year	7,017		
Unobligated balance lapsing	14,802		
Budget authority	6,343,257	6,306,538	6,202,405
Budget authority:			
Appropriation	6,342,574	6,224,881	6,122,400
Transferred to other accounts	−228	−46	
Transferred from other accounts	911		
Appropriation (adjusted)	6,343,257	6,224,835	6,122,400
Proposed supplemental for wage board increases		39,000	
January 1972 pay increase supplemental/amendment		42,703	80,005

[1] Reimbursements are principally from sales to commercial enterprises and individuals of goods and services (10 U.S.C. 2481, 9621, 9625, and 9626).

Note: Includes $29,766,000, in 1973 for activities previously financed from, research, development, test, and evaluation, Air Force. 1971, $35,713,000, 1972, $34,900,000. The amounts shown as January 1972 pay increase supplemental/amendment are not distributed to each individual appropriation in the fiscal year 1973 President's budget, but are reflected as a one-line defensewide contingency amount. The amounts shown above are estimates, pending final determination of the amounts to be requested when supplemental and amended estimates are formally transmitted.

STRATEGIC, ADEQUATE, MODERN FORCES

Chairman ELLENDER. The principal witness will be Maj. Gen. Joseph R. DeLuca, Director of Budget.

You may proceed.

General DELUCA. Mr. Chairman and members of the committee: I will present some of the more significant portions of the fiscal year 1973 budget estimate for the Air Force O. & M. and provide my complete statement for the record.

In preparing the Air Force program, support costs were reduced wherever possible to preserve and modernize combat forces.

I would like to reemphasize this in the light of the discussion yesterday with General Ryan. General Ryan said we sought to preserve our strategic capability and have an adequate general purpose force. Therefore, when we developed this budget along with 1972 we earnestly sought to squeeze the support costs as much as possible in order to achieve three objectives: strategic, adequate general purpose, and some form of modernization.

Chairman ELLENDER. In looking over the justifications I note that your fiscal year 1973 request represents a reduction of approximately $170 million below the current fiscal year 1972 requirement. This seems to be the sum of a large number of increases and decreases.

General DELUCA. Yes, sir; there are pluses and minuses; this is the net minus. As we go through the budget estimate, you will see where we have taken our minuses, particularly in the general purpose area.

Chairman ELLENDER. What is the cost of your O. & M. program for this current fiscal year?

1972 AND 1973 EMPLOYEES AND SALARIES

General DELUCA. The 1972 estimate of the 1973 budget which has been adjusted for civilian pay raises and transfers from other appropriations is $6,372,138.

Now, in terms of the people, the payroll for 1972 is estimated to be $2,124,000,000. In 1973, the payroll is $2,017,000,000. That is $107 million less in 1973.

Chairman ELLENDER. How many personnel are provided in 1972?

General DELUCA. In 1972, our direct hire end strength is 186,912. The reason we can reduce, Mr. Chairman, if I may go back, in 1971 our direct hire end strength was 197,000. In 1972, end of 1972, our direct hire end strength will be 187,000. These are civilians. That is a reduction of 10,000 people between 1971 and 1972. Therefore, our average man-year strength in 1972 was approximately 200,000 and in 1973 it will be 188,000.

Chairman ELLENDER. Proceed.

REPROGRAMING OF FUNDS

General DELUCA. We will have a fiscal year 1972 reprograming action here also—through section 736 transfer authority to add $65.6 million to the 1972 column, again on your large spread sheet here on line 27 which shows in the second column from the right, $6,306 million.

We will have a reprograming request for $65.6 million to add to that, bringing our requirement in fiscal year 1972 to $6,372 million.

We will reprogram that out of existing resources, without asking for more money. But it goes for needs like CHAMPUS, $47 million; currency revaluation, $16 million, where it takes more German marks and more Japanese yen to pay for our labor, utility, and service contracts due to the currency revaluation, and $2.6 million for increased cost of health benefits. We are not asking for more money but we will recoup from our own resources.

Chairman ELLENDER. That money will be derived from funds asked for previously?

General DELUCA. Yes, sir; we seek to transfer funds under section 736 of Public Law 92-204.

At the top of page 2 of my statement, Mr. Chairman, is the spread of the O. & M. fund needs between the major force programs of our budget. In the 1972 column you see the $6.372 million that includes the reprograming request I just spoke of—$65.6 million—and our 1973 request of $6,202 million.

So, we have a net decrease in the O. & M. fund request of approximately $170 million, as you stated. But within that is a mix of a number of minuses and pluses which I cover in my statement.

Senator YOUNG. Mr. Chairman.

Does this include NATO operations?

General DELUCA. In program 10, the support of other nations, there are some fund requests for support of our people in NATO Headquarters. I will get to that in program 10.

Senator YOUNG. All right.

INTELLIGENCE AND COMMUNICATIONS

Chairman ELLENDER. I notice that your intelligence and communications request is increased considerably.

General DELUCA. About $40 million, sir.

Chairman ELLENDER. Why is that?

General DELUCA. If I may, when I get to that there will be some ups and downs unless you want me to cover it now.

Chairman ELLENDER. All right.

General DELUCA. In addition to what we have just covered, the O. & M. appropriation has picked up responsibility for funding in fiscal year 1973 two additional activities.

SATELLITE CONTROL FACILITY, HEADQUARTERS, CALIFORNIA

The first one, $29.3 million for the satellite control facility with headquarters in California, has been transferred from the R.D.T. & E. appropriation because this activity's prime mission now is operational in nature rather than research oriented. This satellite control facility is a worldwide network that has seven geographically dispersed tracking stations whose primary purpose is to provide tracking real time elementary telemetry, command and control and recovery of DOD space vehicles. The bulk of the research is done. It is now an operating activity.

SANDIA/MANZANO BASE, ALBUQUERQUE, N. MEX.

In addition the Sandia/Manzano Base at Albuquerque, N. Mex. was previously run by the Defense Nuclear Agency and in their O. & M. appropriation. We are now going to operate the base in a consolidation effort with our base at Kirtland, which is right next to Sandia. The $8.5 million is additive in 1973 and was non-existent in 1972 in the Air Force O. & M. program.

Chairman ELLENDER. Who operated this previously?

General DELUCA. The Defense Nuclear Agency.

Chairman ELLENDER. I suppose their request will be reduced by that amount?

General DELUCA. Yes, sir.

SANDIA/MANZANO COMPLEX

Chairman ELLENDER. What is the function of the Sandia/Manzano complex that is to be funded for the first time under your O. & M. appropriation?

Mr. RHODES. The function of this complex is nuclear weapon research, design, development, testing, and storage. The Sandia Corp. located on Sandia Base is involved with research, design, development, and testing. The Defense Nuclear Agency, a tenant on Sandia Base, is responsible for stockpile management, inspection, weapons effect research and testing, and overseas weapons testing. Manzano Air Force Base, which is located within the boundaries of Sandia Base, is a [deleted] site. The Air Force Special Weapons Center, administers Kirtland AFB, and conducts aircraft compatibility testing of nuclear weapons, develops operational test concepts and provides air support for nuclear weapons testing, and supports the Defense Nuclear Agency/Department of Defense nuclear test program. The Air Force Weapons Laboratory, a tenant on Kirtland AFB, conducts a wide range of nuclear weapons research.

General DELUCA. We are removing it from the R.D.T. & E. appropriation because it is operational. It is one of those pluses I spoke about, Mr. Chairman. It is additional money in fiscal year 1973 for O. & M. when you compare it to fiscal year 1972.

SATELLITE CONTROL FACILITY

Chairman ELLENDER. What is the function of the satellite control facility?

General DELUCA. The function of the satellite control facility is to provide tracking, command, real-time telemetry, and recovery of Department of Defense space vehicles in a multisatellite environment. The network simultaneously supports satellites of many programs operating in different orbital parameters to accomplish diversified test objectives. It is a complex instrumentation system consisting of antennas, communications, and data processing equipment providing the means for meeting the program requirements of the many space vehicles.

Chairman ELLENDER. What installations are included in this facility?

General DELUCA. The satellite control facility is a worldwide network consisting of a headquarters at Los Angeles, Calif.; a control center (the satellite test center) at Sunnyvale, Calif.; a satellite recovery group at Hickam AFB, Hawaii; a parachute and recovery test force at Edwards AFB, Calif.; a radiometric test site for military communication satellites at Camp Parks, Calif.; and seven geographically dispersed tracking stations at Vandenberg AFS, Calif.; Grenier AFS, N.H.; Kaena Point, Hawaii; Kodiak Island, Alaska; Guam [deleted]; and Mahe, Seychelles Islands, Indian Ocean.

Chairman ELLENDER. Exactly what will this $29.3 million be used for? How much of it will be for civilian personnel? How much is for contract support? And so on?

General DELUCA. Included in the $29.3 million is $4.2 million for civilian personnel; $12.6 million for other base support items such as utilities, maintenance, supplies, communications, facilities projects and equipment. Other contract services for support of the network amount to $12.5 million.

Chairman ELLENDER. How many military personnel are assigned to this facility, and what is the estimated cost for these personnel?

General DeLuca. The Satellite Control Facility has 1,755 military personnel assigned. The estimated cost for these personnel in fiscal year 1973 is $17.9 million.

Senator Young. Why is the funding for this operation being transferred to the O. & M. appropriation, and why is it being done at this particular time?

General DeLuca. The funding for the satellite control facility is being transferred to the O. & M. appropriation in order to reflect the character of the operation more adequately. The operation and maintenance of the various facilities has stabilized over the past few years to the point that now it is more logical to fund these activities in O. & M. rather than in R. & D.

Senator Young. How much was provided in the R. & D. appropriation for this facility in fiscal year 1972?

General DeLuca. The satellite control facility was provided $31.6 million in the R. & D. appropriation in fiscal year 1972.

Senator Young. Does the transfer of this facility show up as a reduction in the R. & D. appropriation in fiscal year 1973?

General DeLuca. Yes, sir.

Senator Young. Further in the justification, on page 7, there is shown an estimated increase in full-time permanent employees of 340 for the satellite control facility. Are these 340 personnel in addition to the ones being transferred or is this a listing of those that are being transferred?

General DeLuca. The 340 personnel shown are the ones being transferred and are not an addition.

Transfer of Sandia/Manzano Complex

Senator Young. Why is Sandia/Manzano complex being transferred to the Air Force, and why is it being transferred at this particular time?

Mr. Rhodes. The complex consisting of Kirtland AFB, Sandia Base, and Manzano Base was consolidated for support (base support) purposes in response to a Deputy Secretary of Defense memorandum, March 29, 1971. This same memorandum addressed the renaming of the Defense Atomic Support Agency (DASA) to the Defense Nuclear Agency (DNA) and reduced the DNA functions. The merger of the bases and the changed DNA role produced a cost reduction opportunity which was implemented on July 1, 1971, the earliest possible opportunity.

Senator Young. I notice that the complex will be "annexed" to Kirtland AFB. Where is the complex located that it can be "annexed" to Kirtland AFB?

Mr. Rhodes. Sandia Base is immediately east of Kirtland AFB. The boundaries are contiguous. Manzano AFB is contained within the confines of Sandia Base and is southeast of the Sandia Base administrative complex.

Senator Young. What does the complex consist of; that is, what is the physical composition, and what sort of support is required for its operation?

Mr. Rhodes. We will be glad to supply this for the record.

(The information follows:)

The physical composition of the complex is illustrated as follows:

	Sandia	Manzano	Kirtland
Land area (acres)	47,400	2,900	2,800
Structures (square feet)	4,500,000	700,000	4,100,000
Paced area (square yards)	6,200,000	1,000,000	2,900,000
Population (civilian and military)	15,700	300	8,500
Tenants	47	8	35

Support for the complex consists of personnel pay, travel, rents, communications, contract services, civil engineer services, utilities, supplies and equipment only for the "housekeeping" efforts. Primary mission support for the tenant organization is excluded from these funds. The support funds are administered by the Air Force Special Weapons Center.

Chairman ELLENDER. How many military and civilian personnel are assigned to this complex and what is the estimated cost for each in fiscal year 1973?

Mr. RHODES. We will be happy to supply this for the record.

(The information follows):

The Blue Ribbon Defense Panel recommended the military departments assume functions within the Sandia/Manzano complex. The military and civilian authorizations transferred to the Air Force associated with the Sandia/Manzano complex were:

Officers	148
Airmen	800
Civilians	883
Total	1,831

Other Air Force units categorized as tenants on the Sandia/Manzano complex including those Air Force authorizations devoted to the Defense Nuclear Agency total:

Officers	107
Airmen	482
Civilians	1
Total	590

The total Air Force military and civilian personnel authorized to the complex are:

AUTHORIZATIONS

	Number	Amount
Officers	255	$4,435,215
Airmen	1,282	9,944,474
Civilians	844	10,608,000
Total	2,421	24,987,689

Chairman ELLENDER. How much was appropriated for this complex in fiscal year 1972?

Mr. RHODES. The Defense Nuclear Agency is reimbursing the Air Force R. & D. appropriation $8.9 million in fiscal year 1972, for support provided at Sandia/Manzano. This excludes support of the hospital.

Chairman ELLENDER. Has there been an offsetting reduction in the O. & M. defense agencies appropriation that will take this transfer into account?

Mr. RHODES. Yes, sir, there has been a corresponding reduction.

Chairman ELLENDER. On page 7 of the justification, there is an increase shown of 119 civilian personnel for the Sandia Hospital. Now are these in addition to those that are being transferred or is this a summary of those that are being transferred?

Mr. RHODES. The increase of 119 civilian personnel for the Sandia Hospital are in addition to the base personnel being transferred from the Defense Nuclear Agency.

FORCE PROGRAM 1: STRATEGIC FORCES

Chairman ELLENDER. General, before you begin with your discussion of the $1,034,459,000 for the "Strategic Forces" I want to have the summary statement on page 11 of the justifications included in the record.

(The information follows:)

TOTAL OBLIGATIONS BY PROGRAM ELEMENT GROUPINGS

[In thousands of dollars]

Program element groupings	Fiscal year 1971, actual	Fiscal year 1972, estimate	Fiscal year 1973, estimate
A. Offensive:			
1. Aircraft	282,775	278,673	278,538
2. Missiles	25,283	31,293	28,043
3. Offensive operations	305,424	337,325	335,693
Subtotal, strategic-offensive	613,482	647,291	642,274
B. Defensive:			
1. Aircraft and missiles	24,659	19,475	11,311
2. Surveillance and warning	204,279	224,976	237,509
3. Defensive operations	175,038	153,210	143,365
Subtotal, strategic-defensive	403,976	397,661	392,185
Total, strategic forces	1,017,458	1,044,952	1,034,459

General DELUCA. Now moving to force program 1, I will cover the strategic offensive forces. In force program 1, we cover both offensive and defensive strategic forces.

STRATEGIC OFFENSIVE FORCES

The estimate for strategic offensive forces is for the operating requirements of the Strategic Air Command, including combat aircraft, intercontinental ballistic missiles, and tankers.

The total flying hour program of the strategic offensive forces remains stable at about 636,000 hours but within that 636,000 hours the B–52 rises from 213,000 to 224,000 hours. The B–52 is a high consumer of supplies, POL and depot maintenance resources.

B–52 AND KC–135 FORCES

The B–52 and KC–135 forces are programed to continue operations in Southeast Asia during 1973. Now, in 1971, the B–52's flew an average of 1,112 sorties per month. In 1972 and 1973, these operations are budgeted to average [deleted] sorties per month operating out of U-Tapao, Thailand.

Chairman ELLENDER. Have you any money here for operations in South Vietnam?

General DELUCA. These bombers are stationed in Thailand and they do the coverage in the whole Southeast Asia area.

Chairman ELLENDER. Proceed.

FB–111 FORCE

General DELUCA. Fiscal 1973 will be the first full year of operation of the aircraft of the four squadron FB–111 force. Thus, the total force of 30 squadrons consisting of eight B–52D's, one B–52F, 11 B–52G's, six B–52H's, and four FB–111's will provide a strategic alert force and meet requirements for Southeast Asia operations.

SAC SATELLITE BASING PROGRAM

The SAC satellite basing program, and this is, you know, where we are going for interior coverage and dispersal. This increases the prelaunch survivability of the SAC alert force, and will consist of 13 bases at the end of 1972 and 19 bases at the end of 1973.

FUNDING

The strategic offensive forces O. & M. requirements for 1973 total $642.3 million, which is $5 million less than in 1972.

STRATEGIC DEFENSE FORCES

The estimate for strategic defense forces are for the operating requirements of the Aerospace Defense Command, including the North American Air Defense (NORAD) and the Alaskan Air Command. Here, too, these are divided into three categories: support of aircraft and missiles; support of surveillance and warning, and defense operations support.

AIRCRAFT AND MISSILE PROGRAM

In the aircraft and missile program for fiscal 1973, the active fighter interceptor squadrons will be reduced to seven by transfer of two squadrons to the Air National Guard. These are the two F–106's. Also, this reduces the F–106 aircraft flying hours in active force from 74,000 in 1972 to 57,000 in 1973.

So there are some decreased costs to us.

PHASEOUT OF BOMARC INTERCEPTOR

Also, the Bomarc interceptor will be phased out of the forces by the inactivation of Bomarc squadrons. The 1973 estimate for this category of defense is $11.3 million, compared to the 1972 program of $19.5 million.

It is another illustration of the reductions.

SURVEILLANCE AND WARNING

Now, several significant changes also occur in the area of surveillance and warning. Backup interceptor control (BUIC) sites which are related to the control of fighter interceptors and missiles and

located in the United States, will be deactivated. Also, costs have been reduced for long-leased-line communications. Savings from these reductions, along with the reduction in defensive aircraft operations, are offset by improvements of surveillance and warning facilities worldwide and full year operating costs of activities that become operational in fiscal year 1972.

We do have some increases.

PROGRAM SUMMARY

Chairman ELLENDER. General, please provide for the record a summary on pages 18 and 19 of the justifications setting out a summary of the $237.5 million requested for "Surveillance and Warning."

General DELUCA. I will provide that information for the record, Mr. Chairman.

(The information follows:)

	In thousands of dollars
2. Surveillance and warning:	
Fiscal year 1971 actual	$204,279
Fiscal year 1972 estimate	224,976
Fiscal year 1973 estimate	237,509

This category includes funds for manpower authorizations, supplies and equipment, and associated operating costs for direct support of the Air Defense Semi-Automatic Ground Environment System (SAGE), the Ballistic Missile Early Warning System (BMEWS), the Space Detection and Tracking System (SPACETRACK), the Distant Early Warning System (DEW LINE), the Air Force portion of the Continental Air Defense Integration North (CADIN), the Over the Horizon Radar System (OTH), the Airborne Early Warning and Control System (AEW&C), and the NORAD Combat Operations Center (NORAD COC). The components of these programs are shown in the following table:

PROGRAM DATA (OPERATING LOCATIONS UNLESS INDICATED OTHERWISE)

	Fiscal year—		
	1971	1972	1973
NORAD manual control centers	4	4	4
Regional control centers:			
Conus	6	6	6
Alaska	1	1	1
Canada	1	1	1
Surveillance radars	100	100	100
Back-up interceptor control (BUIC):			
Conus	12	8	[Deleted.]
Canada	2	2	2
NORAD COC	1	1	1
Distant early warning (Dew Line)	32	31	31
Airborne early warning and control (A.E.W. & C.) (squadrons)	2	2	2
Ballistic missile early warning system (BMEWS)	3	3	3
Space detection and tracking system (Spacetrack)	3	3	3
Over the horizon radars (OTH)	[Deleted.]	[Deleted.]	[Deleted.]
Total flying hours	36,956	26,440	26,168
Manpower totals (end strengths)	18,254	18,375	17,656
Military personnel	17,185	17,206	16,482
Civilian personnel	1,069	1,169	1,174

Surveillance and Warning requirements increase $12,533 thousand from FY 1972 to FY 1973. Major changes in program costs are shown below:

[In thousands of dollars]

a. Surveillance Radars—Full year cost for PINETREE radars in FY 1973 and partially offsetting decrease for CADIN	+$1,547
b. NORAD Cheynne Mountain Complex (NCMC) Improvement Program	+8,345
c. DEW LINE—Reflects one-time DYE-3 project in FY 1972 with partial offsetting increase for Arctic fuel in FY 1973	−1,445
d. BMEWS—Full year cost for Moorestown SLBM activation and contract costs for new requirements at Thule operational site	+1,900
e. SPACETRACK—Increase in contracts associated with installation of computers at Shemya and Diyarbakir and program changes at Eglin FPS–85 facility	+2,511
f. BUIC—[Deleted]	−1,033
g. Aerospace Defense	+1,770
h. Other program and contract adjustments	−1,062

FUNDING

General DeLUCA. On page 7, Mr. Chairman. The 1973 estimate for defensive operations is $143 million compared to the 1972 program of $153 million, or a decrease of $9.8 million.

You see, Mr. Chairman, decreases are showing up here as we change our operations.

PROGRAM FUNDING DECREASE

Now, for the total Strategic Forces which I have covered, offensive and defensive, as you will see, our investment in 1972 in O. & M. funds was $1,045 million. In 1973, it was $1,034,500,000. But we are holding the support of O. & M. rather stable with the pluses and minuses and with the increases in payroll and services costs.

STRATEGIC FORCES—OFFENSIVE AIRCRAFT

Chairman ELLENDER. In the Strategic Forces program, a slight net decrease is budgeted for offensive aircraft in fiscal year 1973. Within that figure, however, there is a substantial increase, over $6.8 million, resulting from increases in B–52 support costs for "crew manning and flying hours, and the full year effect of aviation POL price increases." Would you please explain a bit more precisely what these increases are and what the reason for them is?

Mr. RHODES. $1.3 million is for the full year impact of the POL price increase. The remainder, $5.5 million, is to support the flying hours for the additional aircrews that will be available in fiscal year 1973. Aircrews were withdrawn from all B–52 units to support operations in Southeast Asia, so the actual aircrew availability in the state-side units for B–52 G and H models has been less than authorized. For example, in fiscal year 1971, the flying hour program for these aircraft equated to only 73 percent of the authorized aircrew manning level. There has been a substantial improvement and based on this we are projecting aircrew manning rates of 83 percent and 91 percent respectively for fiscal years 1972 and 1973.

Senator YOUNG. Again regarding offensive aircraft in the Strategic Forces program, I notice on page 13 of the justification that a decrease of $7.2 million in the operating costs of the one SR–71 squadron is

expected in fiscal year 1973. What is the reason for the estimate? I wish you would go into some detail in answering this.

General DeLuca. During a comprehensive review of the overall worldwide reconnaissance requirements and their relationship to our national objectives, the Department of Defense determined that a reduction would not have an adverse impact on the strategic reconnaissance role of this aircraft. As a result, the Air Force plans to make adjustments, primarily in the modification, spares and other support areas.

SR–71 SQUADRONS

Senator Young. How many aircraft are in one of these SR–71 squadrons?

General DeLuca. There is only one SR–71 squadron and it has 12 aircraft.

STRATEGIC FORCES—OFFENSIVE MISSILES

Chairman Ellender. On page 14 of the justification you indicate that there will be a reduction in support costs of Titan and Minuteman missiles "primarily in the area of software contracts involving the test, analysis, and targeting programs," amounting to $4.2 million. How was the reduction accomplished?

General DeLuca. In the missile application programs we have been able to reduce the scope of software contracts. These particular programs use software contracts in the development of target systems, damage assessment calculations and other similar complex tasks. The development stages of the software packages have largely been completed and unless major changes occur in the force application guidance, efforts and dollar requirements in the future will be for the less expensive process of keeping the programs current.

Senator Young. How much is being budgeted this year for software contracts of the test, analysis, and targeting variety?

General DeLuca. We have $15.1 million in the program for fiscal year 1973.

Chairman Ellender. The tabulation of the number of missile squadrons and missile for fiscal years 1971, 1972, and 1973 on page 14 of the justification indicates that a reduction of two squadrons consisting of 50 Minuteman I missiles each will be offset by a like increase in Minuteman III squadrons and missiles. Will this shift result in any increase in operating costs?

General DeLuca. No, sir.

Senator Young. Will there by any change in the personnel situation as a result of the change in missile mix?

General DeLuca. Yes, sir; there are minor changes. The primary difference in personnel results from the increased crew ratio associated with Minuteman III. A Minuteman I unit has a crew ratio of 6 to 1, while Minuteman III has 9 to 1. The complexity of the Minuteman III launch control facility requires the full attention of two crew members at all times. With Minuteman I it is possible for one crew member at a time to get some rest, thereby allowing the crews to remain in the missile complex for longer periods of time. Hence, the need for a greater crew ratio in Minuteman III.

M'CONNELL AIR FORCE BASE

Chairman ELLENDER. On page 16 of the justification there are a number of items of increase and decrease that need additional explanation. The first item concerns support for McConnell Air Force Base. Would you please explain why the support for this air base is included as an increase to the fiscal year 1973 budget request?

General DELUCA. This increase is really a transfer within O. & M. from one major force program to another. In fiscal year 1972, McConnell Air Force base is a tactical air command installation upon which Strategic Air Command is tenanted. Activity at the base is such that SAC is now the predominant user, so we are transferring the base support function responsibilities from TAC to SAC. The $7.8 million represents only the cost of the base support functions and does not include any costs associated with the prime mission elements.

Chairman ELLENDER. What appropriation funded the support of McConnell AFB in fiscal year 1972?

General DELUCA. The O. & M. appropriation financed this support, but in major force program II because that is where TAC is funded. Because of the change in responsibility we are merely transferring the funding within O. & M. to SAC and major force program I.

Chairman ELLENDER. How much was in the fiscal year 1972 budget for the support of this facility?

General DELUCA. The same amount, $7.8 million.

Senator YOUNG. Has an appropriate reduction been recorded in the budget item that formerly funded McConnell Air Force Base?

General DELUCA. Yes, sir. When we get into major force program II, you will find the corresponding reduction. I believe it is on page 34 of the justification.

AIRCRAFT POL

Chairman ELLENDER. The second item on page 16 concerns a decrease in aircraft POL for mission support flying hours. Would you please break this reduction of $166,000 out to show the total reduction due to the cut back in flying hours and the offsetting increase due to the increase in the price of aviation POL?

General DELUCA. The decrease in hours prices out to $569,000 and the offsetting price increase is $403,000. That gives you a net decrease of $166,000.

STOCK FUND MANAGEMENT TECHNIQUES

Chairman ELLENDER. Further down the list on page 16, you indicate that approximately $3 million will be saved this year due to "improved management techniques" in the stock-funded supplies and equipment area. What sort of improvements are being effected that will result in such significant savings?

Mr. RHODES. Mr. Chairman, these "improved management techniques" are essentially a continuation of our policy to assure that all activities buy only the minimum quantities of supplies from the stock fund that they need to do their jobs. We are also stressing that when materials are excess to their immediate needs, they are returned to the stock fund so that appropriate credit can be received. This enables field activities to apply these resources to other essential requirements.

Chairman ELLENDER. Will the improved techniques result in any reduction in the number of personnel necessary ot carry out the function, or in the ratio of civilian to miiltary personnel? I wish you would explain this to us.

Mr. RHODES. The reduction related to improved techniques pertains only to better management of the funds available for procurement of material, and has no effect on personnel requirements.

PROJECT VOLUNTEER

Chairman ELLENDER. What activities are being eliminated as a result of the reduction of this $1.9 million in Project Volunteer?

Colonel CAREY. Sir, there is an error in the printed justification book. The actual decrease is $1.6 million. This is a net change. An increase of $2.2 million for custodial services is offset by decreases for family services, $0.3 million; aircraft maintenance rest facilities, $1.5 million; and furnishings for transient quarters and dormitories, $2 million.

Chairman ELLENDER. Please provide for the record a list of all Project Volunteer increases and decreases for fiscal year 1972 and the estimates for 1973 as they appear throughout the justification.

Colonel CAREY. I will provide the details you requested for the record.

(The information follows:)

FORCE PROGRAM I

Program element grouping	Fiscal year 1972 funding	Fiscal year 1973 changes
Offensive operations	$5,010	−$1,649
Custodial services	1,145	+2,216
Family services	370	−370
Aircraft maintenance rest facilities	1,495	−1,495
Furnishings for transient quarters	700	−700
Dormitory furnishings	1,300	−1,300
Defensive operations	2,110	−1,205
Custodial services	755	+150
Family services	455	−455
Aircraft maintenance rest facilities	500	−500
Furnishing for transient quarters	50	−50
Dormitory furnishings	350	−350

FORCE PROGRAM II

Tactical operations	$5,785	−$4,305
Custodial services	400	+840
Family services	935	−695
Improve aircraft maintenance rest facilities	650	−650
Furnishing for transient quarters	1,900	−1,900
Dormitory furnishings	1,900	−1,900

FORCE PROGRAM III

Intelligence and communications	$50	+$10
Other intelligence programs	50	−10
Communications		+20

FORCE PROGRAM IV

Program element grouping	Fiscal year 1972 funding	Fiscal year 1973 changes
Airlift operations	$564	+$2,256
Custodial services		+1,100
Family services	114	+406
Maintenance of aircraft facilities	130	+1,070
Transient quarters furnishings	50	−50
Dormitory furnishings	270	−270

FORCE PROGRAM V

Air Force Reserve		+$632
Custodial services		+20
Family services		+12
Reserve recruiting		+600

FORCE PROGRAM VII

Other logistic support activities	$555	−$275
Custodial services	130	+150
Family services	75	−75
Improve aircraft maintenance rest facilities	190	−190
Furnishing for transient quarters	160	−160
Eastern Test Range	75	+503
Custodial services		+450
Family services	75	+53

FORCE PROGRAM VIII

Recruiting and examining	$7,200	+$6,200
Advertising	5,700	+3,000
Leased vehicles	700	+2,100
Furniture and office expansion	300	+600
Communications	100	−100
Out-of-pocket expenses		+800
Travel	400	−200
Professional training: Senior NCO PME		+900
Training operations:		
Inservice tuition assistance	1,000	+1,000
Guidance counselors	3,045	+221
Air Force central transcript repository		+1,200
Renovation of submarginal education centers		+250
Equipment for technical/occupational centers		+750
Recruiting service personnel		+1,600
Custodial services	570	+2,004
Family services	399	−399
Aircraft maintenance rest facilities	398	−398
Furniture for dayroom	730	−730
Furnishings for transient quarters	300	−300
Communications-recruiting		+1,100
Service and custodial services		+10
ROTC: Scholarships	550	+750
Total	14,192	+14,158

FORCE PROGRAM IX

Field headquarters and activities	$254	−$54
Custodial services	100	+100
Family services	52	−52
Improve aircraft maintenance rest facilities	12	−12
Dormitory furnishings	90	−90

Senator YOUNG. How much remains in Strategic Forces offensive operations for Project Volunteer in fiscal year 1973 and what programs will it fund?

Colonel CAREY. Sir, there is $3.4 million in fiscal year 1973 funds which will provide approximately 6.8 million square feet of contract custodial services broken down into 3.8 million square feet for common use areas of airmen dormitories, and 3 million for squadron level and below administrative areas. These custodial services will assist greatly in the removal of irritants to service life and increase the productivity of technically trained military personnel.

SATELLITE BASING PROJECT

Chairman ELLENDER. Further down the list on page 16 is an increase of $5 million resulting from the programed expansion of the satellite basing project. How many bases are involved in this expansion and which ones are they?

General HILL. Six satellite bases and four Strategic Air Command (SAC) main operating bases (with satellite detachments) are involved. The six satellite bases are Amarillo Air Terminal, Tex., Clinton Sherman Field, Okla.; Forbes Air Force Base, Kans.; Glasgow Air Force Base, Mont.; Roswell Municipal Airport, N. Mex.; and Hill Air Force Base, Utah. The four SAC main operating bases are Minot Air Force Base, N. Dak.; Grand Forks Air Force Base, N. Dak.; K. I. Sawyer Air Force Base, Mich.; and McConnell Air Force Base, Kans.

Chairman ELLENDER. Would you please go into the details of how many personnel, both civilian and military, and how many airframes the budgeted expansion provides for in fiscal year 1973?

General HILL. There will be an increase of 857 military and 60 civilian personnel involved in the fiscal year 1973 portion of the programed expansion. With respect to the airframes, our plans call for dispersal of approximately 60 more of our B–52 and KC–135 alert aircraft.

Chairman ELLENDER. Is it anticipated that this project will be expanded further in future years? That is, can we expect requests for more funds for this purpose next year?

General HILL. Yes, sir.

The O. & M. dollar requirements for fiscal year 1974 will be greater than 1973 because we will have more satellite locations to support, but should be somewhat less than the increase in fiscal year 1973. The O. & M. requirements should stabilize in the fiscal year 1976 time frame.

Senator YOUNG. Is the support for McConnell AFB that we just discussed part of this expansion, or is it related in any other way to this expansion?

General HILL. As you recall, we talked about programed changes in activity that have made SAC the predominant user of the base. The impact of McConnell becoming a main operating base for SAC under the satellite basing project contributed to this change. So to answer your question sir—yes, McConnell is part of the expansion, but the

fund requirement to support that part is included here since this is a direct mission requirement, rather than being included in the $7.8 million we discussed earlier for the transfer of base support functions.

Chairman ELLENDER. We'll get to these two items in a bit but right now I would like to know if the phasedown of operations at Goose Air Base, Labrador, and/or the expanded activity at Glasgow Air Force Base, Mont., which are indicated lower down on the list on page 16, are related to the satellite basing project?

General HILL. The operation at Goose is in no way related to the satellite basing project, but the expansion at Glasgow is. The reason we have separated Glasgow from the rest of the project is because the bulk of the base support there is all done by contract and covers more than just satellite basing. It gives us a bit of a bookkeeping problem to try and split that contract amount up between base support for the satellite location and base support for the other activities at Glasgow. I would like to emphasize the "base support" aspect to differentiate between that and direct mission support that we normally charge to primary weapon systems. In the satellite basing project we try to charge off all applicable costs to the project, but as is the case with the Glasgow contract, it is sometimes difficult to segregate costs when more than one mission is involved.

GLASGOW AFB

Chairman ELLENDER. The last item I would like to question on page 16 of the justification regards the expanded activity at Glasgow Air Force Base, Mont. We touched on this item earlier but I'd like you to briefly explain why the Glasgow facility is being expanded and, as a bit of background on the subject, perhaps you can tell us how long this facility has been inactive and why it was deactivated in the first place.

General HILL. The Glasgow facility is being expanded to facilitate acceptance of its mission as a SAC satellite base and to enable the Air Force to support its host responsibilities at that location for the Army's safeguard depot activity and a Department of Health, Education, and Welfare regional vocation school. Glasgow was inactivated in July 1968 because of realignment actions that occurred at that time as a result of a reduction in the number of bomb wings in SAC.

Chairman ELLENDER. How many personnel will be involved in the expansion, permanent personnel that is, not the crews that will be getting the facility in shape? How many are civilians and how many are military?

General DELUCA. Approximately 40 civilians and 115 military personnel will be involved in the expansion.

Senator YOUNG. Will there be required any further military construction to make the Glasgow base operational?

General HILL. A program amount of $1.2 million was included in the fiscal year 1972 military construction program to meet the operational requirements of phase I of the satellite basing project. Additional construction is anticipated in fiscal year 1974 to improve the capability of Glasgow to support satellite basing. On the O. & M. side, we will require fund support for projects to unpickle fuel distribution and storage facilities, and reopen buildings to be used for satellite basing.

We will also use O. & M. funds to reopen various buildings associated with the Air Force responsibilities as host to the Army's safeguard depot activity, and the HEW vocational school. This total O. & M. requirement for Glasgow will be approximately $177,000.

DEFENSIVE AIRCRAFT AND MISSILES

Chairman ELLENDER. On page 17 of the justification you indicate that the fiscal year 1973 budget figure is reduced by $8.2 million as a result of the transfer of four F–106 fighter interceptor squadrons to the Air National Guard and the inactivation of the three remaining Bomarc squadrons. The effect this has on personnel is to reduce military personnel by 2,578 and civilian personnel by 71. Would you please break out the effects of each of these two actions, both dollarwise and personnelwise?

General HILL. The savings of $8.2 million, 2,578 military and 71 civilian personnel you refer to are related to the reduction of two F–106 squadrons and the 3 remaining Bomarc squadrons. The other two F–106 squadrons were reduced in fiscal year 1972. I will provide a detailed break-out for the record.

(The information follows:)

	F–106	Bomarc	Total
Cost (O. & M.)	$7.607	$0.559	$8.166
Personnel (end strengths):			
Military personnel	1,891	687	2,578
Civilian personnel	46	25	71

FIGHTER INTERCEPTOR SQUADRONS

Senator YOUNG. What is the reason for transferring these four interceptor squadrons to the Air National Guard?

General DELUCA. The transfer of the F–106's to the Air National Guard is to preserve air defense interceptor capability while reducing the active force.

Senator YOUNG. What became of the military personnel that had been assigned to these squadrons once they were transferred to the National Guard? Were any of them transferred out to assist the Guard?

General DELUCA. The military personnel were transferred to other Air Force units where there was a need for them. None are transferred to the Air National Guard. However, there are Air Force military personnel who are assigned to the Guard in the capacity of advisers to assist the Guard attain readiness.

Chairman ELLENDER. Where were the four squadrons located before they were transferred to the National Guard and to which Guard units were they transferred, respectively?

General HILL. The locations which are still classified are as follows: [Deleted].

The Air National Guard fighter interceptor squadrons—FIS—receiving the F–106 aircraft are as follows: [Deleted].

BOMARC

Senator YOUNG. Why are the Bomarc missile operations being phased out and will they be replaced by some other system?

General HILL. The Bomarc is being eliminated because it is a nonsurvivable weapon system, vulnerable to suppression. The unique characteristics of the Bomarc will be replaced by the improved manned interceptor—IMI—when it enters the inventory. The Bomarc is not programed to be replaced by another missile system.

NORAD CHEYENNE MOUNTAIN COMPLEX

Chairman ELLENDER. On page 19 of the justification the detail reflects an increase of $8.3 million for the NORAD Cheyenne Mountain Complex improvement program. Would you please explain to the committee what this program is and, specifically, what these funds will be used for?

General DELUCA. The NORAD Cheyenne Mountain Complex (NCMC) improvement program (427M) updates the data processing, communications, and display elements of CINCNORAD/CONAD's command and control system. The program provides for the replacement of the NORAD Combat Operations Center 425L system and the Space Defense Center elements of the Spacetrack 496L system. It also contains provisions for housing and integrating the Safeguard Ballistic Missile Defense Center.

Fiscal year 1973 O. & M. funds will be used to acquire software for the world-wide military command and control system (WWMCCS) computer provided the Space Computational Center and to provide system engineering, integration and testing. Throughout the implementation of this program, system engineering is required to meet the changing requirements and assure that both intra- and intersystem integration are implemented in a timely, cost-effective manner to meet the stated operational and technical requirements. The remainder of fiscal year 1973 O. & M. funding will be used to initiate the lease of a communication processor which will replace the present automatic digital relay (ADR) and input/output data controller (IODC). A state-of-the-art communication processor is required to interface weapons systems with the NCMC. The communication processor will accept, buffer, translate, and transfer all communications data to or from the communications lines and between computer systems such as the Ballistic Missile Defense Center, NORAD computer system and Space Computational Center.

NORAD CHEYENNE MOUNTAIN IMPROVEMENT PROGRAM

Chairman ELLENDER. What is the reason for an improvement program of this size being included in the O. & M. appropriation rather than the military construction appropriation?

General DELUCA. These funds are not for construction of facilities. The funds in fiscal year 1973 will be used to procure the service of contractors to produce software and to provide system engineering. In addition a communication processor will be leased.

Chairman ELLENDER. I presume that some, if not all, of the projects in the overall improvement program at the Norad complex will be contracted out to civilian contractors. Would you please tell us who the major contractors will be and what their particular contracts entail?

General DELUCA. There will be two major civilian contractor efforts. The first will be our communication/system integration and the second will be for space computational center software including consoles and displays. The contracts have not yet been awarded.

Senator YOUNG. When do you estimate the improvements in this program will be completed—or is this a sort of perpetual improvement program for which you need $8.3 million this year?

General DELUCA. The improvement program is scheduled to be completed by third quarter fiscal year 1976.

BMEWS

Chairman ELLENDER. On page 19 of the justification there is an increase indicated in the BMEWS program of $1.9 million for "full-year cost for the Moorestown SLBM activation and contract costs for new requirements at Thule operational site." Would you please furnish a further breakdown showing the costs of the individual projects, that is Moorestown and Thule?

General DELUCA. Yes, sir. For Moorestown, it is $1.2 million and for Thule, $0.7 million.

Senator YOUNG. Specifically, what will the increased funding for Moorestown and Thule provide for?

General DELUCA. Increased cost for Moorestown SLBM is due to full-year contract operation including spares support by the RCA Corp., versus only 8-month contract operation in fiscal year 1972. The increase at Thule provides for reroofing of buildings at the operational site.

Senator YOUNG. Will the increased activities at Moorestown and Thule affect the number of permanent party personnel at these facilities?

General DELUCA. No, sir. The facilities are contract operated and the increase in contract cost will not affect the number of personnel assigned.

SPACETRACK

Chairman ELLENDER. Also on page 19, there is an item for $2.5 million regarding Spacetrack, for contracts associated with "installation of computers at Shemya and Diyarbakir and program changes at Eglin FPS facility." Would you please break out the costs of these two projects and explain specifically what the increased funding will provide?

General DELUCA. The contract cost increases are as follows:

Shemya/Diyarbakir, $.4 million; FPS–85, Eglin AFB, $1.9 million; and Other Spacetrack items, $211,000.

The increased funding for Shemya/Diyarbakir is an increase to the General Electric contract for operation and maintenance of these sites due to additional contract man-years of effort required in the maintenance of the new computers and for spares support.

The FPS–85 phased array radar at Eglin AFB, Fla., is a one-of-a-kind facility built specifically for Spacetrack and satellite surveillance. A minor part of the increase is associated with the 2-year effort—fiscal years 1972–73—to improve the sensor programing capabilities. The major part of the increase is for a new programing effort to expand the FPS–85 capability to detect and warn against submarine-launched ballistic missile (SLBM) launch from within the southeastern approaches to the United States

Senator YOUNG. What is the function of the facilities at Shemya and Diyarbakir? What about the FPS–85 facility at Eglin?

General DELUCA. Spacetrack radar sensors are located at Shemya and Diyarbakir. Their function is specifically oriented to space surveillance, satellite control, and tracking. The Eglin FPS–85 facility is a one-of-a-kind Spacetrack facility built specifically for space surveillance and tracking and space object identification. This radar coverage is now being expanded to include a submarine-launched ballistic missile detection and warning capability within the southeastern approaches to the United States.

BACKUP INTERCEPTOR CONTROL

Senator YOUNG. The justification on page 18 indicates that the backup interceptor control (BUIC) program is being phased out in the continental United States in this coming fiscal year, resulting in a savings of over $1 million in 1973 alone. To complete the programed phaseout for fiscal year 1973, eight sites will have to be closed. Where are these eight sites located and how many personnel are affected?

General HILL. I will provide that information for the record.

(The information follows:)

Site	Authorizations	
	Military	Civilian
North Truro, Mass	95	1
Havre, Mont	94	1
Calumet, Mich	88	1
Fallon, Nev	139	1
Baudette, Minn	94	1
Fortuna, N. Dak	89	1
Keno, Oreg	90	1
Tyndall, Fla	91	1
Total	780	8

PERSONNEL

Senator YOUNG. How many military and how many civilian personnel will be affected?

General DELUCA. The budget was based on a reduction of 780 military and nine civilian personnel authorizations. Since the budget was submitted the programed reduction is being reassessed and some sites may be retained.

Senator YOUNG. What system do we have that will be taking the place of this Back-Up Interceptor Control system in the Continental United States—or have the perimeter defenses been developed to the point where such a system within the United States is of marginal value?

General HILL. The BUIC's provide depth to the Semi-Automatic Ground Environment (SAGE) system. There is no current replacement for the BUIC system, nor have perimeter defenses increased in sophistication. However, these system functions will eventually be replaced by the AWACS and OTH–B, which will substantially increase control and surveillance capabilities.

AEROSPACE DEFENSE

Chairman ELLENDER. There is an item on page 19 of the justification titled "Aerospace defense" for which $1.8 million is requested. Would you please explain to the committee precisely what this item is, why it is not reflected in the program data summary on page 18, and what the funds are to be used for?

General DELUCA. This is a [deleted] system which is designed to provide reliable [deleted]. The fully operational program will deploy satellites [deleted].

The ground facilities for this program were not reflected in the program data summary because they do not fit the category of major operating locations. [Deleted.]

The dollar increase is directly related to full year's cost of operation of [deleted] ground stations including support provided by the [deleted] on a reimbursable basis.

Chairman ELLENDER. How many personnel, military and civilian, are involved in "Aerospace defense"?

General DELUCA. There are 803 military and 29 civilian manpower end strength in the program.

Senator YOUNG. How much was provided last year for this function?

General DELUCA. The amount provided in fiscal year 1972 is $5.9 million.

ADJUSTMENTS

Chairman ELLENDER. On page 19 of the justification is a final "catch-all" category titled "Other programs and contract adjustments" that includes a reduction of some $1.1 million. Would you please furnish us with some specific examples of the sort of items that are included in this category?

General DELUCA. Reduced requirements for (*a*) computer programming services $0.3, (*b*) operations and maintenance of the OTH radar site at [deleted] $0.3, (*c*) contract technician services in support of the EC–121 aircraft $0.4, and (*d*) systems engineering in support of the Norad Combat Operations Center $0.1.

POINT BARROW

Senator YOUNG. The "Strategic forces—defensive operations" budget request, as given on page 20 of the justification, shows a decrease of $9.8 million from fiscal year 1972. Of that amount, $2.8 million is due to the transfer of the Point Barrow, Alaska, facility to the Navy. What is the reason for this transfer and why is it being made at this time?

General HILL. Point Barrow, Alaska, is being transferred to the Navy because Air Force activities have declined in the Point Barrow

area to such an extent that the Office of Naval Research has now become the major user of facilities and services at that location.

Chairman ELLENDER. How much has been provided by the Navy for the operation and maintenance of the Point Barrow facility in the past 2 fiscal years?

General DELUCA. That Navy provided within their budget the amounts of $1.5 and $1.85 million for fiscal years 1971 and 1972, respectively, to fund a contract with the University of Alaska for operation of the Naval Arctic Research Laboratory located at Point Barrow.

Chairman ELLENDER. I am quite certain that the Navy request for funds includes funding for this facility and I think the amount of their request should be in the record at this point; would you please find out that information and insert it for the record?

General DELUCA. In fiscal year 1973 the Navy is requesting $6.4 million of which $1.9 million is for continuation of the University of Alaska contract for operation of the Naval Arctic Research Laboratory, $2.9 million for contractual operation of the facilities transferred from Air Force, and $1.6 million for new host base logistic support costs such as transportation, supplies and equipment, and maintenace and repairs to structures.

WILDWOOD AFS

Chairman ELLENDER. The justification also indicates that you intend to inactivate Wildwood AFS, Alaska and that it will produce savings of $1.4 million. Is that savings figure a gross or a net figure? Does it include closing costs?

General DELUCA. The $1.4 million is a net amount. Most closing costs are for the movement of civilian personnel and household goods and will take place in fiscal year 1972.

Chairman ELLENDER. How much was budgeted for Wildwood AFS in fiscal years 1971 and 1972?

General DELUCA. $1.4 million in O. & M. was budgeted for Wildwood AFS for each year.

Senator YOUNG. What is the reason for the closure of Wildwood AFS?

General HILL. Wildwood Air Force Station is being closed because the Air Force has no further need for the station in the worldwide automatic digital network (Autodin) communication system because of a realinement of that system. There is no other requirement for the installation for any other mission.

Senator YOUNG. Will there be another station that will perform the function that Wildwood has up until now once the station is closed? What functions did Wildwood serve?

General HILL. The mission of Wildwood has been to support the operation and maintenance of an Autodin automatic switching center serving Alaskan military tributary terminals as part of the worldwide Autodin communication system. No other station will perform the function that Wildwood has been performing. By realinement of the Autodin network configuration throughout Alaska, the Wildwood Automatic Switching Center can be deleted without impairing the Autodin capability in that area.

PROJECT VOLUNTEER

Chairman ELLENDER. The Project Volunteer reduction reflected in the defensive operations portion of the budget is $1.2 million. How is that reduction realized?

Colonel CAREY. Again, sir, this is a net change. We are increasing custodial services by $0.1 million and decreasing family services $0.4 million, aircraft maintenance rest facilities $0.5 million, and furnishings for transient quarters and dormitories $0.4 million.

Chairman ELLENDER. What was the amount budgeted for Project Volunteer in defensive operations for fiscal year 1972 and how much is requested for this fiscal year?

Colonel CAREY. $2.1 million was budgeted in fiscal year 1972 and $0.9 million is included for fiscal year 1973.

GENERAL PURPOSE FORCES

Chairman ELLENDER. The summary information on page 21 of the justifications pertaining to the request for $878,583,000 for "general purpose forces" will be included in the record at this point.

(The information follows:)

FORCE PROGRAM II: GENERAL PURPOSE FORCES

PURPOSE AND SCOPE

General Purpose Forces consists primarily of the Tactical Air Command, Pacific Air Forces, United States Air Forces Europe, and the United States Readiness Command. They provide world-wide tactical strike forces for air superiority, interdiction, close air support, and reconnaissance missions in support of friendly ground forces in the theaters of operation. United States Readiness Command is responsible for coordinating certain joint Army and Air Force exercises within the total program affecting CONUS strike forces.

TOTAL OBLIGATIONS BY PROGRAM ELEMENT GROUPINGS

[In thousands of dollars]

	Fiscal year 1971, actual	Fiscal year 1972, estimate	Fiscal year 1973, estimate
Tactical fighters	170,808	148,023	139,031
Tactical attack/interceptors/bombers	6,209	2,156	683
Tactical reconnaissance/tactical electronic warfare	44,889	34,525	26,373
Special operations forces	24,302	16,592	12,810
Tactical airlift	60,652	44,576	35,611
JCS directed and coordinated exercises	12,592	38,523	33,605
Tactical operations	745,029	692,489	630,830
Total, general purpose forces	1,064,481	976,884	878,547

General DELUCA. Now, what you were asking earlier on General Purpose Forces, here is where we begin to see the reduction in flying hour programs. Air Force General Purpose Forces are tactical organizations assigned to the Tactical Air Command in the United States, Pacific Air Forces, and the U.S. Air Forces in Europe.

The activity of these forces will decline in 1973 as compared to 1972.

Here, Mr. Chairman, the flying hour program for 1973 is 1.5 million as compared to 1.8 million in 1972, or about a 300,000 flying-hour reduction in 1973.

The major change is in the Southeast Asia portion of the program, which is 689,000 hours in 1972 and [deleted] hours are programed in 1973, or a decline of [deleted] hours.

Chairman ELLENDER. Is that for operations in Southeast Asia?

General DELUCA. That is operations in Southeast Asia of a tactical nature. As you see, of the 300,000 hours we have declined, going from 1972 to 1973, [deleted] are related to the Southeast Asia program.

The planned monthly tactical air attack sortie rate in Southeast Asia for 1973 is [deleted] sorties monthly, down from 7,100 sorties monthly this year and 10,000 per month in 1971.

FLYING REDUCTION RESULTING FROM TRANSFER OF AIRCRAFT TO SOUTH VIETNAM

Chairman ELLENDER. Is any part of what you are referring to here transferred to South Vietnam?

General DELUCA. Yes; some part of it is transferred.

Chairman ELLENDER. Is that one of the causes of the reduction in flying hours?

General DELUCA. Yes.

Chairman ELLENDER. To what extent?

General DELUCA. We will have to supply it for the record, but it is one of the reductions.

(The information follows:)

SORTIES TRANSFERRED TO SOUTH VIETNAM

The reductions of 267,244 flying hours and (deleted) monthly Southeast Asia Tactical Attack Sorties in General Purpose Forces from fiscal year 1972 to 1973 is due to reduced USAF activity in Southeast Asia. During the same period South Vietnamese flying hour/sorties increase as follows:

	Fiscal year 1972	Increase	Fiscal year 1973
Flying hours	[Deleted].	+185,410	[Deleted].
Average monthly sorties	[Deleted].	+2,271	[Deleted].

U.S. CONTINUED PAYMENT

Chairman ELLENDER. Who pays for the sorties that will be undertaken by the South Vietnamese?

General DELUCA. When we get to program 10 we will support that. We pay for it.

Chairman ELLENDER. It will be done by the South Vietnamese but we will pay for it?

General DELUCA. Yes, sir.

Chairman ELLENDER. So, there are no savings.

General DELUCA. There are no dollar savings directly. There are some types of resource savings.

Chairman ELLENDER. We will have to recess in order to vote.

(A brief recess was taken.)

HELICOPTER SORTIE INCREASE

Chairman ELLENDER. The subcommittee will resume.

You may continue.

General DeLuca. In reference to your question, the helicopter sorties flown by the VNAF they are moving from 19,000 per month in January 1971 to 53,000 in January 1972, so they are increasing substantially. It depends on the type of airplane that they have, the sorties that they fly, which are not exactly equivalent to ours, but it does show that they are going up.

Chairman Ellender. Where will this money appear?

General DeLuca. That we support them with?

Chairman Ellender. Yes.

General DeLuca. In program 10, support of other nations, which will be in my last few pages.

Chairman Ellender. Proceed.

Withdrawal of Units From South Vietnam

General DeLuca. The withdrawal of Air Force [deleted] units from the Republic of Vietnam is [deleted]. USAF bases will be phased out, leaving [deleted] in the Republic of Vietnam. [Deleted] tactical fighter squadrons are programed to be based in Thailand throughout fiscal year 1973.

Chairman Ellender. These we still maintain?

General DeLuca. These we still maintain. These are regular U.S. Air Force fighting units. We will be operating out of bases like Udorn, Ubon, and so forth.

Chairman Ellender. So that, all of those bases, except, I think, one or two in Thailand will be in operation?

General DeLuca. That is correct.

Chairman Ellender. Are you providing here for the full year of operation?

General DeLuca. The full year. I want to emphasize that this is a program budget subject to the Chief Executive and the Congress decision making.

Squadrons in Thailand

Chairman Ellender. To your knowledge, will there be any decrease in the number of squadrons in Thailand or are you providing for the same kind of operation as is now going on?

General DeLuca. In Thailand, yes, sir; we have 19 squadrons in fiscal year 1972 and we [deleted] squadrons there in fiscal 1973.

Chairman Ellender. So, there is [deleted].

Airfields in Southeast Asia

Is that the only area in which we have airfields in Southeast Asia?

General DeLuca. Just Thailand, and that one remaining base we are keeping in South Vietnam.

Chairman Ellender. Who will operate that?

General DeLuca. The base is operated by the South Vietnamese, but we will also have operations on the base.

Chairman Ellender. The rest of them have been turned over to the Vietnamese?

General DeLuca. Have been or will be.

OPERATIONS AT KADENA, OKINAWA

Chairman ELLENDER. How about Okinawa? Will you cover that later?

General DELUCA. At Okinawa, we are stationed in Kadena. We can give you what forces we have.

Chairman ELLENDER. Those operations will continue?

General DELUCA. Yes, sir; those operation at Kadena will continue. Of course, we also operate out of Guam.

Chairman ELLENDER. Yes; I know.

On Okinawa, has there been no changes because of the transfer to Japan?

General DELUCA. There has been no change.

Chairman ELLENDER. All right.

TACTICAL FIGHTER FORCE

General DELUCA. Worldwide, the USAF tactical fighter force will consist of 72 squadrons in fiscal year 1973—a reduction of one squadron from fiscal year 1972. The composition of the force will change as three F–105 squadrons and three F–100 squadrons are transferred to the Air National Guard and are replaced in the active force by three A–7 and two F–111 squadrons.

TACTICAL RECONNAISSANCE AND ELECTRONICS WARFARE FORCES RF–4 AND EB–66 SQUADRONS

The tactical reconnaissance and electronic warfare forces will be reduced from 15 to 11 squadrons during fiscal year 1973. Three RF–4 squadrons will be transferred to the Air National Guard and the EB–66 squadron in Europe will deactivate.

Chairman ELLENDER. Where are these located?

General DELUCA. The three RF–4 squadrons——

Chairman ELLENDER. You spoke of a reduction from 15 to 11 squadrons.

General DELUCA. The tactical reconnaissance and electronic warfare forces are coming down from 15 to 11.

General HILL. Of the three RF–4 squadrons, [deleted] in the United States. The EB–66 squadron is in Europe.

FUNDING DECREASE

General DELUCA. For General Purpose Forces, and this is the Pacific, Europe and the continental United States, the 1973 O. & M. need is $878 million, a decrease of $98 million from the 1972 program of $976 million.

TACTICAL FIGHTERS

Chairman ELLENDER. On page 22 of the justification, the table indicates that three squadrons of A–7's and two squadrons of F–111's will be added to the force structure, while three squadrons of F–100's and three squadrons of F–105's are being transferred from the Active Forces to the Reserves. On page 23, in giving the respective funding

increases and decreases, you indicate that the additional squadrons will cost $3.7 and $9.5 million, respectively, and that the decreases will result in savings of $3.8 an $6.3, respectively. As a result, the addition of the A–7's and the transfer of the F–100's offset one another. The costs of the F–111, however, are so much greater than those of the F–105's that I wonder if you would explain just why this is so?

General De Luca. Yes, sir. The F–105 flying hour program decreases by 17,220 hours from fiscal year 1972 to 1973 at a cost of $281 per flying hour. The F–111 is a more expensive aircraft to operate, $346 per flying hour, and the F–111 flying hour program increases by 30,934 hours from fiscal year 1972 to 1973. These are the principal reasons for the difference in costs.

TACTICAL FIGHTERS

Senator Young. Is the $9.5 millon for the F–111 the cost of operation only or does that figure include setup costs as well?

General DeLuca. Those funds are for the cost of operation only.

Senator Young. How much do you normally estimate to be the cost of an operational F–111 squadron?

General DeLuca. Since the cost varies somewhat by the aircraft model, I will provide that information for the record.

(The information follows:)

The average annual O. & M. cost for a 24 U. E. squadron, which includes fuel and oil, base material support, personnel support, and depot maintenance, is as follows:

Model:	*Millions*
F–111A	$10.7
F–111D	12.4
F–111E	10.6
F–111F	12.1

Chairman Ellender. How many aircraft are in the squadrons we have been discussing for end fiscal year 1972—the A–7's, F–100's, F–105's, and F–111's?

General Hill. Authorized unit equipment of tactical force squadrons is variable dependent upon the operational requirement and the availability of resources. Squadron equippage in the Active Force for these aircraft is as follows: There are six 24 unit equipped (UE) A–7 squadrons; three 24 UE F–100 squadrons; three 24 UE and two 12 UE F–105 squadrons; seven 24 UE and three 20 UE F–111 squadrons. The F–111F squadrons will maintain 20 UE until equipping with 24 UE per squadron in the first quarter of fiscal year 1974.

SPECIAL ASSIGNMENT AIRLIFT

Chairman Ellender. The last item on page 23 of the justification concerns special assignment airlift, indicating that a reduction of $2.4 million is planned for fiscal year 1973. Would you please tell the committee what special assignment airlift entails and how much was budgeted in fiscal year 1972 for this purpose?

General DeLuca. Special assignment airlift is the chartering of an industrially funded Military Airlift Command aircraft to make a

special pickup or delivery at points other than those within the established Military Airlift Command route system, or movements requiring special consideration because of the number of passengers involved, weight, size of cargo, or other special factors.

The budget includes $2.7 million for special assignment airlift in fiscal year 1972 to return war readiness supply kits, bench stocks, and mobility areospace ground equipment for units redeploying from Southeast Asia.

TACTICAL FIGHTERS

Senator YOUNG. With the $2.4 million reduction on special assignment airlift, how much is left in the fiscal year 1973 budget for this purpose?

General DELUCA. There is $0.3 million in fiscal year 1973 for the redeployment of F–4 equipment.

TACTICAL ATTACK/INTERCEPTORS/BOMBERS

Chairman ELLENDER. On page 24 of the justification, it appears that you are closing out the program element grouping entitled "Tactical Attack/Interceptors/Bombers," but there is still $680,000 requested for this purpose. What are these funds to be used for?

General DELUCA. I would like to clarify this. The number of squadrons for all aircraft shown in this budget is an end-year position. The one F–102 squadron shown for fiscal year 1972 is actually in being until the fourth quarter of fiscal year 1973 when it converts to F–4 aircraft. The unit will continue to be a designated fighter interceptor squadron, however, the funds to support the F–4 squadron are budgeted under the tactical fighter grouping along with all other F–4's. The $680,000 in the tactical attack grouping is for the support of the F–102 squadron until it converts.

Chairman ELLENDER. On page 25, the justification indicates that seven of the 12 F–102 aircraft being phased out will go to the military assistance program. What countries will these planes go to?

General DELUCA. The plan is to transfer seven F–102's to [deleted].

Senator YOUNG. Would you please explain the footnote on page 24 with reference to the B–57 inactivation?

General HILL. The fiscal year 1973 budget submission includes the programed inactivation of the B–57G aircraft from the Active Force. The footnote was provided as a means of identifying the presence of this unit in the Active Force until inactivation in the fourth quarter of fiscal year 1972.

Senator YOUNG. Specfically what aircraft are being transferred to the Reserves as a result of the inactivation of the B–57 squadron in this program element? Which units will be receiving them?

General HILL. There are 14 B–57G aircraft in program element 27111F; these aircraft will be transferred to the ANG unit at Forbes AFB, Kans., as modernization replacements for the obsolescent RB–57 aircraft.

TACTICAL RECONNAISSANCE/TACTICAL ELECTRONIC WARFARE

Senator YOUNG. On pages 26 and 27, you indicate that three RF–4 squadrons and one EB–66 squadron are to be inactivated in fiscal year 1973. What is the reason for the inactivation of these squadrons?

General Hill. The programed inactivation of three RF–4 squadrons was primarily a result of fiscal constraints, and was contingent on a corresponding reduction in the [deleted]. The inactivation of the EB–66 squadron eliminates an old aircraft with limited capability from the Active Force, and provides additional fiscal savings.

Senator Young. Which National Guard units are slated to receive the planes from the three RF–4 squadrons?

General Hill. Those RF–4 aircraft are currently programed for Air National Guard units at [deleted]. The programed reduction in the tactical reconnaissance force structure is currently under review.

Chairman Ellender. Is this program element to be eliminated over a period of time as the tactical attack/interceptor/bombers program was that we just discussed? If so, what is your time frame and why?

General Hill. Present plans do not eliminate this program element, however, a decision on the force composition for this program has not yet been effected. Results of ongoing studies to identify the optimum tactical electronic warfare system (TEWS) capability will influence the final structure of these forces.

Chairman Ellender. Are these reductions being offset by increases in other reconnaissance or electronic warfare efforts?

General Hill. These reductions are not being offset by increases in tactical reconnaissance, and there is no programed equipage or production money in the fiscal year 1973 budget submission for tactical electronic warfare support forces. As previously noted, efforts are underway to determine the optimum tactical electronic warfare force capability.

SPECIAL OPERATIONS FORCE

Senator Young. Air Force gunships are mentioned as part of the special operations forces on page 29 of the justification and I was wondering just how many of these gunships we have and whether they are all deployed in Southeast Asia?

General Hill. There are a total of 45 gunships in the special operations force, 34 of which are in Southeast Asia. The gunships in Southeast Asia include 18 AC–130, and 16 AC–119K aircraft. The remaining 11 gunships, five AC–130's and six AC–119K's, are based in Conus performing aircrew replacement training for the Southeast Asia deployed force.

Senator Young. Also on page 29 you indicate that there is a "decrease of $3.8 million from fiscal year 1972 * * * due to a reduction of 78 aircraft and the associated reduction of 45,075 flying hours." Please furnish the committee with the type and number of aircraft being reduced.

General Hill. The total of 78 aircraft programed for special operations force reduction is composed of the following: 19 A–1's, 29 A–37's, four T–28's, six AC–119's, two AC–130's, six C–123's, 10 0–2's, and two U–10 aircraft.

Senator Young. What is the reason for the planned reduction of the 78 aircraft in the special operations force area?

General Hill. The reduction provides aircraft for diversion to U.S. allies and permits the transfer of some aircraft to other activities. Additionally, the reduction is consistent with the overall phasedown of Southeast Asia activities. These reductions also accrue manpower and dollar savings.

Senator YOUNG. What is the planned disposition of the 78 aircraft being reduced?

General HILL. The disposition of the 78 aircraft being reduced from the special operations force includes the following: 19 A–1's, 29 A–37's, four T–28's, and six AC–119's are to be diverted to U.S. allies; seven O–2's are scheduled for storage; two AC–130's are forecasted attrition; and six C–123's, three O–2's, and two U–10 aircraft are to be transferred to other activities.

TACTICAL AIRLIFT

Chairman ELLENDER. On page 31 of the justification, you indicate a reduction in the C–130 flying hour program of $3.9 million, while maintaining the same strength—17 squadrons. Arithmetically, what does that amount to in flying hours per aircraft and how does that figure compare to the average you would expect to fly in aircraft of this sort? Are they flying more or less than the normally accepted average?

General DELUCA. The $3.9 million relates to a reduction of 19,558 C–130 flying hours from the active force. The squadrons shown are end fiscal year position. Although the end fiscal 1972 and fiscal 1973 squadron strength remains at 17, the end year fiscal 1971 squadron figure is 21. This actually equates to 296 average operating aircraft during fiscal 1972 versus 272 average operating aircraft during fiscal 1973. The C–130 tactical airlift aircraft fly approximately 800 hours per year per aircraft or slightly more than a 2-hour per day utilization rate. With the difference of 24 average operating aircraft between fiscal 1972 and fiscal 1973, the reduction of 19,558 hours is reasonable. The 800-hour-per-year utilization rate compare favorably with aircraft of this type and mission and is a normally accepted average.

Chairman ELLENDER. Again on page 31, you indicate that of the five C–7A squadrons inactivated in fiscal year 1972, the assets of two were transferred to the Air Force Reserve. Exactly how many aircraft are involved and to which units will they be transferred?

General HILL. Thirty-two unit equipped (UE) C–7A aircraft are involved, 16 for each Air Force Reserve unit. The two units receiving these aircraft are the 908 Tactical Airlift Group (TAG), Maxwell AFB, Ala., and the 918 TAG, Dobbins AFB, Ga.

Chairman ELLENDER. The same question arises with regard to the inactivation of the one C–123 squadron as with the five C–7A squadrons—which Air Force Reserve units will receive aircraft of the phased out squadron?

General HILL. The 907 Tactical Airlift Group (TAG), Lockbourne AFB, Ohio, is programed to receive C–123 aircraft from the active force C–123 unit inactivating in fiscal year 1973.

JCS DIRECTED EXERCISES

Chairman ELLENDER. On page 32 of the justification there is listed a request for $33.6 million for JCS directed and coordinated exercises. Would you please furnish the committee with a list of the exercises involved and the estimated cost of each? Please indicate, also, where they are to take place.

General DELUCA. I will be happy to provide that information.

(The information follows:)

Exercise	Location	Estimated cost (in thousands)
Crested Cap IV	Europe	$4,722
Reforger IV	Germany	7,620
Exotic Dancer VI	Puerto Rico	2,724
Flintlock Five	Europe	1,079
High Heels	Continental United States	57
Opportune Journey Series	Hawaii	3,651
Punch Card Series	Alaska	373
Deep Furrow 72	Greece	4,379
Black Hawk	Canal Zone	783
Commando Elite	Hawaii	776
Gallant Hand	Fort Hood, Tex	3,374
Snow Time	North American Air Defense Regions	76
Black Night	MacDill AFB, Fla	1
Ace Card VI	Alaska	25
Brave Shield	Southeastern United States and Puerto Rico	2,410
Freedom Torch	Korea	1,737
Aloud Series	Camp Lejeune, N.C., and Puerto Rico	690
Ember Dawn IV	Alaska	70
Central America III	Central America	112
Strong Express	Northern Europe	1,205
Bonus Light	Continental United States	2
SMPO PX-47	South China Sea	81
SMPO PX-48	Thailand	80

The above list includes all exercises agreed upon during the joint exercise scheduling conference held in January 1972. The total cost of these exercises exceeds the $33.6 million included in the budget by $2.4 million. However, historically force availability and other considerations have caused the cancellation or reduction in scope of various exercises. Consequently, it is assumed that such reductions or cancellations will reduce total fund requirements in fiscal year 1973 to within the budgeted $33.6 million.

Chairman ELLENDER. In your testimony last year you indicated that $22.2 million of the $38.5 million requested was to support maneuvers in Europe. How much of this request for 1973 is for exercises in Europe?

General DE LUCA. The European exercises are estimated to cost $19.1 million in fiscal year 1973.

OBJECTIVES OF EXERCISES

Chairman ELLENDER. Would you please furnish the committee with a very brief summary of each of the exercises including the duration and objectives of each?

General DE LUCA. Yes sir.

(The information follows:)

Name—Duration (Tentative)	Objective
Deep Furrow 72 September 18–28, 1972	A NATO field training exercise to exercise plans for the Southeastern Region
Crested Cap IV September 10–October 10, 1972	To test procedures for receiving, exercising and returning dual-based Tactical Fighter Forces to Europe
Reforger IV October 2–November 20, 1972	To test procedures for receiving, exercising and returning dual-based Army Forces to Europe
Gallant Hand 73 January 10–30, 1973	To improve the combat readiness of U.S. Readiness Command Armored Forces and exercise all participating forces in joint operations

Freedom Torch March 1973 (Length to be determined)	To exercise rapid augmentation plans and capabilities through airlift of an Airborne Infantry Battalion to Korea
Exotic Dancer VI March 23, April 12, 1973	To evaluate the capabilities of Atlantic Command Forces
Aloud (Series of four small 3-day exercises) July 1972–May 1973	Atlantic Command Joint Communications Exercises to train and exercise the various elements which would be employed during a contingency
Snow Time (Series of six 3-day exercises July 1972–May 1973	To train NORAD systems and SAC aircrews in an ECM environment
Opportune Journey (Series of four 35-day exercises) August 1972–May 1973	To exercise Pacific Command Air-Sea Mobility Plans
Commando Elite September 11–November 24, 1972	Deploy Tactical Fighters to Hawaii to provide close air support training for Army units
Flintlock Five July 20–October 28, 1972	To provide joint/combined training for theater and dual-based European Command Unconventional Warfare Forces
Ember Dawn IV August 10–23, 1972	To exercise Alaskan Command reception and employment of Reserve and ANG Tactical Airlift Forces in joint operations
Punch Card XVIII February 10–23, 1973	To exercise Alaskan Command reception and employment of Tactical Air Augmentation Forces
Central America III 6 days during September–October 1972	Small Central America Defense Council joint/combined exercise [deleted]
Strong Express September 14–28, 1972	Maritime exercise to test NATO capability [deleted] of Northern Europe
SMPO PX–47 14 days during October–November 1972	SEATO Maritime Command Post type exercise
Nebbia Blue October 12–16, 1972	To exercise and test NATO Southern Region War Plans. A Command Post type exercise
Brave Shield III November 29–December 13, 1972	To demonstrate U.S. Readiness Command ability to augment another command
Ace Card February 10–23, 1973	To provide Alaskan Command training in cold weather unit, airborne and air mobility operations
Bonus Light 73 February 25–March 6, 1973	A joint Command Post type exercise to exercise Readiness Command augmentation plans
Black Hawk II March 19–30	To test and provide training for CONUS Augmentation Air Defense in the Canal Zone
High Heels 73 March 8–16, 1973	To exercise the reporting and implementing procedures for general war
SMPO PX–48 14 days during April–May 1973	A Command Post exercise [deleted] Thailand
Logex 73 8 days in April–May 1973	To train participants in joint Logistics Command and staff activities
Brave Shield IV Apr 23–May 5, 1973	To improve readiness of Readiness Command Airborne Forces and exercise all forces in joint operations

Chairman ELLENDER. Again on page 32, you will notice that, compared to fiscal year 1971, the request for this year is almost three times as great. Would you please comment on the reason for this difference—what do you plan to do in fiscal year 1973 that you did not do in 1971?

General De Luca. The fiscal year 1971 budget was $16.8 million and the proposed fiscal year 1973 budget is $33.6 million, somewhat below the $38.5 million of fiscal year 1972. The increase from fiscal year 1971 is directly related to the phasedown of activity in Southeast Asia. Many combat units that were involved in the fighting in Southeast Asia in fiscal year 1971 have been withdrawn. More forces are now in a training status and need to participate in JCS Directed and Coordinated Exercises. Numerous fiscal year 1971 exercises were Command Post type, that is, an exercise involving only communications and headquarters personnel. Only five exercises were conducted that involved movement and employment of significant numbers of personnel or equipment. In fiscal year 1973, 10 such exercises are programed. In fiscal year 1973, as part of the Total Force Concept, many of these exercises have been expanded to include not only more active duty units but Reserve and Air National Guard units so as to provide necessary training to enhance their combat readiness status.

TACTICAL OPERATIONS

Chairman Ellender. Please comment on the nature of the activities funded with the $630.5 million requested for "Tactical operations."

General De Luca. These funds provide for the Headquarters and base operating costs for the Tactical Air Command, U.S. Air Forces Europe and Pacific Air Forces, Airborne Command Posts, Aerial Port Squadrons, Air Weapons Control Systems, Tactical Air Control Systems, various types of training and Headquarters U.S. Readiness Command, and associated support units.

Senator Young. You referred to the U.S. Readiness Command. Is that the replacement for the Strike Command?

General De Luca. That is correct, Senator Young.

Chairman Ellender. Turning now to the base closures that are listed on page 34, would you please explain the reason for the closures outside of Vietnam.

General Hill. Yes, sir.

At [deleted] Japan, there has been a reduction in general-purpose force activities as a result of the withdrawal of all tactical forces from Japan. The residual activities are primarily associated with intelligence functions, and funding has been transferred to program III, intelligence.

The reduction of general-purpose forces in Japan and our capability to consolidate residual activities has made it possible to close out the support activities at [deleted].

The Kanto Plains reductions are a result of our consolidation of residual forces in Japan. As a result, several locations which formally provided support for our forces are no longer required.

Tactical reconnaisance units are stationed at [deleted]. In our original budget planning, a reduction in the Active Force of these type units would have resulted in the withdrawal of two squadrons of tactical reconnaisance aircraft from [deleted] and the repositioning of one other squadron elsewhere [deleted]. However, the total requirement for tactical reconnaisance is now being restudied, and no action will be taken to realine these forces until the study is completed.

Senator Young. How many personnel are involved in the closure of these bases, both military and civilian?

Colonel POSNER. Associated with the closure of [deleted] the transfer of [deleted] the reduction of activities in the Kanto Plains area, and the programed change in the operational status of [deleted] is a decrease of 4,750 personnel in fiscal year 1973.

Senator YOUNG. If I am not mistaken, there is quite a bit more involved in the Kanto Plains closure than the closure of just one base. Am I correct? Would you please explain just what facilities are involved?

General DELUCA. We have developed a plan to reduce our presence in the Kanto Plain area, the Tokyo area, by approximately [deleted] percent over the next 3 years. Basically, the plan is a reorganization and consolidation of Air Force activities on the Kanto Plain.

Chairman ELLENDER. On page 33, you indicate that the number of squadrons in the tactical air control system will increase in fiscal year 1973; while on page 34 you indicate that the amount for flying-hour and personnel support for tactical air control systems is being reduced $4.9 million. What type aircraft is included in the squadron to be added, and why is it being added if the amount for flying-hour support is being reduced below last year's level?

General HILL. The squadron being activated is an 0–2 unit. These are forward air controller aircraft. The activation reflects the redistribution of resources within the total tactical air control effort. This total effort includes those tactical control units in Southeast Asia. The level of effort in SEA, decreasing in consonance with the phasedown of all U.S. forces, accounts for the decrease in flying-hour support.

Senator YOUNG. From the personnel summary and the projected decrease due to the reduction of personnel, you have obviously made some substantial cuts. How have you been able to make these cuts? Have you effected these reductions in any one area, or have they been sort of across the board?

Colonel POSNER. Personnel reductions in the tactical operations program were achieved primarily by the transfer of bases to either other major force programs or to the host government, and by reducing activity at other bases. Although base support personnel is the area where we have made the most significant manpower reductions, other areas reduced were training, command headquarters, and aerial port squadrons.

Chairman ELLENDER. On page 34, you indicate that $2.2 million will be saved due to the decrease in operational testing and evaluation of the Maverick missile. How much is left in the budget to carry on the testing and evaluation that has yet to be done?

General DELUCA. The amount of $2.2 million represents the difference in dollar requirements between fiscal years. The fiscal year 1972 requirement is $2.7 million. For fiscal year 1973, the amount of $0.5 million is in the budget to provide for testing and evaluation yet to be done.

Chairman ELLENDER. How long do you expect to be performing these tests on the Maverick missile? When do you expect to finish?

General DELUCA. Operational testing and evaluation on the Maverick missile will require approximately 16 months. The tests began in February 1972 and are scheduled to finish in June 1973.

Senator YOUNG. Where is the testing of the Maverick missile being conducted?

General DeLuca. The tests by the Air Force are being accomplished at Eglin Air Force Base, Fla., and the White Sands Missile Range, N. Mex. The joint Army-Air Force test will be conducted at Fort Riley, Kans.

Chairman Ellender. How many personnel are on the team that is conducting the tests? How many military and how many civilians?

General DeLuca. The Air Force has 54 military and one civilian directly assigned to the test. The Army, at present, has six military personnel. Additional Army personnel will be required to conduct the joint test, and this number has not yet been determined.

Chairman Ellender. The last item on page 34 pertains to the rehabilitation of auxiliary fuel tank—war readiness material—through the NATO Maintenance and Supply Agency. What tanks are referred to here?

General DeLuca. They are auxiliary fuel tanks for the F–4, F–105, F–111, and RF–4 aircraft.

Chairman Ellender. How many tanks have to be rehabilitated in this NATO program?

General DeLuca. A total of 43,023 auxiliary fuel tanks.

Chairman Ellender. How often do these tanks require rehabilitation? I do not recall them being in the budget last year.

Mr. Rhodes. They require rehabilitation every 3 years. You are right, this requirement was not in the budget last year. The program was started in January 1972; and due to its urgency, we reprogramed the funds necessary to get the task started.

FORCE PROGRAM III: INTELLIGENCE AND COMMUNICATIONS

Chairman Ellender. General, before you begin with your discussion of the $590,451,000 requested for "Intelligence and communications," I will include the summary information on page 35 of the justifications in the record.

(The information follows:)

Force Program III: Intelligence and Communications

PURPOSE AND SCOPE

Includes rsources primarily for national or centrally directed DOD Intelligence and Security programs; communications; specialized missions such as weather service, and aerospace rescue/recovery. Excludes communications resources allocated for support of the Strategic Offensive and Aerospace Defense Forces, and other communications resources allocated for on-base requirements; also excludes Command and Control resources associated with Strategic Forces, General Purpose Forces, Airlift Forces and Administrative and Associated activities. Includes Communications Systems and Networks and Networks for Program III only. Commercial communications encompassing all force programs are presented in the Selected Analyses Section.

TOTAL OBLIGATIONS BY PROGRAM ELEMENT GROUPINGS

[Dollars in thousands]

Program element groupings	Fiscal year		
	1971 actual	1972 estimate	1973 estimate
General defense intelligence program	$143,452	$152,884	$165,831
Other intelligence programs	64,076	59,281	69,071
Communications	258,050	266,272	266,743
Special activities	53,513	72,240	88,806
Total, intelligence and communications	519,091	550,677	590,451

General DeLuca. Next is Force Program 3, which is Intelligence and Communications. Intelligence operations include the collection, processing, production, and dissemination of general and cryptologic intelligence and counterintelligence.

Intelligence Reorganization

Chairman Ellender. I was informed some time ago that there was a reorganization in intelligence. How are you affected?

Colonel Swofford. The reorganization is in process. The first step taken was to constitute a Defense Mapping Agency (DMA) which combines the three mapping services of the Army, Navy, and Air Force into one Defense Mapping Agency. The first step of the reorganization should be completed by March 1, 1972.

The second thing that is underway at the moment is the consolidation of the investigative services. OSD memorandum dated December 29, 1971, directed establishment of the Defense Investigative Service (DIS) as a separate Defense agency reporting directly to the Secretary of Defense. The DIS will assume supervisory control of all personnel security investigations (PSI's) within the DOD by May 1, 1972. Field PSI assets will follow by October 1, 1972. The Secretary of Defense has appointed a study group with a view toward determining whether the DIS functions should be expanded to include counterintelligence and criminal investigations.

Estimated Cost Reduction

Chairman Ellender. To what extent will that save personnel and dollars?

Colonel Swofford. I don't think any estimate can be made of that right now. We are still reviewing all the assets of what can be consolidated and what personnel can be reduced. I don't think they have a firm figure on that.

I will attempt to get one for you and furnish it for the record.

(The information follows:)

The savings that will be made because of the intelligence reorganizations will be based on consolidations that are made by the Defense Mapping Agency (DMA) and the Defense Investigative Service (DIS). Since the planning for these consolidations has not yet been completed an estimate of any savings that may be achieved cannot be made at this time.

Pay Increase

Chairman Ellender. I note that the fiscal 1973 request for "Intelligence and Communications" represents an increase of about $40 million over the fiscal year 1972 level, most of which is for intelligence. Please explain.

Colonel Swofford. Sir, in the 1972 year we are in right now, intelligence has reduced about $41 million from the fiscal year 1972 President's budget and about 7,600 people. Part of that money was taken up by increases in pay so the net result of all that will be a reduction of $23 million. The number of people being reduced in fiscal year 1973 will be somewhat lower.

COBRA DANE

In regard to increases for 1973, there are several items which cover a major part of the increase. One of them is initiation of Cobra Dane, to replace the radars at [deleted] which are 12 to 15 years old.

The purpose of these radars is to provide a phase array radar. This is to provide information on the Soviet missile [deleted.] We are attempting to gain all we can on that.

COBRA TALON

Another area of increase is about $4.5 million. It goes for Cobra Talon which is a radar we are locating in [deleted], in the [deleted.] Its function is to collect data from the [deleted] that come across the [deleted.] That is where the [deleted] is.

At a future time, we expect that [deleted.]

The purpose of that radar is to provide telemetry and tracking data for scientific and technical evaluation service.

Chairman ELLENDER. Do you consider that an expansion of the service?

Colonel SWOFFORD. It is an expansion in the sense that we have never been able to acquire that data before. We feel that it is an honest requirement in order to keep track of and be able to counter whatever [deleted] developed.

INTELLIGENCE REDUCTION

Chairman ELLENDER. For the past 2 years I have been astounded at the cost of intelligence for the three services. The committee attempted to cut $500 million from the requests made, and we finally wound up with about $372 million cut in conference.

Are you familiar with that?

Colonel SWOFFORD. Yes, sir.

Chairman ELLENDER. The Air Force took a part of that cut?

Colonel SWOFFORD. Yes, sir; the Air Force part of that cut in Force Program III—Intelligence—all appropriations—was $41 million. Principally, the cut was taken in terms of the reduction in personnel. As I said before, that was about 7,600 people. That accounted for something on the order of $20.5 million out of the military personnel appropriation. The remainder of the reduction was in O. & M., R. & D. and procurement appropriations. This is both in the cryptologic program as well as in the general intelligence program.

Chairman ELLENDER. Was that $41 million taken from the item of $440.7 million?

Colonel SWOFFORD. It was a part of that exercise we went through; yes, sir. It principally came out of personnel. Over $33 million of it, as I recall, came out of the military personnel and O. & M. That equated to about 7,600 people. The remainder of the dollar reduction that came out of research and development and procurement appropriations.

Mr. RHODES. $12.5 million was out of O. & M.

General DELUCA. It is important to know that in terms of military personnel; it has gone down 7,100 from 1971.

Chairman ELLENDER. You stated that there was a $41-million reduction, of which $12.5 million was in O. & M. What other appropriations were cut?

Mr. RHODES. Yes, sir. In O. & M. alone, we cut $12.5 million. As Colonel Swofford said, we took another $20.5 million intelligence out of the military personnel appropriation. We applied the reduction in intelligence exactly as your committee directed it to be done. The balance of the $41 million was directed in the R. & D. ($4 million) and Other Procurement ($4 million) appropriation.

Chairman ELLENDER. Comment on some of the major items included in this increase of $40 million for intelligence activities.

General DELUCA. Sir, there are two additive items in there. For example, that satellite control facility of $29 million is added in this program.

Chairman ELLENDER. Where was it previously?

General DELUCA. That was in the R. & D. appropriation. Also, sir; the security service people have taken over the operation of the base at [deleted]. That was in the Pacific Air Forces General Purpose Program before and now it is in this program at $8.7 million.

Chairman ELLENDER. Why was that transfer made?

General DELUCA. Because the primary mission of this base now is cryptologic intelligence. We closed out the flying operations. This is an example of a plus and minus situation, the mix of the account. The $29.3 million for the Satellite Control facility and the $8.7 million for [deleted] makes about $38 million in this account that wasn't there last year.

Chairman ELLENDER. What is the function of the [deleted] Air Base?

General DELUCA. It used to be a flying operations major installation. We have taken out our flying operations there. It is now an installation, whose primary mission is cryptologic intelligence.

Chairman ELLENDER. What does that have to do with intelligence?

General DELUCA. This is the O. & M. appropriation. It is financing the O. & M. costs of running that base whose primary mission is in the intelligence security service arena.

Chairman ELLENDER. Aren't you adding to intelligence then?

General DELUCA. We are adding O. & M. cost here; yes, sir. We have reduced a similar amount in the General Purpose Forces program. It is important to single out, sir, that there are some adds in here that make the net a plus where if we didn't have the Satellite Control facility and [deleted].

Chairman ELLENDER. Proceed.

COMMUNICATIONS FUNDING RISING COSTS AND MANAGEMENT ACTIONS

General DELUCA. At the bottom of page 12, Mr. Chairman. The fiscal year 1973 communications estimate is $266.7 million, level with a fiscal year 1972 program of $266.3 million. All essential support requirements will be satisfied without any significant dollar increases, despite continually rising costs for personnel, services, and materials. Several management actions contribute to this capability.

General DELUCA. Mr. Collins, do you want to highlight some of these?

ELIMINATION OF INTERMEDIATE MANAGEMENT ORGANIZATIONS

Mr. COLLINS. The major management action taken by the Air Force to reduce communications cost is the elimination of several intermediate management organizations in the Air Force Communications Service.

We are deactivating five communications regional headquarters in the overseas area. We are also deactivating two administrative communications groups. This will give us manpower savings of 447 spaces and will also give us some savings in support dollars.

AUTOMATION OF PENTAGON COMMUNICATIONS CENTER AND OTHERS

We are automating the Air Force communication center in the Pentagon to improve communications message handling without any increase in cost. This is an effort to promote the effectiveness of the communications service, provided by the Pentagon communications center, which is the hub of the worldwide Air Force communications complex.

We intend to automate several other similar type centers at some major air command headquarters and other subordinate commands of the Air Force.

EXPANDED USE OF AUTOMATIC DIGITAL NETWORKS AND AUTOMATIC VOICE NETWORK

We will continue with our program which we initiated in 1966 to minimize the number of so-called dedicated networks within the communications system in favor of expanded use of the Automatic Digital Network and the Automatic Voice Network of the Defense Communications System. We are phasing out manual relay centers in Southeast Asia concurrently with the reduction and withdrawal of forces. We are planning widespread improvements with reduced cost in telephone communications service in the European area. We are planning to take a number of dedicated systems and circuits and integrate these into the autovon system.

Chairman ELLENDER. Steps are being taken to do that when?

Mr. COLLINS. This fiscal year. We are operating under the aegis of a plan developed by the Director of Communications Electronics in the European Command. This is a triservice effort. I am only addressing our part of it. The intent is to provide better voice communications capabilities at less cost to all the forces in the European area.

PRIMARY SAVING OF MANPOWER

Chairman ELLENDER. The amount that you ask for communications here, as I see it, is the same——

Mr. COLLINS. Sir, the savings in the effort in Europe will result primarily in manpower. The details of the plan have not been completed. We are not yet able to identify specifically the number of telephone operator spaces, for example, that will be eliminated. We hope to have that later this year.

Being that it is a tri-service action, some of the things we do are pretty much interdependent with the things that the Army and Navy will also have to do.

MINIMAL FUNDING DECREASE: PROGRAM ADDITIONS AND PAY INCREASE

Chairman ELLENDER. I was about to say that in the request that you are making there is a difference of only $400,000.

Mr. COLLINS. Yes, sir. This is in spite of the increases in civilian pay in 1971 and 1972. We picked up additional costs, for example, in relation to the transfer of the satellite control facility from the R.D.T. & E. appropriation to the O. & M. appropriation. This actually increased our ongoing communications costs in the O. & M. appropriation by some $3.9 million.

We have succeeded, of course, in reducing other costs for other programs which largely offset the effect of that transfer so that we are still essentially showing a level cost for the communications O. & M. between fiscal 1972 and fiscal 1973.

General DE LUCA. The point we want to make is that we are seeking to absorb most of these adds.

Chairman ELLENDER. You mean get more communications for less money?

General DE LUCA. That is correct. Get the communications that we need.

GENERAL DEFENSE INTELLIGENCE PROGRAM

Senator ELLENDER. On page 35 of the justification you move into the intelligence area, where I see you have forecast an increase of about $10 million. Perhaps the largest part of that $10 million is due to the [deleted]/Cobra Talon program. The justification indicates that an increase of $8.8 million is required to meet the operational costs for the technical sensor sites associated with this program. From your statement, I see that the Cobra Talon system is a collection system located in [deleted] activities but you do not go into any particulars. I realize the sensitivity of the subject but would you please give us a bit more of an idea as to what the system entails, how it is organized perhaps, and how many sensor sites there are? What I am getting at is, exactly what are the funds you are asking us to appropriate to be used for?

Colonel SWOFFORD. The Cobra Talon sensor systems comprise a U.S. Air Force program for the collection of technical intelligence necessary for substantive knowledge of the characteristics and capabilities of [deleted]. The system elements have been deployed in a [deleted] concept, collecting data [deleted] insofar as possible. The control element of the system is a long range radar (AN/GPS-10) deployed at [deleted] to collect [deleted] data [deleted].

The [deleted] long range radar will be operational [deleted] 1972. These collection capabilities are integrated by communications/single manager operation (United States Air Force) and, through communications, to other U.S. agency data collection capabilities and to the DOD intelligence centers (Space Defense Center and the Defense Special Missile and Astronautic Center).

The fiscal year 1973 O. & M. appropriation funds provide for the operation of the systems. All now known acquisition and construction requirements have been completed:

Chairman ELLENDER. Likewise with the [deleted] system: what are these funds to be used for? How much equipment, how many personnel, what facilities and the like?

Colonel SWOFFORD. The [deleted] acquisition phase and the majority of the scientific tests will be conducted in fiscal year 1972. In fiscal year 1973 the system will phase into operation early in the fiscal year, and is funded in the operation and maintenance appropriation. There is also $500 thousand R.D.T. & E. funds in fiscal year 1973 to complete the scientific tests, primarily due to the necessity to test seasonal ionosopheric variations.

The fiscal year 1973 O. & M. appropriation funds provide for the operation of the system. There are no equipment acquisitions or construction involved. There are 215 military and two civilian personnel.

INTELLIGENCE DATA HANDLING SYSTEM

Chairman ELLENDER. I see that the support for the intelligence data handling system is to increase about $2 million. Specifically what are these funds being requested for?

Colonel SWOFFORD. The introduction of more prolific sensor systems is resulting in an enormous growth of intelligence data of highly detailed information, both semiprocessed and end-product. To serve the needs of the decisionmaker, the planner and the fighting force for time-critical, reliable, and fully analyzed intelligence, the Air Force has installed a family of computers. They represent an indispensable link between intelligence collection and intelligence production.

The requested increase supports Secretary of Defense and Defense Intelligence Agency tasks leading to upgrade of intelligence analytical methodologies and the skills of intelligence analysts and thereby optimize resource utilization.

The bulk of the requested increase is to be applied as follows: $1,224,000 is required to upgrade analytical processes, including lease of equipment, at the Foreign Technology Division and the Continental Air Defense Command to achieve the cross-correlation of multiple-source files in geographically separated data bases primarily within Europe.

Four hundred and eighty-nine thousand dollars is to be applied toward enhancing the timely refinement and manipulation of semifinished data through the employment of automation, primarily at CONAD and SAC.

The Air Force is emphasizing early attainment of an automated human intelligence data system, including techniques for automating full text interrogations. This is in support of the USAF [deleted] plan to handle as rapidly as possible the processing and [deleted]. One hundred and seventy thousand dollars will expedite attaining an operational capability to collate and correlate rapidly the anticipated large volume of information derived from [deleted], in order to ascertain the status [deleted].

Senator YOUNG. How much, in total, is being requested for intelligence data handling in this budget request?

Colonel SWOFFORD. The fiscal year 1973 operation and maintenance budget request is $16,726,000.

ADVANCED RANGE INSTRUMENTATION SHIPS

Senator ELLENDER. Further down on the table of major increases and decreases in the general defense intelligence program on page 35 of the justification there is an item titled "Operational Costs of Advanced Range Instrumentation Ships . . . plus $2 million." As I recall, the funding for these ships was transferred to the O. & M. account from the R.D.T. & E. account just this last year and the full year funding for the program was $10.8 million. Now you are requesting an additional $2 million. Please tell the committee exactly what this increase is to be used for.

Colonel SWOFFORD. There are two advanced range instrumentation ships the USNS *Arnold* and the USNS *Vandenberg*, operated by the Military Sealift Command. These ships support U.S. missile development tests and one ship is deployed for two 45-day periods off the Kamchatka Peninsula to collect intelligence data on Soviet ballistic missile reentry vehicle tests.

The USNS *Arnold* was not operational during fiscal year 1972 and will not be operational during most of fiscal year 1973 due to an extensive sensor modification program. Accordingly, the O. & M. appropriation funds required in fiscal year 1972 reflect the costs of operating only one ship and significantly reduced funds for the second ship which was being modified.

In fiscal year 1973 the approximate $2 million increase provides for a small increase in the contract with PanAm/RCA ($332,000) and a significant increase to the Military Sealift Command (MSC) support ($1,846,000). This MSC O. & M. appropriation fund increase is accounted for by an approximate 6-percent pay raise ($257,000) and increased crew requirements for the USNS *Arnold* which will be operational in late fiscal year 1973 ($1,589,000).

The MSC fiscal year 1973 cost increase of over $1.5 million is for a crew increase of approximately 70 personnel. The USNS *Arnold*, while in wet dock during fiscal year 1972, required only 18 to 20 crew personnel to maintain the ship during the minor sensor modifications completed that year. In fiscal year 1973, the total crew of approximately 90 personnel will be required for over 9 months, that is, 3 months operation/test and 6 plus months for sensor modifications.

The fiscal year 1973 sensor systems (radar) modifications, in contrast to those of fiscal year 1972, require the ship to self-generate electrical power for air conditioning, radar functioning, et cetera. This, in turn, requires almost total ship operation in terms of crewmembers. Further, the Air Force is required to pay per diem if the crewmembers are not ship based and, accordingly, it is cheaper to activate all ship functions, such as the mess, and avoid the per diem costs.

I will provide a detail statement on the fiscal 1972 and 1973 programs.

(The information follows:)

COMPARISON OF FISCAL YEAR 1972 AND 1973 COSTS

[In thousands of dollars]

	Fiscal year 1972	Fiscal year 1973
Travel	21	21
Purchased equipment maintenance	240	240
Supplies	506	506
Equipment	2	2
MSC	4,279	6,125
PanAm/RCA contract	4,336	4,678
Portside services	4	4
Engineering services/fees	238	100
Total	9,671	11,676

ARIS

Senator YOUNG. Is the increase for these ships requested this year to meet a one-time requirement or will this become part of the base next year?

Colonel SWOFFORD. The additional $2 million O. & M. appropriation increase in fiscal year 1973, will become part of the base in the next year and the Air Force is programing a further increase for fiscal year 1974 over the fiscal year 1973 level. However, the ARIS program is constantly reviewed with a view toward reducing requirements.

CLEAR SKY

Chairman ELLENDER. Project Clear Sky is next on the list with an increase of $1.2 million budgeted. What is Project Clear Sky, what are its functions, its staffing, its facilities, and so on?

Colonel SWOFFORD. Project Clear Sky is a nickname assigned to the operation and maintenance of the [deleted]. Its principal tasks are to: (1) design, install, operate, and maintain a worldwide system for the [deleted]; (2) determine the characteristics and performance of [deleted]; (3) design, install, operate, and maintain a worldwide system for the determination of the [deleted]; (4) determine the characteristics of [deleted]; (5) manage the program for analysis of [deleted]; (6) Determine the nature and extent of [deleted]; and (7) monitor [deleted] established in conjunction with the [deleted] the improvement of our capability, within feasible and practical limits, to monitor the [deleted]. Staffing consists of an authorized strength as of January 12, 1972 of: 328 officers; 1,529 airmen; and 102 civilians. Facilities include the headquarters, four squadrons—two continental United States—two overseas: and a worldwide network of 40 detachments and 49 operating locations.

Chairman ELLENDER. Was Project Clear Sky funded in any way last year? If so, to what extent?

Colonel SWOFFORD. Yes, sir. The fiscal year 1972 operation and maintenance funded program was $14,964,000 for Project Clear Sky.

Chairman ELLENDER. What is the reason for the increase for Project Clear Sky in fiscal year 1973? Precisely what will these funds be used for?

Colonel SWOFFORD. The increase for Project Clear Sky in fiscal year 1973 is required for the following:

1. Full year funding of the civilian employee pay raise effective January 1, 1972.
2. Full year funding for computer upgrades and programed plotter capacity increase.
3. Data analysis and reporting contracts for [deleted].
4. Contractor operation of facility at [deleted].
5. Host country salary increase for personnel assigned to [deleted] facility [deleted].

MAPPING, CHARTING, AND GEODESY

Senator YOUNG. Would you please tell the committee the reason for the reduction of $3.2 million in "Mapping, charting and geodesy" activities shown in the table on page 35 of the justification?

Colonel SWOFFORD. This is the elimination of four RC–135 aircraft and technical support under the intelligence program. Also, there are general reductions in production capability of the Aeronautical Charting and Information Center.

Senator YOUNG. With this reduction of $3.2 million in mapping, charting, and geodesy activities, how much remains in the budget for this activity?

Colonel SWOFFORD. The O. & M. level remaining for the Aeronautical Chart and Information Center and the First Geodetic Survey Squadron would be $60,347,000 for fiscal year 1972 and $57,195,000 for fiscal year 1973.

Senator YOUNG. How will this reduction be effected? What will be the effect on military and civilian jobs?

Colonel SWOFFORD. In part, the reduction will be effected by eliminating the flying operations of the Aerospace Cartographic and Geodetic Service and leave the task of photographic collection to be performed by the Air Weather Service. It is hoped that the civilian part of the reduction can be accommodated by attrition but a reduction-in-force is a possibility. There will be a total reduction of 35 officers, 253 airmen, and 115 civilian personnel in fiscal year 1973.

OTHER INTELLIGENCE PROGRAMS

Chairman ELLENDER. [Deleted] Air Base is listed along with several others on page 34 of the justification as being part of a $45.4 million reduction in the Tactical Operations budget. In assuming the operational responsibility for this facility as part of your other intelligence programs, is the $8.7 million budgeted offset by a like amount in the tactical operations budget? Is $8.7 million of the $45.4 million reduction in tactical operations directly attributable to the [deleted] transfer?

Colonel SWOFFORD. Yes, sir; the $8.7 million is offset by a like amount of decrease in the tactical operations budget and is directly attributable to the transfer of the base support function for [deleted] Air Base to the intelligence program.

Chairman ELLENDER. What function will the [deleted] Air Base serve in the other Intelligence programs?

Colonel SWOFFORD. [Deleted] Air Base supports the cryptologic intelligence mission of the Department of Defense as its primary function. The Army, Navy and Air Force cryptologic operations were consolidated at [deleted] during 1971 as a result of the [deleted] realinement plan ordered by OSD as early as May 1967. The realinement plan was prepared by the National Security Agency (NSA). This consolidation at [deleted] resulted from the closure of the Army Security Agency (ASA) field station at [deleted] and the Navy security group (NSG) station at [deleted].

The closures and realinement of functions were in response to the drawdown of military forces overseas and budget constraints. The Air Force, as host to the other services, is providing all the base support.

ACTIVITY TRANSFER

Senator YOUNG. On page 36 of the justification, you indicate that, as a result of the transfer of communications security activities, the other intelligence programs budget will be reduced by $4.5 million. Would you please point out to the committee just what activities are being transferred and where they are being transferred to?

Colonel SWOFFORD. Communications security by definition means securing all Air Force communications. This activity, which was a part of the consolidated cryptologic program within intelligence activities, was transferred to force program III, specal activities, as part of the new consolidated telecommunications program in compliance with the OSD decision requiring the restructure for visibility of all telecommunications resources. The $4.5 million in the O. & M. appropriation provides for the pay of civilians engaged in COMSEC activity, supplies, depot maintenance of COMSEC equipment, and all other normal operating support costs.

Senator YOUNG. Will the transfer of these communications activities result in any savings due to increased efficiency in your operations?

Colonel SWOFFORD. The transfer from intelligence to the telecommunications program was a restructure to provide visibility of resources considered to be communications versus intelligence. There were no changes in operation involved in this action.

Chairman ELLENDER. Will there be any effect in the personnel picture? Will the number of military and/or civilian personnel be reduced?

Colonel SWOFFORD. There will be no change in the personnel, either military or civilian.

GOODFELLOW AFB

Chairman ELLENDER. There is an item down the list on page 36, for "Initial equippage of new facilities at Goodfellow AFB and service dormitory improvements . . . $0.6 million." What new facilities are you referring to at Goodfellow AFB and how much of the $600,000 is attributable to the cost of equipping it?

Colonel SWOFFORD. There are two new dormitories, a bachelor officers quarters, and a training facility being completed at Goodfellow AFB. Equipment for these facilities will cost $350,000. The balance is for service dormitory improvements at a number of overseas locations.

Chairman ELLENDER. What sort of equipment is referred to in the budget increase for Goodfellow AFB?

Colonel SWOFFORD. The initial dormitory and bachelor housing furniture for the new facilities at Goodfellow AFB includes desks, chairs, wardrobes, night stands, and similar items of equipment authorized in accordance with Air Force standards. The new facilities replace old substandard barracks which did not include these basic items due to crowded conditions. The beds that were in the old barracks are being used and only a few are being replaced as required.

Chairman ELLENDER. How much of the $1.1 million increase for contract food services, facility operations, and maintenance of equipment is shown on page 36 of the justification, budgeted for each of these three categories?

Colonel SWOFFORD. The three items listed are the principal charges included in this amount. A more detailed statement of items included in the $1.1 million would include the full year cost of operation in Germany at small border sites, and the Turkish Government surcharge on each barrel of oil used in base support operations. The breakout of the $1.1 million follows:

Contract food service, $250,000; contract facility operations, $350,000; contract maintenance of equipment, $200,000; Turkish surcharge on oil, $200,000; and full year operation at border sites, $100,000.

Senator YOUNG. What facilities will come under new contract food service as a result of this increase?

Colonel SWOFFORD. The contract food service is for Goodfellow AFB.

NAHA, JAPAN

Chairman ELLENDER. There is a relatively small item toward the bottom of page 36 that mentions an increase of $400,000 for the support of U.S. Navy flying activities from Naha, Japan. Would you please tell the committee what sort of support this is and how many Navy personnel are involved?

Colonel SWOFFORD. The decision to relocate the Navy flying unit to [deleted] was made by direction of the Secretary of Defense on December 10, 1971. The Navy will be self-sustaining in regard to resources for their operations. Flight line operations and related support activities will be the responsibility of the Department of Navy as a [deleted] Air Force will be responsible only for community support costs. This $400,000 included in the O. & M. appropriation is for civil engineer support for the facilities to be used by the Navy and Marine Corps personnel. There will be 644 Navy and Marine Corps personnel and their dependents. It is estimated that approximately 20 percent of these personnel will be accompanied by dependents.

Chairman ELLENDER. How much is in the budget, other than the $400,000 increase for the support of the Navy flying activities?

Colonel SWOFFORD. The $400,000 in the O. & M. budget is all that has been included in the Air Force budget for intelligence activities in support of the Navy flying activity.

Chairman ELLENDER. Why isn't the support of the Navy flying activities from Naha taken care of on a reimbursable basis with the Navy?

Colonel SWOFFORD. The directive concerning this action was an Assistant Secretary of Defense, Installation, and Logistics decision which stated that these activities will become tenants of the Air Force for community support purposes only. The nonremibursable require-

ment is an estimate of civil engineer support which under the criteria for interdepartmental host-tenant relationships is considered to be the responsibility of the Air Force as host.

SPECIAL RECONNAISSANCE VEHICLE

Senator YOUNG. The last item on page 36 is an increase of $575,000 for special reconnaissance vehicle operations. Would you please tell us what these operations entail and, specifically what this increase is for?

Colonel SWOFFORD. This is the operational mission of the 100th Strategic Reconnaissance Wing which includes five activities. Buffalo Hunter is a low altitude drone [deleted] reconnaissance mission in Southeast Asia. Tasking is by the Joint Chiefs of Staff and the theater commander. The other four which are Combat Dawn which is a high altitude [deleted] intelligence [deleted] mission in the [deleted] area. Giant Nail which is a U–2 [deleted] reconnaissance mission in Southeast Asia. Senior Book is a [deleted] mission in [deleted]. And, Old Head, which is a U–2 photo reconnaissance mission over [deleted]. These four tasked by the Joint Chiefs of Staff.

Specifically, the increase is for Senior Book which began full-scale operations in October 1971.

Senator YOUNG. How much is already in the budget for Special Reconnaissance Vehicle operations that this $575,000 is to be added to?

Colonel SWOFFORD. The estimated fiscal year 1972 cost of Special Reconnaissance Vehicle operations is $8.156 million.

COMMUNICATIONS

Chairman ELLENDER. I noticed that the communications request is substantially the same as last year, overall, but there are two items on page 37 of the justification that need a bit more explanation than is given in the justification. One concerns the functions to be performed at Thule and Sondrestrom Air Bases, Greenland, that are to be done by contract. I see that you are requesting an increase of $1.9 million for this purpose and wish you would tell the committee what these funds are to be used for.

Mr. COLLINS. The purpose of the $1.9 million increase is to convert all host base communications and navigational aid functions at Thule and Sondrestrom from military to civilian contractor operation, the overall objective being to reduce the military population at both bases by approximately 275 manpower spaces. Besides reducing the number of remote assignments for our military personnel, we expect to achieve a net annual operating savings of over $1 million by this conversion program. Under the program, both the long-haul Defense Communications System [DCS] and the normal base communications facilities would be converted. Also, all communications—electronics facilities associated with operation of the airfields, with exception of air traffic control operations, would be turned over to contractor O. & M. With respect to the latter, all USAF International Civil Aviation Organization [ICAO] responsibilities in Greenland will remain under USAF operation, at least for the foreseeable future.

Chairman ELLENDER. Who are the contractors in the communications contracts at Thule and Sondrestrom and how were they selected?

Mr. COLLINS. Under a 1962 intergovernmental agreement with Denmark the United States is committed to provide the Danes the opportunity to compete for certain U.S. Air Force procurement actions in Greenland. Consequently, the services to be contracted effective July 1, 1972 have been segregated between those which are identified as being "sensitive" and which will have to be awarded to a United States contractor only, and those which are identified as being "nonsensitive" and which are being procured competitively from Danish contractors in accordance with the 1962 agreement. The United States Air Force has advertised for competitive bids to provide services under both categories. At this point the technical proposals of the bidders, both those in the United States and Denmark, are still undergoing review as part of the normal procurement cycles and the selection of contractors has not yet been made.

TELECOMMUNICATIONS RESOURCES REALINEMENT

Senator YOUNG. Next you have listed "Realinement of Telecommunications Resources * * * $1.1 million." Would you please explain what the realinement is that you are referring to and why an additional $1.1 million is required to do it?

Mr. COLLINS. Mr. Chairman, the referenced realinement of telecommunications resources is a DOD project to provide improved visibility for telecommunications requirements and resources within the force program and program element structure of the 5-year defense program. This is being accomplished through use of additional discrete program elements which will consolidate and present communications program data which, in the past, has been difficult to fully identify and assess. It was either lumped together with other types of resource data in noncommunications program elements or was included in force programs not directly relatable to the mission activity supported. In proceeding with these changes in accordance with OSD instructions, realinement of communications resources between force programs and, in some cases between categories in force programs has been necessary. In the case you mention the increase of $1.1 million in the communications category is actually a transfer from the special activities category and is part of the $2.176 million reduction listed under paragraph D page 37 of the justification book.

Senator YOUNG. How much is in the base budget for telecommunications resources?

Mr. COLLINS. There are two additional communications exhibits included further on in the justification book. On page 91, under Item b, we show a total Air Force communications program broken down by appropriation. Then on page 117, we show the total O. & M. appropriation costs for communications, distributed into various categories such as station operations, post and base communications, long-haul leased communications, engineering and installation projects. For fiscal year 1973, the total program for all appropriations is $885.3 million including total O. & M. of $378.5 million.

Chairman ELLENDER. The one reduction item in the justification reflects a $3.1 million decrease due to, "Full-year cost of January 1, 1972 pay raise offset by an anticipated reduction in average salaries and

two less compensable days than in fiscal year 1972." In order to achieve a reduction of this size, the offset amount due to "anticipated reduction in average salaries" must be quite substantial. How are you planning to achieve this reduction?

General De Luca. Mr. Chairman, you are quite right. The anticipated reduction in average salaries would not be sufficient to produce a net savings of $3.1 million. The brief explanation in the justification book is incomplete in that it addresses only changes in average salaries. The explanation should have indicated that the savings also are attributable to a manyear reduction between fiscal years 1972 and 1973. Total civilian end strengths in the communications portion of this program will be reduced by 171 during fiscal year 1973. The activities affected by this reduction are scattered at about 195 locations around the world and the reductions at any one location are expected to be rather minor. Insofar as practical, we will attempt to achieve the employment reduction through the attrition process in order to minimize the impact on assigned civilian employees.

Chairman Ellender. Again we come to the item titled "Realinement of Telecommunications Resources" with a reduction of $2.2 million. Would you tell us again what this "realinement" entails?

Mr. Collins. As stated previously, the realinement of telecommunications resources is a DOD project to provide for greater visibility of telecommunications resource data within the force program and program element structure of the 5-year defense program. I might add that the improvement in visibility is intended to promote better management at all levels in DOD. The realinement will consolidate and present communications program data, which previously was not readily identifiable in the 5-year defense program into discrete communications program elements. These new program elements when used together with previously designated communications program elements will serve to fully identify total communications dollar and manpower requirements at various levels in the Department, that is, DOD-wise, individual military department and defense agency or by force program or aggregation. The implementation process entails some realinement of communications resources between force programs as well as between resource categories within force programs such as between the intelligence and communications catgories and the special activities and communications categories in force program III.

Senator Young. What will be the effect of the realinement of telecommunications on the special activities program?

Mr. Collins. The only impact will be the identification of a lesser level of communications resources within the special activities category and identification of increased levels within the communications category all within the overall intelligence and communications force program. For example, in the fiscal year 1972 budget submission, the total of the O&M fiscal year 1972 request for special activities and communications was $346 million which included $197,500,000 for communications and $148,700,000 for special activities. The current fiscal year 1972 estimate for these categories in the fiscal year 1973 budget request totals $338,500,000. However, with the communications category increasing to $266,300,000 and the special activities category reducing to $72,200,000, from this you can readily see how the realinement is serving to give improved visibility for communications resources to the Congress.

GAO REPORT ON LEASED COMMUNICATIONS

Chairman ELLENDER. In a recent GAO report, B–169857, Benefits From Centralized Management of Leased Communications Services, the GAO indicates that the procedures used by DOD to control the extent and use of leased communications services might be improved. Please describe the degree to which this relates to the operations of the Air Force.

Mr. COLLINS. Although the GAO made recommendations to the Secretary of Defense to establish a central office at OSD level for management and control of leased communications services, the findings in the report were based on direct criticism of the military departments. The Air Force and Army were the principal targets of incidents reported to establish the findings in the report. The Air Force had instituted management improvements prior to the receipt of the GAO draft report which we feel have corrected the deficiencies reported by the GAO. We feel that the problems in management as cited in the GAO report are under control at this time and continuing efforts are being made to strengthen these controls. The JCS study, recently completed, addresses the GAO recommendations and provides assurance that joint efforts will be applied to standardize and strengthen the procedures and authority of the military departments in this area of communications management.

Chairman ELLENDER. The GAO seems to feel that part of the problem is due to the lack of formal accounting for communications systems. How real is the problem GAO refers to in the Air Force and what are you doing to come to grips with it?

Mr. COLLINS. The cited GAO report alleges that the Office of the Secretary of Defense does not have visibility or control over minor leased communications services because approval authority for these leases is vested in the respective military departments. Minor leased services are defined by the DOD as those which cost less than $200,000 in annual leased charges or total fixed investment cost of less than $500,000. Since 1969, the Air Force has controlled the leasing of minor telecommunications services by requiring that all requests for new services which exceed stipulated monetary thresholds be reviewed and approved at HQ USAF. Each such request not included in the approved fiscal year budget requires the identification of equivalent cost off-sets by the requesting major command.

Further, each request submitted for HQ USAF review must include complete justification including sufficient reason why other existing facilities will not satisfy the requirement. In fiscal year 1970 all new starts were reviewed at HQ USAF for approval. In fiscal year 1971 the monetary threshold was fixed at $250 per month in recurring leased costs. In fiscal year 1972 this monetary threshold was increased to $500 monthly recurring or $1,000 nonrecurring charges. Additionally, we have strengthened and expanded the existing criteria and reporting requirements for the continuous reviews of installed leased communications by the major commands and individual using activities. They are required to revalidate continuing requirements annually and discontinue nonessential services as soon as the need for them ceases to exist. Individual using activities submit reports of these reviews to their major commands and the major commands are required to submit summary reports to HQ USAF semi-

annually of the results of these review actions. We feel that these control actions are sufficient without depriving the major commands of their capability for satisfying mission requirements through leased facilities, where required.

LONG DISTANCE RATES

Chairman ELLENDER. Would you indicate to what degree the telephone rate investigation has affected the Air Force?

Mr. COLLINS. I assume you have reference to the controversial dismissal of phase two of the Federal Communications Commission's message telephone rate investigation. Now that the investigation has been reinstated by FCC, the Air Force can foresee no serious problems with the future cost of message services. The completion of phase two of the investigation should provide the Commission with adequate information upon which to develop a fair and just rate.

SPECIAL ACTIVITIES

Chairman ELLENDER. On page 37 of the justifications, I note a request for $88,806,000 for "Special activities." What are the nature of these activities?

General DELUCA. In this group are included the operating costs of the USAF Weather Service; aerospace rescue-recovery; and the Air Force traffic control, approach, and landing system. Other programs included are support for the National Military Command Center, National Emergency Airborne Command Post, National Military Command System, base operations, and O. & M. support of the Titan III space booster program and the satellite control facility program.

Chairman ELLENDER. Moving now to the table at the bottom of page 37 that shows the major increases and decreases within the program, I see that this is the program that contains the satellite control facilities that I questioned you about earlier, so I won't go into it further. The next item concerns the redistribution of command and control resources to other major force programs, resulting in a decrease of $10.2 million to "Special activities." Would you please furnish the committee with a detailed distribution by major force program of these funds. I would also like to have a breakdown by major force program of the equivalent fiscal year 1972 costs. If you want to put these two breakdowns together in a comparative table, so much the better.

Mr. COLLINS. Yes, sir.

(The information follows:)

[In millions]

	Fiscal year 1972	Fiscal year 1973
MFP I—Strategic		$0.2
II—General purpose		2.2
III—Intelligence and communications	$10.2	
IV—Airlift		6.1
IX—Administration		.9
Total	[1] 10.2	9.4

[1] The reduction in MFP III from fiscal year 1972 to fiscal year 1973 amounts to $10,200,000. The fiscal year 1973 distribution of the command and control resources in other major force programs amount to $9,400,000.

LEASED COMMUNICATION FOR SPACE TRACK

Senator YOUNG. Turning now to the table on pages 39 and 40, I notice that the amount budgeted for the leased communications services for space tracking goes up from $878,000 in fiscal year 1972, to $1.6 million in fiscal year 1973. Specifically, what is the reason for this increase?

Mr. COLLINS. The increase of $0.7 million in the space track program is to provide for the lease of two diversely routed, alternate voice-data circuits from the Cobra Talon radar site in [deleted] to the space track center within the Norad Cheyenne Mountain complex. These facilities will be utilized to provide Cobra Talon space surveillance data for use by space track.

REALINEMENT OF COMMUNICATIONS RESOURCES

Chairman ELLENDER. On page 40, I see that the Air Force budget for U.S. Air Force Europe is being transferred from the intelligence and communications program to the general purpose forces program, and that it is being increased from $2.2 million to $2.8 million. I presume that the shift is part of your command and control realinement, but what is the reason for the increase?

Mr. COLLINS. You are correct. The shift is due to the realinement of communications resources as previously discussed. The $0.6 million increase is to defray the Air Force share of a general rate increase for private-line-type commercial communications services within the Federal Republic of Germany which has been imposed by the German Government Postal Administration. I understand that this increase will have a total annual impact exceeding $2 million on all U.S. Forces in Germany.

Chairman ELLENDER. Another transfer is that of the Pacific Air Force, from intelligence and communications to general purpose forces, just as with the U.S. Air Force Europe, but in this case the amount is considerably smaller. What is the reason for the great difference in the cost of leased communications service in Europe and in the Pacific?

Mr. COLLINS. In reply I must point out that the USAFE and PACAF line items to which you refer are not representative of our total leased communications costs in the European and Pacific area. The amounts indicated are for leased costs associated with certain USAFE and PACAF dedicated command communications networks. Additional leased line costs of common user cricuits are included in force program III—communications. The total cost of all leased lines in the USAFE and PACAF areas are about $13 million and $10 million respectively. The difference is that several years ago, OSD assigned responsibility for the lease of the majority of common user communications circuits in the Pacific area west of Hawaii to the U.S. Navy. The Navy pays the rental charges for voice frequency circuits which are equipped in such a manner to permit the derivation of 16 or more two-way teletype circuits. These circuits are controlled and allocated by Defense Communications Agency (DCA) to authorized defense communications system (DCS) users without charge. The Air Force benefits by this arrangement without which our leased costs in the European and Pacific areas would be more clearly comparable.

COMMUNICATIONS

Senator YOUNG. What was the reason for the substantial reduction in the costs of leased communications services in the Pacific?

Mr. COLLINS. The reduction results from a number of actions. Some of these are the reduction of U.S. forces in Southeast Asia, the deactivation of the PACAF interim automated command control system and the transfer of voice and record communications traffic from dedicated command networks to the DCS Autovon and Autodin systems.

FORCE PROGRAM IV—AIRLIFT FORCES

Chairman ELLENDER. The summary information on page 42 of the justifications dealing with the request for $177,566,000 for "Airlift forces" will be included in the record.

(The information follows:)

PURPOSE AND SCOPE

Provides funds for the locally incurred Base Operations and Maintenance expenses in support of airlift organizations not financed from the Military Airlift Industrial Fund. Includes crew training, command, logistic and support units organic to these organizations. Further, the estimate provides for base support costs for activities such as Air Rescue, Air Weather Service, and Aerospace Audio-Visual Service at Norton AFB for which the direct mission costs are included in other force programs.

[In thousands of dollars]

Program element groupings	Fiscal year 1971 actual	Fiscal year 1972 estimate	Fiscal year 1973 estimate
Air Force mission activities	$64,287	$52,107	$37,241
Airlift operations	129,352	136,198	140,325
Total, airlift forces	193,639	188,305	177,566

General DELUCA. That takes us to program 4 airlift forces. This program is going down.

The airlift operations and maintenance program finances the Military Airlift Command (MAC) activities not funded by the Airlift Services Industrial Fund (ASIF),

Here, Mr. Chairman, the MAC flying hours financed by the O. & M. appropriation total 87,000 in 1973, a 2.8-percent increase from the 1972 program of 86,000 flying hours. There will be reductions here in the reduced rest and recuperation airlift requirements that we pay for as the phaseout of Southeast Asia continues.

PROGRAM FUNDING

The 1973 estimate for the airlift operation maintenance program is $177 million, $10.7 million less than the 1972 program of $188 million. There have not been any significant shifts or accounting transactions in this particular program.

Chairman ELLENDER. Will this amount be decreased as you leave Southeast Asia?

General DELUCA. It is a decreased requirement. Therefore, we are budgeting $6.2 million for rest and recuperation in fiscal 1973. This is a decrease of $15.4 million from the fiscal 1972 level.

AIRLIFT FORCES

Chairman ELLENDER. With regard to Air Force mission activities, you are requesting a decrease of $14.9 million, which is the net effect of a decrease of $15.4 million in rest and recuperation airlift offset by an increase of $700,000 in joint airborne/air transportability training, plus some other minor decreases. Please indicate the number of passengers going to each of the rest and recuperation areas for fiscal year 1972.

General DELUCA. The estimated number of passengers to be transported during fiscal 1972 to the various rest and recuperation (R. & R.) areas are: Honolulu, 57,900; Sydney, 20,200; Bangkok, 57,600; Hong Kong, 6,000; and Taipei, 18,000, for a total of 159,700. The Hong Kong and Sydney sites were closed in September 1971 and January 1972, respectively. The Taipei site is scheduled to close in April 1972, and we are currently working on plans to close the Bangkok site sometime in calendar year 1973. This will leave Honolulu as the only remaining rest and recuperation site.

Senator YOUNG. Does the $6.2 million you are requesting this year include any overhead expenses, such as the operation of transit offices, et cetera, or is it strictly the expense of operating the aircraft on these flights?

General DELUCA. No overhead expenses are included. The entire $6.2 million request is for payments to the Airlift Service Industrial Fund which in turn is paid to civil air carriers that provide airlift in support of the rest and recuperation program.

AIR FORCE MISSION ACTIVITIES

Chairman ELLENDER. The only other item in this program I would like to question is the joint training. What joint training exercises will the $7.2 million requested permit you to support and/or participate in, and where will they take place?

General DELUCA. Joint airborne/air transportability training—is training of U.S. Ground Forces in loading and unloading of aircraft and paradrop of men and equipment. MAC provides this training at approximately 40 locations in Continental United States and overseas. As troops redeploy out of Southeast Asia, intheater training of this kind is decreased and additional exercise training is required. Prime users: 8th Infantry Division, Germany; U.S. Army, Hawaii; 1st Marine Brigade, Hawaii; 82d Airborne Division, Fort Bragg, N.C.; USREDCOM, MacDill AFB, Fla.; 2d Marine Division Camp Lejeune, N.C., 3d Marine Division Futema, Okinawa; 1st and 2d Armored Division, Fort Hood, Tex.; 5th Marine Expeditionary Brigade, Camp Pendleton, Calif.; 172d and 171st Brigade, Forts Richardson and Wainwright, Alaska; Army at Fort Sill; Fort Bliss; Fort George Meade; Fort Eustis; Fort Campbell.

Chairman ELLENDER. Which of the exercises is the increase of $700,000 associated with and what is the reason for your adding it this year?

General DELUCA. The increase of $700,000 resulted from changes in the flying hour mix between the C–5 and C–141 aircraft plus the full year cost of a POL price increase that was effective January 1, 1972.

Chairman ELLENDER. On page 45 of the justification, you have indicated that an increase of $1.5 million is necessary because of increased crew training for C–5A aircraft. Why is an increase for this type of training required at this time?

General DELUCA. The increase in the flying hour program is directly related to the number of crews that require training. The fiscal year 1972 budget contained 7,560 hours for crew training. Subsequently a decision was made to slip the Air Force Reserve C–5 associate training program until fiscal year 1974. Also the C–5 aircraft were temporarily grounded due to the pylon structural problem, this in turn reduced the number of crews that could be trained. As a result of these actions the fiscal year 1972 program was reduced to 3,732 hours, a reduction of 3,828 hours.

The program in the fiscal year 1973 budget for crew training is 6,075 hours, an increase of 2,343 hours with an additive cost of $1.5 million. The increase will bring the crew training back up to the level initially required in fiscal year 1972.

Senator YOUNG. How much was in the budget for fiscal year 1972 for the purpose of training C–5A aircraft crews, and how many crews do you expect to train with the funds available?

General DELUCA. $4.589 million was allocated in the fiscal year 1972 budget for the training of 157 crews (132 active and 25 reserve). However, the active crew training was curtailed due to the pylon structural problem, and Reserve units were slipped until fiscal year 1974. Therefore, only 52 active crews will be trained in fiscal year 1972.

Senator YOUNG. How many C–5 crews do you anticipate will be trained with the addition of this $1.5 million?

General DELUCA. The fiscal year 1973 budget request, including the $1.5 million increase, will provide for the training of 132 crews (80 more than will be trained in fiscal 1972).

Chairman ELLENDER. On page 44 of the justification, I notice that the number of aircraft used in crew training is to be reduced from 131 to 128, while at the same time the number of flying hours is being increased. Would you please break the total flying hour figure down for fiscal years 1972 and 1973, to show the number of flying hours utilized in each type of training indicated in the table?

General DELUCA. Yes, sir.

(The information follows:)

	Fiscal year 1972	Fiscal year 1973
C–141 crew training	17,858	17,872
C–5 crew training	3,732	6,075
Air rescue crew training (HC–130 and helicopters)	37,845	38,685
Other	27,439	26,665
Total flying hours	86,874	89,297

Chairman ELLENDER. I also notice an increase of 358 civilian personnel. What is the reason for this increase?

Colonel POSNER. The increase is generally attributable to conversion of military authorizations to civilian in areas such as commissaries, redistribution and marketing, and project transition; additional support required in areas such as medical, legal, civilian procurement career training; and additional C–5 aircraft also contributed to this increase.

PROJECT VOLUNTEER

Chairman ELLENDER. Since we have already discussed the realinement of costs for the command and control systems, I will skip the next item, an increase of $6.6 million, and proceed with the increase of $2.3 million you are requesting for Project Volunteer in "Airlift forces—airlift operations." Please explain exactly what you intend to use these funds for.

Colonel CAREY. Two increases are included. One is $1.1 million for converting custodial services to civilian tasks through contracts with local vendors. These details are a constant source of irritation to trained personnel who must spend valuable time away from normal duty positions to accomplish these tasks. Another increase of $1.1 million is for improvement and/or construction of rest areas in the aircraft maintenance work areas. And $0.4 million is budgeted for renovation of family service centers and the establishment of adequate loan closets. The loan closets will be stocked with all the necessary household items so that each military family may borrow what is needed to keep their households operating while awaiting the arrival of their household goods. The foregoing items are offset by decreases of $0.3 million in the areas of transient quarters improvements and dormitory equipment.

Senator YOUNG. The justification for airlift forces-airlift operations for fiscal year 1972 does not reflect a request for Project Volunteer funding. What has occurred since then that prompts you to come forward with a request for these funds at this time?

Colonel CAREY. Sir you are correct, in the fiscal year 1972 President's budget the estimate did not distribute any of the Project Volunteer funds to the airlift operations program. Since the budget was prepared we have realine our available fiscal year 1972 funds to provide the Military Airlift Command (airlift operations program) with $0.5 million for urgent Project Volunteer requirements.

Senator YOUNG. To provide us with a bit of background, would you please give us a list of the installations that carry on the training in the four areas shown on page 44?

General DELUCA. The C–141 and C–5 crew training is conducted at Altus Air Force Base, Okla. Advance helicopter crew training is centralized at Hill Air Force Base, Utah. The fourth area is not training but is base operations support for the Military Airlift Command installations, including base support for Air Weather Services, Aerospace Rescue and Recovery Service and the Aerospace Audio-Visual Service.

PROGRAM V: RESERVES

Chairman ELLENDER. The summary data on page 46 of the justifications pertaining to the $190,195,000 for the Air Force Reserves will be included in the record.

(The information follows:)

PURPOSE AND SCOPE

The funds requested for this program are required by the Air Force Reserve to maintain units in a reserve status to assure their readiness and to provide administrative support for the Air Reserve Personnel Center.

TOTAL OBLIGATIONS BY PROGRAM ELEMENT GROUPING

Program element grouping	Fiscal year 1971 actual	Fiscal year 1972 estimate	Fiscal year 1973 estimate
Reserve units	$155,872	$172,495	$190,195
Total, Air Force Reserve	155,872	172,495	190,195

General DeLuca. The Air Force Reserve program, Mr. Chairman, is repetitive of what you have already heard from the Air Force Reserve, but it is to support the operations and maintenance requirements in fiscal 1973 for our Air Force Reserve operations, $190 million.

Chairman Ellender. Why is that increase necessary?

Civilian Personnel and Pay Increases

Colonel Loretti. There are three additional units added in the 1973 program that were not in 1972. Therefore, there is an increase of 855 man-years in the civilian area. Of that total of $190 million, $122 million is associated with civilian pay for technicians and other civilian personnel. The increase is primarily related to force structure changes. Of the $17 million increase, $13 million is associated with civilian pay.

MAC Reimbursement Account

The remainder of the increase is for reimbursement to MAC for Associate Unit Flying and reimbursements to the Air Force depot maintenance industrial fund for maintenance of Air Force aircraft.

We reimburse MAC in this appropriation approximately $6 million for flying training of our reservists that are on a MAC base.

General DeLuca. For civilian personnel alone, they have an increase of $13 million. That is the bulk of the increase.

On page 16, sir——

Transfer of F-105 Squadrons to Reserve

Chairman Ellender. Just a minute.

In reference to the transfer of these squadrons, as I remember, there was testimony of a transfer to the Reserve.

General DeLuca. It was discussed yesterday and some of it was discussed this morning.

Chairman Ellender. Why was that transfer made to the reserve?

General Hill. To provide recruiting incentive in an all-volunteer zero draft environment; to provide recruiting incentive for the Air Force Reserve to have a higher performance aircraft in the inventory, fighter aircraft; to recruit against.

The program, as the President's budget was submitted, did not have these airplanes, F-105's, in the Reserve. They were in the Guard. In order to balance the recruiting, provide equity for that factor, the recruiting potential or the recruiting incentive, the program was revised and we hope it will be improved so as to provide the Air Force Reserve parity as far as recruiting incentive is concerned.

Chairman Ellender. There won't be any reduction in force, then?

General Hill. No, sir. It would have been in the Air National Guard otherwise. It is simply in the Air Force Reserve now rather than in the Air National Guard.

RESERVES

Chairman Ellender. On page 47 of the justifications I note that one of the purposes of these funds is "base operations for Reserve bases." How many bases do you operate, and what is the total amount required for these bases?

General Lewis. The Air Force Reserve will operate two Air Force Bases in fiscal year 1973, Dobbins Air Force Base, Ga. at a cost of $6.2 million and Ellington Air Force Base, Tex. for $7.4 million.

Chairman Ellender. What is the funding requirement of the Air Force Reserve Personnel Center in fiscal year 1973? What about 1972?

General Lewis. The Air Force Personnel Center will cost $8.2 million in fiscal year 1972 and $8.4 million in fiscal year 1973.

SQUADRON QUARTERS

Senator Young. Regarding the table of major changes in program costs on page 48, I notice that the increases and decreases are generally justified because of increases or decreases in squadron quarters. Would you please explain what these squadron quarters are and how you determine how many quarters will be added or subtracted?

General Lewis. We have used squadron quarters as a measure of the amount of support included for a given weapon system. This provides for the phasein and phaseout of each type of weapon system during a given fiscal year. The force structure changes on page 49 are shown at end-year which does not reflect the number of systems in being and requiring support during the year.

For example, the two new C–7 tactical airlift systems entered our force with one squadron in the second quarter and one squadron in the fourth quarter of fiscal year 1972 for a total of four squadron quarters. These two squadrons were in the force for the full year in 1973 for a total of eight squadron quarters for a net increase of four squadron quarters in fiscal year 1973.

The C–124's were supported for 36 squadron quarters in fiscal year 1972 with four squadrons remaining at end-year. The C–124's drop out of our forces during fiscal year 1973, two phased out in the first quarter, one in the second quarter, and one in the fourth quarter for four squadron quarters of support, resulting in a net decrease of 32 squadron quarters between fiscal years 1972 and 1973.

CIVILIAN PERSONNEL COSTS

Chairman Ellender. Would you please break out the civilian personnel costs associated with each of the major increases and the one decrease? Perhaps you could insert into the record a table showing the personnel costs, flying costs, maintenance costs and support costs that you estimate will be required to reach the total of your estimate?

General Lewis. I will be glad to do so.

(The information follows:)

COMPARISON OF FISCAL YEAR 1973 VS FISCAL YEAR 1972

	Civilian pay [1]	Aviation POL	Depot maintenance [1]	All other	Total
EC-121 airborne early warning	+$625	+$64	+$110	+$54	+$853
C-123 Tactical Airlift Group	+4,938	+989	+1,564	+493	+7,984
C-130 Tactical Airlift Group	+9,478	+1,156	+2,277	+997	+13,908
C-7 Tactical Airlift Group	+1,895	+169	+410	+186	+2,660
Special Operations Group	+3,732	+492	+753	+1,022	+5,999
Aerospace Rescue/Recovery Squadron	+690	−30	+276	+152	+1,088
C-124 Military Airlift Group	−13,137	−3,922	−4,101	−1,998	−23,158
C-141 Military Airlift Squadron (Assoc.)	+2,631	0	0	+1,303	+3,934
C-5A Military Airlift Squadron (Assoc.)	+1,436	0	0	+289	+1,725
Depot maintenance:					
Inservice engineering: Support of supply operations	0	0	0	+883	+883
C-130 Tactical Airlift Training Squadron	+339	+4	0	+15	+358
All other	+707	+501	+22	+236	+1,466
Total	+13,334	−577	+1,311	+3,632	+17,700

[1] Includes January 1972 pay raise and depot maintenance distributed to individual weapon systems.

MAJOR PERSONNEL COST CHANGES

Chairman ELLENDER. I would also like to have a table for the record along the lines of the table of major changes on page 48 that shows separately the military personnel costs associated with each of the increases and the one decrease, and then a total of the O. & M. costs and the military personnel costs together.

General LEWIS. Yes, sir. The information shown details active duty military personnel in support of the Air Force Reserve. Active duty personnel act as gaining command advisors, administer the individual reservist program, assist in maintenance of records at the Air Reserve Personnel Center, and provide certain base services at Ellington AFB, a Reserve base supporting active Air Force organizations. Active duty personnel are not assigned to Reserve units in a staffing or administrative capacity.

(The information follows:)

FISCAL YEAR 1972 VERSUS FISCAL YEAR 1973

	Active duty military		MPA amount	O. & M. amount [1]	Total cost
	E/S	Man-years			
EC-121 A.E.W. & C		+3	+$34	+$853	+$887
C-123 TAG	+8	+9	+87	+7,984	+8,071
C-130 TAG	−2	+14	+166	+13,909	+14,074
C-7 TAG	−3	+3	+15	+2,660	+2,675
Special operations	+6	+7	+76	+5,999	+6,075
Aerosapce rescue recovery		−1	−13	+1,088	+1,075
C-124 MAG	−21	−12	−135	−23,158	−23,293
C-141 MAG (associate)			0	+3,394	+3,934
C-5A (associate)			0	+1,725	+1,725
Depot maintenance (in-service engineering)			0	+883	+883
C-130 TATS		+1	+9	+358	+367
Net of minor adjustments	+17	−5	+236	+1,466	+1,702
Total net change	+5	+19	+475	+17,700	+18,175

[1] Includes January 1972 pay raise and depot maintenance distributed to individual weapon systems.

RESERVE AIRCRAFT

Senator YOUNG. What new aircraft are being added to the Reserve forces in fiscal year 1973?

General LEWIS. The HC–130 Aerospace Rescue. However, subsequent to the formulation of this budget, a decision has been made to place F–105 Tactical Fighter aircraft in the Air Force Reserve in fiscal year 1973. This is a new aircraft in our forces.

CIVILIAN PERSONNEL STRENGTH INCREASE

Senator YOUNG. With the increase in civilian personnel from 9,280 level of 1972 to 10,135 of 1973, will the Reserves be at the maximum authorized civilian personnel strength?

General DELUCA. The figures you have cited, Mr. Chairman, are man-year estimates to support projected end-year civilian personnel strengths of 9,733 and 10,728 for fiscal years 1972 and 1973, respectively.

Our end-year civilian strength projections derive from decisions on force levels and activity rates, predicated upon careful evaluation of mission requirements. These requirements include numbers and types of aircraft authorized the Air Force Reserve. In concert with other mission elements such as logistics, training, and similar needs to sustain the force, these requirements generate workloads which translate into firm manpower requirements.

Manpower requirements will vary as workloads vary with periodic changes in mission requirements and related needs. Hence, there is no single "maximum authorized civilian personnel strength" applicable across the board. Statutory strength ceiling prescribed in permanent law do apply to National Guard technicians, but do not apply to civilian personnel strengths for the Resreve program.

In sum, our projected civilian personnel strength requirements for the Reserve program are a product of the annual budget process based on careful evaluation of mission needs as presently construed. In our judgment, the strengths specified in the Air Force appropriations request will satisfy those mission needs.

Chairman ELLENDER. On page 48 of the justification, you indicate that the number of flying hours is increasing from 137,156 in fiscal year 1972 to 144,002 in fiscal year 1973 but that the cost of aviation POL is decreasing from $10.7 to $10.2 million. Earlier in this discussion I believe you indicated that the more sophisticated aircraft required more expensive fuel and that, as a result, the cost of fuel is increasing. In addition, we have price increases on fuels of all sorts. How then with the upgrading of the aircraft in the Reserve Forces can you budget a lesser amount in fiscal year 1973 than in fiscal year 1972?

General LEWIS. The average cost per flying hour that we use in budgeting is the same standard cost factor used by the Active Air Force. The different mix of the number of flying hours between the various aircraft in our program in fiscal year 1972 as compared to fiscal year 1973 accounts for the lesser budget in fiscal year 1973, for fuel.

Specifically, we have a decrease of 34,045 flying hours for C–124 aircraft for a reduced cost of approximately $3.6 million. The increase of 41,256 in flying hours for aircraft coming into the force, such as C–123's, C–130's and A–37 cost approximately $2.6 million. This decrease of $1.1 million is offset by projected price increases of about $0.5 million resulting in the net decrease of $0.6 million in the budgeted amount for fuel.

FORCE PROGRAM VII: CENTRAL SUPPLY AND MAINTENANCE

Chairman ELLENDER. The summary information on pages 50 and 51 of the justifications pertaining to the request for $2,124,490,000 for "Central supply and maintenance" will be included in the record.

(The information follows:)

Program requirements

Total, direct obligations:	*Thousands*
Fiscal year 1971 actual	$2,343,705
Fiscal year 1972 estimate	2,311,389
Fiscal year 1973 estimate	2,124,490

PURPOSE AND SCOPE

The funds requested for this program are required for the logistical support of the Air Force. Provision is made for depot operations at six major logistical installations, procurement operations, depot level maintenance of airborne and ground equipment, transportation other than first destination, other logistic support service, and the Eastern Test Range.

TOTAL, OBLIGATIONS BY PROGRAM ELEMENT GROUPING

[Dollars in thousands]

Program element groupings	Fiscal year 1971 actual	Fiscal year 1972 estimate	Fiscal year 1973 estimate
Depot operations	$826,930	$793,019	$734,696
Procurement operations	73,171	74,581	69,997
Depot maintenance	1,056,544	1,026,543	934,227
Transportation	347,535	275,600	251,069
Other logistic support activities	39,525	39,774	39,107
Eastern test range		101,872	95,394
Total, central supply and maintenance	2,343,705	2,311,389	2,124,490

General DELUCA. On page 16, is our force program 7, "Central supply and maintenance."

The fiscal year 1973 estimate for central supply and maintenance activities is $2,124.5 million and compares to the fiscal year 1972 program of $2,311.4 million, a decrease of $186.9 million. The program is comprised of six major activities.

Sir, these are really the wholesale logistical activities of the U.S. Air Force, supply, maintenance, procurement, transportation, as well as the O. & M. support of the eastern test range.

DEPOT OPERATIONS

Treating each of these separately, the estimate for depot operations is for the operating requirements of the five air materiel area depots of the Air Force Logistics Command. The estimate for 1973 is $734.7 million, or a decrease of $58 million from the 1972 program of $793 million.

These depot operations are the receiving, storage, the issuance, disposal, and material management, computing of the requirements, and so forth in a depot.

PROCUREMENT OPERATIONS

The next activity is "Procurement Operations." This activity includes the prime procurement functions and contract administration of the AFLC contracts.

For 1973, $70 million is requested, a decrease of $4.6 million from the 1972 program. The bulk of these dollars, Mr. Chairman, are for the pay of civilian personnel who let contracts and administer the contracts.

DEPOT MAINTENANCE

The next activity is the large one, "Depot Maintenance". The depot maintenance program finances the repair, overhaul, modification of equipment that is beyond the repair capability of operational units. The depot maintenance requirements for fiscal 1973 total $934 million, a decrease of $92 million from the 1972 program of $1,026 million.

Chairman ELLENDER. Is all of this depot maintenance done within the Air Force or do you do any contracting of work?

General DE LUCA. The depot maintenance is done organically within our depot structure and contractually. The current ratio is——

Mr. MCELHANON. This year, we are running 49 million man-hours of direct production organically and some 38 million man-hours contracted out. We speak in man-hours, Mr. Chairman, because that gives us a fairly good common denominator whereas dollars do not.

Chairman ELLENDER. Is much of that done here or abroad?

Mr. MCELHANON. The United States is the principal source of the contract maintenance program.

General DE LUCA. Within that depot maintenance, on the second paragraph, page 18, is the repair and overhaul of exchangeables. These are units that you repair, that you overhaul. That is a vital program. It is $427 million in 1973, $29 million less than in 1972.

AIRCRAFT MAINTENANCE

The next largest category is aircraft maintenance, and this is primarily IRAN. That program is down $34 million. The engine overhaul program, is $150 million, a reduction of $16 million from the 1972 program.

This includes, Mr. Chairman, as we were discussing, the overhaul of jet, turbo-prop and reciprocating engines. You can see what I was referring to earlier here in the next paragraph, that we are doing gas turbine engine overhaul, a decrease from 5,220 to 4,800 in 1973. So, we schedule through our shops or with contractors 4,800 engines a year and that is a sizable volume of production scheduling, and delivery work load. That is why the Guard works through us.

Chairman ELLENDER. Which do you find more successful: contractual work or inhouse performance?

General DELUCA. It depends on the type of work and the engine that is involved.

Mr. MCELHANON. There is not an absolute answer to that, Mr. Chairman. Some things can be best done by contract. Other things we feel

we can do better inhouse. We have specific examples in the engine area, where we rely entirely on contract.

Chairman ELLENDER. How is the distribution arrived at?

Mr. MCELHANON. The Department of Defense maintenance policy and also starting with OMB circular A–76 called for us to do inhouse only that portion that relates to maintaining a technological base for support of our mission essential material. Anything beyond that minimum technological base we do contract for as a way of life.

General DELUCA. I believe all of our reciprocating engines are under contract.

Mr. MCELHANON. That is correct. We have not done a reciprocating engine inhouse in 5 years.

TRANSPORTATION

General DELUCA. Moving on to transportation. These are the O. & M. dollars needed to pay the second destination movement of the material from the depots to the worldwide forces. The 1973 estimate is $251 million which is $25 million lower than the 1972 estimate. Again volume of movement.

WORLDWIDE DIRECT SUPPORT

Chairman ELLENDER. Have you a central distribution point to serve your forces in the Mediterranean, for example?

General DELUCA. Our forces are logistically supported in terms of a depot on a direct support worldwide basis. Wherever the base may be, whether it is in Europe or in the Pacific or in the continental United States, it requisitions its needs directly on the depot that services the aircraft.

F–4 AIRCRAFT

For example, the F–4. If you are flying the F–4, you go to the Ogden Depot. Therefore, wherever you are flying the F–4, be it in the Pacific, Europe, or continental United States, you go to one depot which is Ogden, which ships the material directly to you without any intermediate layers or handling or paperwork. This is a direct support concept.

DISTRIBUTION TO EUROPEAN BASES

Chairman ELLENDER. Have you any special depots in Western Europe?

General DELUCA. We have no special depots in Western Europe.

Chairman ELLENDER. When the Air Force units stationed there need equipment, how is it distributed?

General DELUCA. You mean between the bases?

Chairman ELLENDER. Yes; from here.

General DELUCA. Whenever they need any materiel that they don't have on their base, they get it from the continental United States depot that they are assigned to for that aircraft or commodity. If they are in an emergency need, they can communicate across the bases, like an aircraft is down and they need something in a hurry, they can communicate across the bases to laterally support each other.

Chairman ELLENDER. In Europe?

General DELUCA. In Europe. If they have excesses, they report it to a central computer which seeks to distribute them in Europe, not only in the Air Force but also the Army.

Chairman ELLENDER. I was in Athens during the month of December last year. I was informed that there was a large depot there that supplied all the needs in the area. Do you have any dealings at all with such a depot in Greece?

General DELUCA. Not for the support of our weapons or our aircraft; no, sir.

Chairman ELLENDER. How are aircraft serviced that we have in Turkey or Greece?

General DELUCA. Those aircraft that we have in Turkey or Greece are supported again directly from our continental United States depots.

Chairman ELLENDER. Material is sent directly to the airfield where the airplanes are in operation?

General DELUCA. Yes, sir.

Chairman ELLENDER. So you don't have any distributing points?

General DELUCA. No intermediate distributing points.

As for your comment earlier about the handling of paper and layers in the logistics field, we have eliminated that.

Chairman ELLENDER. Off the record.

(Discussion off the record.)

EASTERN TEST RANGE SUPPORT: TRANSFER FROM R.D.T. & E.

General DELUCA. On page 22 is another highlight; the Eastern Test Range is now in O. & M. It moved in 1972. It is now $95 million O. & M. supported, a reduction of $6.5 million from last year. It is another item that moved in from R.D.T. & E. that has increased the O. & M. account.

Chairman ELLENDER. Why was that transfer made?

General DELUCA. It was operational at this particular point. In other words, we try now to keep in research and development things that we are doing, exploratory, advanced development, engineering development, preproduction.

But, once we have the range, the telemetry, the instrumentation, the guidance set up and now it is a case of running it instead of developing it, it should be just a normal operating activity.

Chairman ELLENDER. This is not new equipment still in the exploratory phase?

General DELUCA. Not this test range. It is settled and it tracks our missiles and so forth now. If there is a gear, a piece of equipment, that is coming up for development, we will finance that particular gear in development until we procure it and install it. When we run it, operate it, maintain it, that is O. & M. That is trying to bring a degree of propriety to the account.

Chairman ELLENDER. I understand why equipment ready for operation ought to be funded under O. & M.

General DELUCA. This is what this is.

RANGE COMPONENTS

Chairman ELLENDER. What is involved in the Eastern Test Range?

Colonel OEXMANN. The national range at Patrick Air Force Base, Fla., the launch facility at Cape Kennedy Air Force Station. We have tracking stations on Grand Bahama and Turks Island. We operate two ships. We have 10 aircraft.

Chairman ELLENDER. What is its relationship to NASA?

Colonel OEXMANN. It provides some support to the NASA launch such as Apollo.

STATION AT PRETORIA, SOUTH AFRICA

Chairman ELLENDER. Have you any stations in Africa?

Colonel OEXMANN. We have one station at Pretoria, South Africa, which is what I would call in a down-mode status or standby status right now. We have approximately 14 people there. We have some telemetry gear that is in a down-mode that could be called up if we needed it.

Chairman ELLENDER. I visited such a facility in northern Algeria 2 years ago in Cana.

Colonel OEXMANN. That is not part of the eastern test range.

ADDITIVE REIMBURSEMENT FROM NASA

Chairman ELLENDER. What you do for NASA is done on a reimbursable basis?

Colonel OEXMANN. It is done on what we call an additive reimbursement basis. The dollars reflected in our budget are the dollars required to do our DOD work load which is to support ballistic missile testing and DOD space launches.

Any additional cost that we incur as a result of supporting NASA is reimbursed.

CIVILIAN PERSONNEL

Chairman ELLENDER. You also indicate that the estimate reflects a 6-percent personnel reduction related to a phrasedown in logistical support activities. Please explain how you arrived at the 6-percent personnel reduction figure?

Colonel POSNER. The Air Force strives to perform its assigned mission by seeking new and improved methods of doing business with the objective of achieving every possible economy in the consumption of resources. Adjustments in manpower levels reflect changes in mission and workload, in addition to any savings accruing from technological advances.

Manpower in this program supports total Air Force centralized supply requirements and as such is partially dependent upon total force levels, deployments, and activity rates. Between fiscal years 1972 and 1973, civilian end strengths in the central supply and maintenance program will be reduced by 2,652. The reduction is due to a phasedown in logistical support requirements associated with reduced activity rates, principally in Southeast Asia; improved facility layouts; work methods improvement programs, et cetera.

The decrease of 2,652 civilian spaces equates to a 4½-percent reduction rather than the 6 percent erroneously shown in the justification book. It should be stressed that the reductions are not the result of a predetermined percentage or numerical goal but rather the result of considering all factors bearing on the civilian manpower requirements for this program.

Chairman ELLENDER. Was the 4½ percent applied across the board in the supply and maintenance suborganization, depot operations, procurement operations, et cetera?

Colonel POSNER. No, sir. The decreases were not the result of applying a given percentage reduction to the total program or any of its subcomponents.

SORTIE RATE REDUCTION

Chairman ELLENDER. You also indicate on page 50 that Transportation will be reduced "due to sortie rate reduction and flying hour reduction, offset in part by rate increases." I think that this would be an appropriate place to again provide the number of sorties that you flew in fiscal year 1972 and the number you anticipate you will fly in fiscal year 1973.

Mr. RHODES. Yes, sir. I will provide that information for the record.

(The information follows:)

	Fiscal year 1972	Fiscal year 1973
Tac sorties	7,100	[Deleted.]
Arc light sorties	1,000	

Senator YOUNG. In light of recent events, or at least events since the time you prepared this budget, have the sortie estimates for fiscal year 1973 changed?

Mr. RHODES. At this time there is no change which would affect the operation and maintenance appropriation in fiscal year 1973.

DEPOT OPERATIONS

Chairman ELLENDER. I notice on page 52 that the civilian work force is to be reduced by about 3,000 workers in the depot operations area with a resultant savings of $59 million. In making this reduction, was there any one group of employees that was hit especially hard or were you able to distribute the reduction among all different levels and all the different types of jobs in this operation? Please explain.

Colonel POSNER. Yes. Mr. Chairman. "Supply operations" was hit harder than other areas. It was reduced by approximately 1,800 spaces. The remaining spaces reduced were distributed through other depot operations areas. Every effort will be made to minimize the impact on employees currently assigned. Insofar as possible, reductions will be achieved through the process of attrition. Positions vacated in other areas will be offered to qualified employees affected by the reductions and placement assistance will be given to any employees displaced.

Chairman ELLENDER. How much of the $734,700,000 requested for depot operations is budgeted for the costs of the 50,260 civilian employees that will remain after the reduction in the work force?

General DELUCA. A total of $561 million is included in the estimate for the pay of the 50,260 civilian employees.

FACILITY PROJECTS

Senator YOUNG. The second item in the table of major changes on page 52 is: "Reduction in facility projects by contract . . . $—4.4 million." What sort of projects are included in the facility projects

referred to in this statement? Perhaps you could tell us what some of these projects were and why they were requested in the first place.

General DeLuca. The sort of projects referred to in the justification statement are maintenance and repair projects on buildings, $1.4 million; airfield pavement $1.3 million; utilities, $0.7 million; pavements—other than airfield, $0.7 million; other facilities and land, $0.1 million; and minor construction projects amounting to $0.2 million.

These represent one-time projects, and the $4.4 million reduction represents a decrease in requirements between fiscal year 1972 and fiscal year 1973, and not a cancellation of projects originally requested.

Senator Young. How much of the amount requested for "Depot operations" is for the facility projects by contract that were not eliminated? Which contracts were these and to whom were they awarded?

General DeLuca. The amount requested for "Depot operations" includes $7.4 million for facility projects by contract. These facility projects by contract include minor construction projects, each less than $50,000, amounting to $772,000; and maintenance and repair projects on the following types of facilities:

Utilities, $1,573,000; buildings, $3,431,000; other facilities, $243,000; airfield pavements, $449,000; other pavements, $728,000; and land, $160,000.

All of these facility projects by contract are planned for award after July 1, 1972.

SERVICE ENGINEERING CONTRACTS

Chairman Ellender. What sort of service engineering contracts are included in the reduction of $4 million shown on page 52?

Mr. McElhanon. Service engineering tasks are categorized by aircraft, engines, missiles, communications, electronics, and avionics requirements. The requirements consist of the engineering support capability not available within the air materiel areas. Within each category, the tasks to be accomplished are prioritized according to relative importance. The $4 million reduction will require a comprehensive review and tightening of the priority assessment as to urgency of need to assure that available funds are applied to the highest priority tasks. At this time, we can assume that reduction will be assessed against some of the older weapons systems such as the F–106, A–1, and F–102.

CONTRACT SERVICE ENGINEERING

Chairman Ellender. How much of the fiscal year 1973 budget request remains for contract service engineering?

General DeLuca. A total of $37 million remains for contract service engineering in fiscal year 1973.

MUNITIONS STORAGE

Senator Young. On page 53, there is an item relating to munitions storage, an increase of $2.1 million, that I wish you would explain to the committee. Specifically, what will this increase provide for?

General DeLuca. This increase will provide for increased costs reimbursable to the Army for storage of munitions in their depots. The Air Force relies on Army and Navy facilities in the CONUS for storage of

munitions, since the Air Force has no depot storage facilities for ammunition. The increased rates were recently effected in a joint service interdepartmental agreement which identified specific areas of increase to individual tasks.

AUTOMATIC DATA PROCESSING EQUIPMENT

Chairman ELLENDER. Would you also explain the other increase that follows the increase for ammunition storage, the increase of almost $9 million for rental of automatic data processing equipment? Why is this new equipment necessary?

Mr. FRUCHTER. The increase of approximately $9 million for rental of automatic data processing equipment is for that part of the advanced logistics system ADPE which will be installed during fiscal year 1973. Since submission of this request, there has been schedule slippage of approximately 2 months in the vendor selection phase of the project which has reduced our fiscal year 1973 requirement by approximately $3 million. One medium and four large-scale computers will be phased in during fiscal year 1973, and two additional large-scale computers will be installed early in fiscal year 1974. The new equipment will replace approximately 90 computers currently being used by Air Force Logistics Command. The present equipment is saturated and will require costly augmentation if not replaced. Further, the new computers will provide the capability to effect major systems redesign to take advantage of new and advanced management techniques resulting in net tangible savings in manpower and procurement dollars of about $140 million over the 7-year systems life.

Chairman ELLENDER. What new equipment is being rented in the automatic data processing upgrading and where will it be installed?

Mr. FRUCHTER. The new equipment has not yet been selected. The new large-scale computer systems will be installed in headquarters, AFLC, and at each of the five air materiel areas (AMA's). The medium scale computer will be installed at San Antonio Air Materiel Area (SAAMA) to support the nuclear ordance logistic support system (NOLSS).

Chairman ELLENDER. What company is furnishing the new equipment and how is the company selected?

Mr. FRUCHTER. The company which will supply the new equipment has not been determined. The ALS equipment is being competitively selected.

SMALL ITEM WAREHOUSE

Senator YOUNG. On page 54, I notice that you are not requesting any funding for the "Small item warehouse" which has been funded with over $1 million for each of the past 2 years. Would you please explain this?

General DELUCA. The work on the small item warehouse at Kelly Air Force Base was completed in fiscal year 1972. The project automated six storage bays, three during fiscal year 1971 and three during fiscal year 1972.

PROCUREMENT OPERATIONS

Chairman ELLENDER. I will insert for the record at this point the short summary of the functions performed in "Procurement operations" that appears on page 55 in the justification.

(The information follows:)

This estimate finances the pay of civilian personnel and related operating costs incurred in procurement operations. The functions covered include Prime Procurement and Contract Administration. The prime procurement function includes negotiation and award of contracts, including amendments, changes and terminations, for the procurement of major electronic support systems and follow-on spares for weapon systems. Contract Administration provides for the administration of prime and subcontracts covering thousands of contractor facilities. It includes contract readjustment, property administration, pricing and financial analysis, contractor procurement evaluation, termination of contracts and quality assurance. Functions performed by personnel funded by this program play a vital role in insuring that the Air Force receives what it pays for in quality, quantity, reliability, and timeliness.

REDUCTION IN PROCUREMENT OPERATIONS

Chairman ELLENDER. To what extent will the work force of 5,190 personnel be affected by the 4½-percent reduction referred to earlier or will it? Please explain.

General DELUCA. Mr. Chairman, man-years or average strength for fiscal year 1973 are projected to be 5,190 or 15 below the fiscal year 1972 estimate. However, end year strengths for procurement operations will increase to 5,376 due to implementing Military Standard Contract Administration procedures (MILSCAP). Phasing of employment for MILSCAP will require only 141 man-years in building up to an end-year strength of 278. This increase is offset by a man-year decrease of 156 in other areas of procurement operations.

TRANSPORTATION

Chairman ELLENDER. What is the number of civilian and military personnel assigned to transportation?

General DELUCA. The authorization for personnel as of end of fourth quarter fiscal year 1972, in Air Force program 7, depot transportation function—which is limited to the Air Force Logistics Command is 30 officers, 262 airmen and 4,612 civilians, for a total of 4,904.

Chairman ELLENDER. Are there any reductions being made in the transportation work force as a result of the reduced activity in Southeast Asia that is referred to at the bottom on page 56?

General DELUCA. Yes, sir. The transportation work force will be reduced by 221 spaces.

LOGAIR AND COMMERCIAL AIR OPERATION

Chairman ELLENDER. With regard to the reduction due to the reduced activity in Southeast Asia, for which you estimate there will be a reduced funding requirement of $34.3 million, I notice on pages 57, 58 and 59 that almost the entire reduction is being absorbed by the Military Sealift Command and the Airlift Service Industrial Fund. The only commercial transportation that is affected is surface transportation; the LOGAIR and commercial air workload and costs are indicated to be the same in fiscal year 1973 as in 1972. Would you please explain to the committee why the LOGAIR and commercial air items are not affected by the reduction of activities in Southeast Asia?

General DeLuca. The LOGAIR system transports high value and critically needed items of supply to the strategic and general purpose forces in the continental United States in order to assure they are maintained in a constant state of readiness. The requirement to operate this system and serve the air bases on a daily basis is a constant requirement which is not affected by the Southeast Asia situation. The same system was operated at the same level of daily service before Southeast Asia and will continue to be required after our forces are phased out of Southeast Asia. The relatively small amount of commercial airlift required to augment LOGAIR also was required prior to Southeast Asia and also is unaffected by the overseas situation.

MILITARY TRAFFIC MANAGEMENT AND MAC AIRLIFT SERVICES

Senator Young. The other major change item on page 56 concerns an increase of $9.7 million due to rate increases in Military Traffic Management and Terminal Services and MAC Airlift Service Industrial Funds. Would you please explain these increases to the committee, how they were established, what they are for, and so on?

General DeLuca. The shipper services, Army, Navy, and Air Force, are required to reimburse the Military Traffic Management and Terminal Service and the Air Force Industrial Fund on the basis of services furnished. Rates are established by the Industrial Funds, and approved by OSD based on operating costs, that is civilian personnel, supplies, maintenance. Increases in rates are due to increased operating costs, similar to increased costs experienced by the civilian sector of the economy.

COMMERCIAL AIR TRANSPORTERS

Chairman Ellender. Would you please break down for the committee the commercial air transporters under contract in the LOGAIR system and indicate how much of the budgeted amount is for each?

General DeLuca. Saturn Airways, $10.1 million; Overseas National Airways, $8.0 million; and Universal Airlines, $15.3 million; for a total of $33.4 million.

COMMERCIAL AIR

Chairman Ellender. Would you please do likewise for contractors in the "Commercial Air" portion?

General DeLuca. The "Commercial Air" referred to here is not the same as the LOGAIR contract airlift. Specific contracts are not entered into for this category of shipments. Each depot transportation officer issues a government bill of lading (GBL) to scheduled air carriers or freight forwarders for whatever item or items he is required to ship. A complete analysis of all Air Force GBL payments would be required to determine the amount each civil carrier has received.

BASE EXCHANGE ITEMS

Senator Young. In the tables on page 58, certain amounts for base exchange materials transported are included in the totals for Military Sealift Command and Airlift Service Industrial Fund. Are the serv-

ices reimbursed for transporting supplies for the Armed Forces Exchange Service?

General DeLuca. No, sir. The use of appropriated funds to transport base exchange items overseas is based on a legal opinion rendered by the General Counsel of the Department of Defense on November 23, 1963. He recommended that future budgets of the Military Department should require that the amounts of funds intended to cover expenditures for shipment overseas of PX goods be identified and justified. This was also directed by the Deputy Secretary of Defense on November 26, 1963. The Army and the Air Force divide the transportation costs on a percentage basis, dependent upon each service population in the area.

SECOND DESTINATION

Chairman Ellender. Would you please provide the committee with tables similar to the ones on pages 57, 58, and 59, that show a further breakdown for each fiscal year, to include: amount for shipment to Southeast Asia, amount for shipment to Europe, and amount for shipment to places other than Southeast Asia and Europe? Please do this for just fiscal years 1972 and 1973.

General DeLuca. Yes, sir.

(The information follows:)

SECOND DESTINATION TRANSPORTATION

[In thousands of dollars]

	Fiscal year—	
	1972	1973
Commercial transportation:		
Other	48,186	46,316
Military Sealift command:		
SEA	83,494	66,807
Europe	16,102	18,553
Other	10,593	10,778
Total	110,189	96,138
Airlift services industrial fund:		
SEA	80,823	65,308
Europe	25,237	28,950
Other	11,165	14,357
Total	117,225	108,615

MILITARY SEALIFT COMMAND

[Dollars in thousands]

	Fiscal year—	
	1972	1973
Cargo:		
SEA	$67,451	$53,268
Europe	10,002	11,409
Other	9,946	10,076
Total	87,399	74,753
BX included:		
SEA	(8,646)	(7,471)
Europe	(2,539)	(2,697)
Other	(359)	(392)
Total	(11,544)	(10,560)
Stevedoring:		
SEA	16,043	13,539
Europe	6,100	7,144
Other	647	702
Total	22,790	21,385
BX included:		
SEA	(1,379)	(1,150)
Europe	(845)	(923)
Other	(120)	(135)
Total	(2,344)	(2,208)

MILITARY SEALIFT COMMAND—WORKLOAD

[Measurement tons]

	Fiscal year—	
	1972	1973
Cargo:		
SEA	1,347,499	928,893
Europe	710,377	816,037
Other	77,723	83,441
Total	2,135,599	1,828,371
BX included:		
SEA	256,639	208,043
Europe	157,237	167,059
Other	22,240	24,288
Total	436,116	399,390
Stevedoring:		
SEA	1,182,512	854,848
Europe	638,918	750,842
Other	70,233	76,843
Total	1,891,663	1,682,533
BX included:		
SEA	244,062	192,978
Europe	149,580	154,962
Other	21,150	22,530
Total	414,792	370,470

AIRLIFT SERVICE INDUSTRIAL FUND

[Dollars in thousands]

	Fiscal year—	
	1972	1973
Channel:		
SEA	50,576	41,008
Europe	14,231	18,498
Other	8,334	9,897
Total	73,141	69,403
BX included:		
SEA	483	498
Europe	163	207
Total	646	705
Special assignment:		
SEA	1,663	1,032
Europe	963	1,404
Other	2,831	4,460
Total	5,457	6,896
APO mail:		
SEA	28,584	23,268
Europe	10,043	9,048
Total	38,627	32,316

WORKLOAD

	Fiscal year—	
	1972	1973
Channel:		
SEA	68,456	39,912
Europe	43,253	49,746
Other	25,689	27,347
Total (S/T)	137,398	117,005
BX included:		
SEA	619	606
Europe	595	583
Total (S/T)	1,214	1,189
Special assignment:		
SEA	1,855	1,138
Europe	1,200	1,407
Other	3,495	4,673
Total (F/H)	6,550	7,218
APO mail:		
SEA	103,565	86,097
Europe	92,084	77,541
Total (ton/miles)	195,649	163,638

DEPOT MAINTENANCE

Chairman ELLENDER. With regard to the depot maintenance, I notice that you are requesting almost $90 million less than last year for fiscal year 1973. Could you give us some idea of the personnel impact of this reduction on the depot maintenance industrial funded facilities?

Mr. MCELHANON. While there is a major reduction in this account, other depot maintenance accounts such as the Air National Guard and Air Force Reserve increase, as a partial offset. The civilian man-years

utilized in our depot shops will decrease from 45,960 in fiscal year 1972 to 43,900 in fiscal year 1973 in line with the overall reduction in workload.

INDUSTRIAL FUND

Chairman ELLENDER. Would you also provide the committee with the industrial fund figures, in the same format as that on page 60, that show the cost of depot and contractor maintenance for fiscal years 1972 and 1973?

Mr. MCELHANON. Mr. Chairman, we will supply that.

(The information follows:)

The data tabulated below projects revenues to be earned or work to be produced by the depot maintenance industrial fund. Although the organic man years are reduced by 2,060 in fiscal year 1973, the costs are not reduced proportionately due to the higher cost per man year. To a large extent, the reduction in contract workload relates to phase-out of equipment or reduction in flying hours on those aircraft supported through contract. In view of the specific workload involved, the reduction reflects an equitable distribution between the organic and contract segments:

[Dollars in millions]

	Fiscal year 1972		Fiscal year 1973	
	Organic	Contract	Organic	Contract
Aircraft maintenance	$217.3	$192.1	$204.1	$174.2
Missile maintenance	4.2	2.6	4.3	2.7
Engine maintenance	151.9	98.6	150.9	84.7
Other major items	41.3	12.7	40.1	11.5
Exchangeables	344.7	222.1	347.0	211.7
Area/base support, local manufacture	65.7		65.3	
Total revenue	825.1	528.1	811.7	484.8

DEPOT MAINTENANCE FACILITIES

Senator YOUNG. Where are the depot and contractor industrial facilities referred to?

Mr. MCELHANON. We have major organic repair facilities at each of the air materiel areas. These are located at Warner-Robins, Ga.; San Antonio, Tex.; Oklahoma City, Okla.; Ogden, Utah; and Sacramento, Calif. In addition, we have a specialized repair activity at Newark, Ohio. Further, a significant amount of the work is accomplished through interservice agreements with the Army and Navy facilities, principally in Rhode Island, Virginia, Florida, Texas, Utah, and California. Contractors will accomplish about 30 million manhours of the work. These contractors, which number over 600, are widely distributed throughout the United States and the overseas areas.

OTHER LOGISTICAL SUPPORT ACTIVITIES: RESERVE INDUSTRIAL PLANTS

Chairman ELLENDER. In the field of other logistical support activities on page 62 of the justification, I notice a reduction of $202,000 as a result of the closing of two reserve industrial plants. With the remaining $405,000 that you are requesting, how many plants will you be able to maintain and where are they located?

General De Luca. We will be maintaining three reserve industrial plants in fiscal year 1973. They are located in Seattle, Wash.; Saltville, Va.; and Santa Susana, Calif.

OTHER PRINTING REQUIREMENTS

Chairman Ellender. Further down on that same page is a reduction of almost $3 million in "printing requirements at departmental level." Would you please explain to the committee what this requirement includes and how you are able to absorb such a great decrease, almost 25 percent in this 1 year?

Mr. Rhodes. The printing requirement at departmental level is for worldwide support of manuals and publications, tab cards and paper used in data processing, and various types of specialty and cut sheet forms. The reduction of 25 percent relates to our efforts to reduce support costs to a minimum.

Chairman Ellender. Further down on page 62 is an item titled "Transportation for Shipment of Printing and Publications from departmental level", and the amount given is the same as in fiscal year 1972. Would you please explain why, if there is a decrease of almost 25 percent in printing at the departmental level, there is no change in the shipping expenses associated with them? I would have thought that the two were directly related.

Mr. Rhodes. Transportation is provided for truck movement from the Government Printing Office to the Publications Distribution Center at Baltimore and the direct shipping of departmental printing to the using bases. There is an increase in transportation charges for direct shipment to the bases (primarily for tabulating cards and paper) effective in January 1972. The fiscal year 1973 estimate is the net amount which provides for a reduction in the amount of material to be moved offset by a full year cost in fiscal year 1973 of the price increase.

REAL ESTATE MANAGEMENT

Chairman Ellender. Another item I would like to ask about is the reimbursement to the Army for real estate management. How is the reimbursement amount arrived at each year?

General De Luca. The Army serves as the agent of the Department of the Air Force for real estate management functions including appraisals, acquisitions, disposals, and leasings. The amount the Air Force reimburses the Army is based on the number of Army personnel involved and contract cost in supporting Air Force real estate activities.

EMPLOYEE COMPENSATION FUND

Senator Young. The amount the Air Force must pay to the Bureau of Employees' Compensation increases $3.3 million in fiscal year 1973, an increase of around 35 percent over last year. Could you please explain the reason for this increase?

Mr. Rhodes. Public Law 86–767 approved September 13, 1960 provides that:

The Secretary of Labor shall, prior to August 15 of each year, furnish to each executive department and each agency * * * a statement showing the total cost of benefits and other payments made from the employees compensation fund during the preceding year on account of the injury or death of employees or persons under the jurisdiction of such agency occurring after 1 December 1960. Each agency shall include in its annual budget estimates for the next fiscal year a request for an appropriation in an amount equal to such costs.

Thus, the amount Air Force must pay to the Bureau of Employees' Compensation in fiscal year 1973 will cover claims paid by the Bureau during fiscal year 1971. The increase of $3.3 million in fiscal year 1973 over fiscal year 1972 includes $2.7 million payments for nonfatal compensation, $0.2 million for fatal compensation, and $0.4 million for medical payments. The $2.9 million increase for nonfatal and fatal compensation results from disability and death cases adjudicated during fiscal year 1973 (the cost of which is additive to the continuing payments for injuries and deaths which occurred during prior years) which reflects the continued increases in salaries upon which the compensation rates are based.

Senator YOUNG. Under existing legislation will you have to contribute more in fiscal year 1974?

Mr. RHODES. Yes, sir. The same factors responsible for the increased payments to Air Force beneficiaries by the Bureau of Employees' Compensation during fiscal year 1971 will cause a further increase in the fiscal year 1972 payments.

EASTERN TEST RANGE

Chairman ELLENDER. In your statement you mention that the Eastern Test Range has been operated under contract negotiated with Pan American, with Radio Corp. of America as major subcontractor and that this year will be the first in 17 years that the contract will be awarded on a competitive basis. Why are you making this change in negotiating process at this point in time?

Colonel OEXMANN. Congress has indicated to the services that they desire procurements to be free and competitive, therefore, it was determined that this contract should be competed for fiscal year 1973.

Chairman ELLENDER. Do you think that this competitive contracting will reduce still further the cost of operating the facilities?

Colonel OEXMANN. We hope to realize savings with the competition. However, termination costs, if the incumbent contractor is replaced, could certainly impact these savings in the near term.

Chairman ELLENDER. When will bids be requested and when will the contract be awarded?

Colonel OEXMANN. Bids were requested August 31, 1971 and anticipated award date is June 18, 1972.

Senator YOUNG. Which firm do you anticipate at this time will participate in the competition?

Colonel OEXMANN. To date two teams of contractors have shown interest. A team made up of Pan American and Radio Corp. of America; and a second team made up of Boeing Corp. and Federal Electric Corp.

FORCE PROGRAM VIII: TRAINING, MEDICAL AND OTHER GENERAL PERSONNEL COSTS

Chairman ELLENDER. The summary information on page 64 of the justifications pertaining to the request of $807,570,000 for "Training Medical, and Other General Personnel Costs" will be included in the record.

(The information follows:)

FORCE PROGRAM VIII: TRAINING, MEDICAL, AND OTHER GENERAL PERSONNEL ACTIONS, PURPOSE, AND SCOPE

This program provides for training, medical and other activities associated with personnel. It encompasses training operations for recruits; technical and professional training; Academy Cadets; flying training; Reserve Officer and Junior Reserve Officer Training Corps. It also includes requirements for medical operations (which encompasses Aeromedical Evacuation effort), recruiting and examining, off-duty education, overseas dependents education and mortuary services. Excluded from this program is training that is command unique such as Combat Crew Training.

TOTAL OBLIGATIONS BY PROGRAM ELEMENT GROUPINGS

[Dollars in thousands]

Program element groupings	Fiscal year— 1971 actual	1972 estimate	1973 estimate
Training and education:			
Recruiting and examining	$6,424	$15,050	$19,545
Recruit and specialized training	67,052	72,315	76,621
Flight training	80,789	76,066	67,783
Professional training	24,363	25,756	27,253
Training operation	212,514	221,697	228,788
Service academy	25,156	25,971	26,559
ROTC	9,306	11,083	13,036
Overseas dependent schools	38,402	39,942	41,506
Subtotal, training and education	464,006	487,880	501,091
Medical:			
Medical operations	153,165	165,566	163,193
Medical care in nonservice facilities	82,886	126,812	143,286
Subtotal, medical	236,051	292,378	306,479
Total, training, medical and other	700,057	780,258	807,570

General DELUCA. Starting with the major force program 8 at the bottom of page 22, "Training and education, medical and other activities."

The training and education program provides for the individual training of personnel in the regular Air Force, Air Force Reserve, Air National Guard, and students from selected foreign countries. Also provided for is the training of students from other services and Government agencies, the Reserve Officer Corps, and the costs for the education of service dependents in the Pacific area. The estimate for training and education in fiscal year 1973 is $501.1 million, compared to $487.9 million in fiscal year 1972.

TRAINING OF FOREIGN STUDENTS

Chairman ELLENDER. How is the training of foreign students paid for?

General DeLuca. They reimburse us through the MAP account.

Chairman Ellender. What is the source of those funds?

General DeLuca. Military assistance, you know, is in three categories: military assistance appropriations, foreign military sales account, and military assistance to free world forces financed from the regular military appropriations.

The students come to our school. We pay this account through the military assistance service funding. If another country buys some of our equipment or, for example, Germany wants to come and train they pay for that themselves.

Then we have a military assistance program where we give them a grant and they pay us for that program.

Chairman Ellender. It all comes from Uncle Sam.

General DeLuca. Except for the foreign military sales.

Recruit and Specialized Training

General DeLuca. In fiscal year 1973, Air Force training requirements will increase despite a reduction in airmen end strength of approximately 8,500 personnel. The input of new recruits will rise from 85,000 in fiscal year 1972 to 107,000 in fiscal year 1973, thereby increasing basic training costs.

The requirement for follow-on specialized training will add approximately 13.000 trainees, from 72,000 in fiscal year 1972 to 85,000 in fiscal year 1973.

The seeming contradiction of increased training despite a declining force is caused primarily by the type of personnel being retained and the numbers recruited 4 years ago who are now completing their first enlistment.

In fiscal year 1969, a high number of non-prior-service airmen were recruited and those now departing must be replaced. This kind of fluctuation will continue to exist until the force is stabilized. To provide recruit and specialized training, $76.6 million is requested for fiscal year 1973 compared to the fiscal year 1972 program of $72.3 mllion, $4 million added.

Chairman Ellender. How does that jibe with our plan to reduce forces?

General DeLuca. What we are seeking to do here, of course, as we discussed this morning, about 100,000 military airmen leave a year and about 100,000 come in and we control the pipeline and attrition.

Here, in effect what we are seeking to do for those non-prior-service people coming in—we do have to give them the basic training. When they finish that, about 80 percent go to some type of technical school. This is what this is for. This is to keep the input trained and those who are senior in years skilled. It is a continuing thing at the bottom of the ladder.

Continual Quality Important

Chairman Ellender. Which seems to mean added costs.

General DeLuca. It means the quality of the smaller force is improved, continually improving. You see, we have come down, as General Kidd discussed this morning, just in the last 2 years, from 755,000 military personnel in 1971 to a 1973 program of 717,000. We have exits of people now and therefore we have to bring in new people and we have to train them.

Chairman ELLENDER. When you say "exits of people," you mean people leaving the service voluntarily?

General DELUCA. They are leaving. Their term is up and so forth. We are programed to lose a total of 128,000 airmen in 1973.

Chairman ELLENDER. That is because——

General DELUCA. They either retire; they don't reenlist, et cetera.

FLIGHT TRAINING

This program includes undergraduate training for pilots and navigators, selected advanced and specialized courses such as electronic warfare officer, and instructor pilot and navigator courses. The estimate for these programs is $67.8 million, which is a reduction of $8.3 million from fiscal year 1972.

Programed undergraduate jet pilot production for fiscal year 1973 is 2,875; a reduction of 1,050 from fiscal year 1972.

Chairman ELLENDER. Would this flight training include graduates from the Air Academy in Colorado?

General DELUCA. Yes, sir; it would.

Chairman ELLENDER. And also those from the ROTC?

General DELUCA. Who qualify.

Chairman ELLENDER. Proceed.

General DELUCA. To satisfy Air Force Reserve and Air National Guard requirements, production will increase to 280 pilots for the Air National Guard and 150 pilots for the Air Force Reserve. This is slightly more than double the number produced in fiscal year 1972.

Of course, this is a direct outflow of the conversion and equippage of their programs.

Undergraduate navigator production for the active force increases from 1,200 to 1,300. Of course, these move right along with the inventory that General Kidd talked about this morning.

PROFESSIONAL TRAINING

Air Force professional education is the mission of the Air University with headquarters at Maxwell Air Force Base in Alabama.

Chairman ELLENDER. What is included under professional training?

General DELUCA. Well, this is the professional training and advanced degrees that we give to our officers in such fields as engineering, mathematics, metallurgy, propulsion, and aerodynamics. All are essential to R. & D. work and the various types of engineering, service engineering.

Chairman ELLENDER. We now have a program to educate doctors and lawyers. Is there any money requested for that?

Colonel KOPAS. No, sir; none for lawyers. The doctors are included in this program.

General DELUCA. Of special significance is a program to establish a senior NCO academy during 1973. What we are seeking to do here, of course, is to take our top-notch noncommissioned officers and run them through the knowledge of living, working and leading a force today—military, political, social, economic.

Chairman ELLENDER. Where do you send them?

General DELUCA. The interim location will be at Gunter Air Force Base, Ala.

TRAINING OPERATIONS

Training Operations finances the operation of the 16 bases of the Air Training Command and two bases of the Air University, plus several special programs, such as Project Transition—that is to facilitate the employment of the airmen that leave us so that they can have a vocation or trade—and the Air Force-wide off-duty education program for military personnel.

AIR FORCE ACADEMY FACILITY

Chairman ELLENDER. You have an air field close to the Air Force Academy. I forget its name.

Colonel BARSOM. Are you speaking of Peterson Field.

Chairman ELLENDER. Yes. Just what is the purpose of this facility. It appeared to me that it was a commercial airport.

Colonel BARSOM. Peterson Field provides the air support for the cadets; it is the terminal for in and out operations of the Academy, and the flight instruction program of the cadets in the Air Force Academy.

SHARED FACILITY WITH COMMERCIAL COMPANIES

Chairman ELLENDER. Aren't commercial aircraft permitted to land there?

Colonel BARSOM. Yes, sir; it is a shared facility with commercial aircraft companies, they pay their share of the operation.

FIELD CONSTRUCTION, COST, AND PURPOSE

Chairman ELLENDER. Who constructed that air base?

Colonel BARSOM. I don't know, sir. I will have to get that for the record.

Chairman ELLENDER. I would like a complete statement on this facility—its function, who built it, its annual costs, and so forth.

General DELUCA. We will put that in the record.

(The information follows:)

Peterson Field was originally built by the city of Colorado Springs and designated as the Colorado Springs Municipal Airport in 1925. In 1943, the U.S. Army leased a part of the airport from the city for use in training flyers during WW II. In 1948, the government interest in the field was deeded to the city.

From 1955 to 1965, the Air Force, under a no-cost lease and joint-use agreement with the city, made use of certain lands, an airstrip and several WW II vintage buildings with Air Force sharing in maintenance costs of the airfield facilities on a pro rata basis.

A lease-purchase agreement on the city's terminal building and approximately 13 acres of improved land was negotiated in 1965 for a period of 10 years at $37,500 per year. In 1975 the Air Force will own the building. Currently, Peterson Field supports aircraft and flying activity of Aerospace Defense Command Headquarters, North American Air Defense Command (NORAD) Headquarters, and flying training plus airlift support to the Air Force Academy.

Long range plans call for consolidation and relocation of Aerospace Defense Command (ADC) activities and support facilities for Hq NORAD and Hq ADC from Ent AFB in Colorado Springs area to Peterson Field.

FY 1972 Operation and Maintenance (O&M) costs of Peterson Field will be approximately $4.0 million.

Air Force Academy

Chairman Ellender. Proceed.

General DeLuca. The Air Force Academy.

In fiscal year 1973, $26.5 million is requested for the Air Force Academy, which is a slight increase over the fiscal year 1972 level of $26 million. The cadet strength of 4,417 authorized by Public Law 88–276 will be achieved by end fiscal year 1972.

Medical Costs

Chairman Ellender. Is that the entire amount spent to operate the Academy?

Mr. Rhodes. No, sir. There is a small amount of money in the medical and communications programs for the Academy which we can identify for you for the record.

Chairman Ellender. This will provide for the additional students who have been authorized?

Mr. Rhodes. Yes, sir.

(The information follows:)

Funds to Operate the Agency

The total cost of operating the Medical Program at the Air Force Academy during FY 1973 is $2,093,000 of which $915,000 is for civilian personnel cost and $1,178,000 is for non-personnel cost. Communications cost at the Academy is estimated at $412,000 for FY 1973.

Reserve Officer Training Corps

General DeLuca. The Air Force Reserve Officer Training Corps includes senior and junior ROTC programs. The senior program has a 4-year and a 2-year program. Newly approved legislation, Public Law 92–166, has increased financial grants from 5,500 to 6,500 students.

The program for fiscal year 1973 will support 183 senior and 235 junior units, an increase of 10 and 41, respectively, over fiscal year 1972.

The fiscal year 1973 estimate is $13 million, an increase of $2 million over the fiscal year 1972 program of $11 million.

Cost Variances in ROTC, OTS, and Academy Education

Chairman Ellender. I was not too much impressed with the example you gave in which you indicated that over a period of 20 years the costs would even out between the ROTC and the Air Academy graduates. I think there was evidence in previous hearings that the cost of training an Air Academy student probably is 10 times more than training an ROTC officer.

General DeLuca. I think General Kidd was trying to show in the life cycle of an officer it may equate——

Chairman Ellender. I understand what he was trying to do.

General DeLuca. I think in line with your reasoning it is important to single out, Mr. Chairman, that the Air Force Academy graduates maybe 750 officers a year, but at least another 10,000 come through the other commissions routes each year. So, percentages are one thing, but absolute numbers are another thing.

Chairman ELLENDER. I did not question his example closely. However, if we can secure through the ROTC and other sources a sufficient number of officers, I see no reason to increase the size of the Academy.

General DELUCA. Since you have been through that, I won't go into it, but there are some advantages in having a professionally trained military orientation, and then also a blend of academic university trained from the society directly.

PILOT TRAINING

Chairman ELLENDER. But there is little difference in the education that they obtain at the Air Academy and what they obtain at Tulane University, let us say. They study different subjects; that is true. But they must get their training to fly or to work on missiles the same as the ROTC boys obtain it.

You don't give flying training at any of these ROTC schools nor at the Academy. They are sent to the same place as the Air Academy graduates go. That is the point I was making.

General DELUCA. Yes, sir.

Chairman ELLENDER. A pilot who receives his education at UCLA, Tulane, LSU, or the Air Academy gets the same training, does he not?

General DELUCA. Yes, sir.

Chairman ELLENDER. When it comes to flying?

General DELUCA. When it comes to flying. There are some professional military courses given at the Academy that are not given at the other colleges.

Chairman ELLENDER. Proceed.

OVERSEAS DEPENDENT SCHOOLS

General DELUCA. The Air Force is responsible for the education of all Department of Defense dependents in the Pacific area. Currently, 72 schools are being operated with a student enrollment of 41,120. The fiscal year 1973 budget provides for the operation of 68 schools with 39,120 students.

The funding requirement has increased from $39.9 million in fiscal year 1972 to $41.5 million in fiscal year 1973, due to higher civilian personnel costs.

Chairman ELLENDER. Are all those students children of our Armed Forces personnel?

General DELUCA. That is essentialy correct.

Chairman ELLENDER. No others?

Colonel OEXMANN. There are provisions for embassy people to attend the school on a reimbursable basis.

MEDICAL PROGRAM

General DELUCA. In fiscal year 1973, the medical program estimate totals $306.5 million—a net increase of $14.1 million over fiscal year 1972.

This program is composed of two major segments: Medical operations, which includes aeromedical evacuation flights; and medical care in nonservice facilities (medicare).

There is a net decrease of $2.3 million in fiscal year 1973 estimate for medical operations. This is due primarily to a reduction in aeromedical flights and a decrease of $1.2 million in hospitals and related activities. Partially offsetting is $1.7 million for increased costs of medical and dental supplies for patients.

Medicare Cost Increase

Overall medicare costs increase $16.4 million in fiscal year 1973. This results from the continued growth in population of retired military personnel and their dependents who become eligible for benefits, and escalation of costs.

As I mentioned earlier, we will have a reprograming action to put some more money into this program.

Chairman Ellender. Why should there be such an increase from $77 million to $136 million in 2 years?

Colonel Kopas. The National Health Service (NHS) cost has increased in leaps and bounds since 1965. In 1965, NHS experienced a $38.9 billion outlay. In 1971, the expenditures for health services in this Nation reached $75 billion. The Consumer Price Index for the medical component showed a 4.8-percent increase in 1971 over 1970. This increase was 1.4 percent higher than the overall Consumer Price Index of 3.4 percent for calendar year 1971.

The principal reason for increase is in the hospital room rates. That is associated with the labor cost which constitutes almost two-thirds of a hospital's total operating expense.

In 1967, the semiskilled labor cost for nonprofessionals and other low-cost employees in the civilian health fields were paid a dollar an hour. On February 1, 1967, the Federal Government had included these people under the minimum wage law and permitted a 15-cent an hour increase from 1967 through 1971, which made the hourly rate $1.60 under the minimum wage law. This wage increase is the principal reason for higher cost for CHAMPUS; and since medicare and medicaid have come into being, these costs have risen dramatically over the years.

Care in Civilian Medical Facilities

Chairman Ellender. Are these in our own operated hospitals?

Colonel Kopas. No, sir; this is CHAMPUS which augments our military medical services.

Chairman Ellender. Is this program carried on both at home and abroad?

Colonel Kopas. Yes, sir; we do refer patients for civilian care abroad however, at a lower scale. It is predominantly in the continental United States where the largest cost in civilian health care is experienced. Europe has medical care that meets U.S. standards, and we are able to seek limited medical care from civilian sources. In the Far East Pacific area, that is not the case.

Cost Escalation and Increased Retirees and Dependents

Chairman Ellender. To what extent did you have more people to provide for in those 2 years? Did that have any effect on the increased cost?

Colonel KOPAS. The escalation of cost is principally the main reason why we are also experiencing increases in our retired and their dependents and the survivors of retired and active dependent personnel. Those are increasing every year.

The patient workload for active duty military personnel and their dependents decreases in line with the declining military strength. However, this is more than offset by the increased workload for retired military personnel and their families which is a reflection of the continually increasing number of retired personnel each year.

TRAINING INSTALLATIONS

Chairman ELLENDER. On page 65 of the justification, you indicate that "Training is accomplished at regular Air Force installations, schools managed by other DOD services and at civilian institutions." Following that is a table showing the number of Air Force installations involved. Would you please tell the committee what specific installations are included in the 19 enumerated?

General DELUCA. Yes, sir. I have a list of the 19 installations referred to on page 65. They are: Chanute AFB, Ill., Columbus AFB, Ga., Craig AFB, Ala., Gunter AFB, Ala., Keesler AFB, Miss., Lackland AFB, Tex., Loredo AFB, Tex., Laughlin AFB, Tex., Lowry AFB, Colo., Mather AFB, Calif., Maxwell AFB, Ala., Moody AFB, Ga., Randolph AFB, Tex., Reese AFB, Tex., Sheppard AFB, Tex., U.S. Air Force Academy, Colo., Vance AFB, Okla., Webb AFB, Tex., and Williams AFB, Tex.

PROJECT VOLUNTEER

Chairman ELLENDER. In the "Recruiting and examining" item on page 65, you show an increase of about $4.5 million, which is broken down at the bottom of the page. I wish you would go into the breakdown that you do furnish a little further. Exactly what is the increase of $3 million in advertising to be used for? What type of advertising are you referring to and how much will go toward each?

Colonel CAREY. Sir, the increase of $3 million in advertising is programed for: Periodicals/outdoor advertising, $1,095,000; displays and sales aids, $2,000; radio (public service), $84,000; TV/films (public service), $416,000; and local advertising, $1,403,000.

RECRUITER EXPENSE

Senator YOUNG. Would you also please explain the "out-of-pocket" expense increase for recruiters, and compare the 1972 total with the 1973 total for this item? I believe you are requesting $0.4 million for this item in 1973, are you not?

Colonel CAREY. Sir, we requested $800,000 in fiscal year 1973 as compared to $400,000 approved for fiscal year 1972. This increase of $400,000 for fiscal year 1973 is basically due to the fact that fiscal year

1972 funding is for 7 months and fiscal year 1973 funding is for 12 months.

Chairman ELLENDER. Can you give us the number of stations to be refurnished and a brief explanation of the type of expenses to be incurred?

Colonel CAREY. We plan to refurnish approximately 160 recruiting offices with items such as, file and storage cabinets, portable typewriters, telephone answering devices, super 8-millimeter projectors, chairs, desks, tables, addressing and sealing equipment, cameras, unitized furniture, and so forth. It is estimated that the average refurnishing cost per office would be $5,000.

Chairman ELLENDER. Does the Air Force intend to increase the number of recruiting offices with any of these funds?

Colonel CAREY. No, sir.

APPLICANT-RELATED EXPENSES

Senator YOUNG. The last item included in the breakdown of recruiting and examining increases is $0.3 million for applicant related expenses. Would you please explain what expenses are included in this category?

General DELUCA. These expenses cover reimbursement to the Army for meals and lodging of applicants, and travel cost of applicants to and from the examining station.

STABILIZATION OF TRAINING

Chairman ELLENDER. In your statement you said, "The seeming contradiction of increased training despite the declining force is caused primarily by the type of personnel being retrained and the numbers recruited 4 years ago who are completing their first enlistment." You go on to say, "This kind of fluctuation will continue to exist until the force is stabilized." What is your estimate of how long it will be before the force is stabilized?

Colonel LUND. In our long-range estimate, we now predict that the force will tend to stabilize in the fiscal year 1975 and beyond. This prediction is based upon the DOD 5-year defense plan which, of course, is subject to change due to world tensions, decisions by the President, the Congress, or the Secretary of Defense.

FLIGHT TRAINING

Chairman ELLENDER. In light of what you have just explained with regard to the basic training and the anticipated need for more funds to train more recruits, what is the reason for your estimate of decreased training for pilots as reflected in the justification on page 68? Is the converse happening with flight personnel from what is happening with the basic recruits?

Colonel LUND. The reason for the estimate of decreased training for pilots in fiscal year 1973 is a direct reflection of the programed

decrease in undergraduate pilot production in fiscal year 1973. This reduction is based on decreased requirements for pilots associated with the smaller force structure programed into the near future.

There is no correlation between the decrease in the training of flight personnel and the quality of personnel entering flight training. The decrease in the training of flight personnel is a direct result of the decrease in pilot requirements. The completion rate for personnel entering flight training has remained relatively stable.

PILOT CONVERSION

Senator YOUNG. I notice that you are still converting fixed-wing pilots to helicopter pilots and I wonder if you would explain why it is to the Air Force's advantage to do this rather than simply to train more from scratch?

Colonel LUND. Our force of approximately 1,100 helicopter pilots in the Air Force is divided among units at approximately 100 different locations worldwide—many of them isolated from other military installations. To insure a mix of maturity of flying experience available for assignment to these remote units, we find a long-term advantage to helicopter conversion training to produce a portion of the force requirements. This permits us to share the burden of this remote duty among a larger portion of our total pilot force while maintaining the necessary experience and age mix.

SURVIVAL TRAINING

Chairman ELLENDER. On the bottom of page 68 of the justification I notice that the Air Training Command has taken over the responsibility of all survival training, which is, I believe, an integral part of the overall flying program. Would you please give us an idea of the costs of operating the five separate training facilities and indicate whether these costs will increase in fiscal year 1973?

Colonel LUND. Yes, sir. The total fiscal year 1972 direct operating costs for the five separate survival training facilities is approximately $854,000. We anticipate that fiscal year 1973 costs will remain at about the same level as fiscal year 1972.

Chairman ELLENDER. This year are there any foreign students in your flight program? If so I would like to have a list for the record showing the number by country and the estimated cost of their training.

Colonel LUND. Yes, sir. We do have foreign students in our fiscal year 1973 flight training program. I will provide the number by country and cost of training for the record.

(The information follows:)

The costs of training foreign students, except for Vietnamese and Laotian students, is reimbursed to the O&M appropriation from the Military Assistance Appropriation and the Foreign Military Sales Program. The training costs associated with Vietnamese and Laotian students is financed from the O&M appropriation under Program X, Support of Free World Forces. Fiscal year 1973 flight training programed for foreign students follows:

Country	Number of students	Original cost per student	Training costs paid by country or origin [1] (thousands)	Training costs paid by United States [2] (thousands)
UNDERGRADUATE NAVIGATOR TRAINING				
Belgium	3	$24,080	72.2	
Chile	1	24,080		24.1
Denmark	2	24,080	48.2	
Germany	5	24,080	120.4	
Indonesia	10	24,080		240.8
Iran	15	24,080	361.2	
Laos	2	24,080		48.2
Morocco	4	24,080	96.3	
Peru	2	24,080		48.2
Saudi Arabia	1	24,080		24.1
Turkey	2	24,080		48.2
Unallocated	3	24,080	72.2	
Total	50		770.5	433.6
UNDERGRADUATE PILOT TRAINING				
Afghanistan	1	55,160		55.2
Belgium	6	55,160	331.0	
Bolivia	6	55,160		331.0
Columbia	1	55,160		55.2
Denmark	26	55,160	1,434.2	
El Salvador	3	55,160		165.5
Germany	100	72,250	7,225.0	
Guatemala	4	55,160		220.6
Honduras	4	55,160		220.6
Indonesia	2	55,160		110.3
Iran	170	55,160	9,377.2	
Italy	20	55,160	1,103.2	
Laos	3	25,600		76.8
Netherlands	3	55,160	165.5	
Nicaragua	3	55,160		165.5
Nigeria	12	55,160	661.9	
Norway	32	55,160	1,965.1	
Paraguay	2	55,160		55.2
Portugal	2	55,160		110.3
Saudi Arabia	15	55,160		827.4
Turkey	2	55,160		$110.3
Vietnam	36	55,160		1,985.8
Vietnam	120	25,300		3,036.0
Vietnam	44	25,600		1,126.4
Unallocated	67	55,160	$3,695.7	
Total	684		25,958.8	8,652.1

[1] Foreign military sales program.
[2] Includes grant-in-aid program funded in military assistance program. Support of Vietnam and Laos is funded in operations and maintenance appropriations, MFP X.

PROFESSIONAL TRAINING

Chairman ELLENDER. I notice on page 71 of the justification that, aside from the new senior NCO academy, the civil engineer school, and the resident medical schools, you plan to enroll the same number of personnel in all the Air Force schools that you did last year. Does this mean that you are arriving at the plateau that you thought you had achieved before the Vietnam conflict? As I recall, last year you were trying to get back to the prewar level.

Colonel BARSOM. Sir, our fiscal year 1972 educational program took us back to the level which we had attained prior to the Vietnam buildup. This level is being retained for fiscal year 1973. Although the force structure is dropping, the Air Force must continue to operate its

schools at this optimum number to assure sufficient numbers of leaders, managers, and commanders for the future. We are not satisfied with the number of junior officers who are attending the squadron officer school and plan to expand in that area in fiscal year 1974 by offering a shortened course and one additional class. This will permit 3,040 career lieutenants and captains to attend annually rather than the present 2,250.

NCO ACADEMY

Senator YOUNG. You deal with the new NCO academy a bit in your statement, but I wish you would go into more detail as to precisely why this new school is needed and what you hope to achieve by having it.

Colonel BARSOM. Sir, as you know, we operate NCO academies and leadership schools for our intermediate and junior NCO's, but there has been a void in professional military education opportunities for senior NCO's. Today, as a result of many developments, this void is a matter of great concern.

Young airmen are more difficult to supervise than in past years. They question everything, challenge authority, and accept nothing at face value. In turn, supervisors are often charged with being insensitive, indifferent, and impersonal. As a result, there is often little communication between the upper and lower enlisted ranks. The senior NCO academy will not only make supervisors more aware of their responsibilities, but will also provide skills needed to establish a dialog with the younger generation.

The curriculum of the new school also includes instruction on contemporary social issues and the changing environment. Many of our supervisors lack the expertise to deal with such issues as drug abuse, race relations, and the protest movement. Experience with these potentially explosive issues has verified the old adage of an ounce of prevention being worth a pound of cure.

Another aspect of the senior academy concerns our transition to a volunteer force. Our success in a draft-free environment will depend on our ability to attract, motivate, and retain a high-quality airman resource. As noted by the President's Commission on an All-Volunteer Force, "Pay is not the only, and perhaps not even the primary, motivating force for joining and remaining in the military services." The Commission also observed that there are "Opportunities * * * to increase voluntarism * * * by improving the conditions of military service and the quality of military life." Since our senior NCO's manage and control the work and living environment of the entire airman force, they must become better supervisors—rather than just super technicians—if we are to realize our volunteer force goal.

In short, the role of the senior NCO in today's Air Force is more complicated than ever before. Supervisory skills are taxed by youth, contemporary social issues and the move to a volunteer force. The senior NCO academy is designed to fill the void in professional education for senior NCO's and to prepare them for these new challenges.

NEW NCO ACADEMY

Senator YOUNG. Where is the NCO academy to be located and how many additional personnel, military and civilian, will be required to operate it?

Colonel BARSOM. Sir, the new senior NCO academy will be located at Gunter Air Force Base, Ala., on an interim basis, until permanent facilities can be developed across town at Maxwell Air Force Base. A total of 108, including six officers, 90 airmen, and 12 civilians, will be required for faculty, staff, and base operating support.

Senator YOUNG. How much do you anticipate it will cost to operate this school, aside from startup costs, in fiscal year 1973?

Colonel BARSOM. Sir, aside from startup costs, the fiscal year operating expense is estimated at $1.5 million of which $700,000 is included in the O. & M. budget. The rest of the cost is in the military personnel appropriation.

Senator YOUNG. I see on page 71 that you anticipate enrolling 800 students a year in this academy. Is this to be the normal enrollment or can we anticipate an increase once the program is firmly established?

Colonel BARSOM. Sir, the enrollment in fiscal year 1973 reflects the fact that the academy will be established during the year, and will not begin classes until approximately mid-year. In fiscal year 1974 and later years, plans are to enroll 1,200 students in five classes of 240 each.

Chairman ELLENDER. On page 72 of the justification, under civilian institutions, there are various increases and decreases to the different programs. For example, there is a decrease of 190 in the number going to degree-granting courses and an increase of 60 in the number going to short courses and so on. Does this reflect any basic policy decision to get away from the longer, degree-granting courses, or is it just that there were not enough qualified applicants this year, or is there some other reason for it? I wish you would explain this.

Colonel BARSOM. Sir, there has been no change in Air Force policy with regard to education. We try, within available resources, to provide the individual with the education necessary for him to perform a specific Air Force function. Our total requirements for both the degree courses and short courses could not be accommodated within the dollars provided for this program without degrading higher priority Air Force missions.

TRAINING OPERATIONS

Chairman ELLENDER. On page 73 of the justification you deal with training operations and request $228.8 million for fiscal year 1973, up $7.1 million from fiscal year 1972 total of $221.7. In glancing over last year's hearings, I notice that the request for last year was $202 million yet here you indicate that the amount for fiscal year 1972 is $221.7 million. Would you please explain this difference of $19.7 million?

General DELUCA. The increase in the fiscal year 1972 requirement from that submitted in the original budget submission is primarily for the January 1, 1971 and 1972 direct hire civilian pay raises, wage board increases and associated administrative costs such as employee health benefits authorized by Public Law 91-418.

CIVILIAN PAY

Chairman ELLENDER. The one item of decrease cited is in civilian pay resulting from reductions in the average salaries. I presume that to reduce the average you have to reduce the number of personnel

and I wonder if you would furnish the committee with an idea of what personnel actions you will undertake to achieve this.

General DeLuca. Mr. Chairman, we have previously touched on the subject of savings associated with reductions in average civilian salaries. At this point, it might be helpful to elaborate on this aspect of the justification since it is a partial explanation of dollar reductions in all areas of the submission.

Although somewhat of an oversimplification, projected civilian personnel dollar costs may be viewed as the product of multiplying anticipated man-year utilization by the expected average annual cost per man-year. Two of the many factors considered in developing the average cost per man-year for fiscal year 1973 were two less compensable days than in fiscal year 1972 and a projected reduction in the average grade of general schedule employees. Actual basic payroll costs for any individual employee are determined by multiplying the authorized hourly rate by the number of hours the employee is in a pay status. In fiscal year 1972, the number of hours for pay purposes is 2,096 or 262 days; whereas, in fiscal year 1973, the number of hours is 2,080 or 260 days. For this reason, the average annual cost per man-year in fiscal year 1973 will be $86 less than in fiscal year 1972. The average grade of general schedule employees is determined by multiplying the number of employees in each grade by the GS grade number and dividing the sum of these weighted factors by the total number of GS employees. An average grade of 7.7 is estimated for June 30, 1972, and our fiscal year 1973 estimate is predicated upon reducing that average grade to 7.6 by June 30, 1973. This one-tenth of a grade reduction translates into a decrease of $56 in the average annual cost per general schedule man-year.

Getting back now, Mr. Chairman, to your assumption that any significant savings in personnel costs would have to accrue from reductions in the number of personnel. This is quite true but is not applicable in the case of training operations. Other than the savings associated with reductions in average salary costs, the only additional civilian personnel dollar decrease is that related to a reduction of 49 man-years which amounts to approximately $600,000. This decrease in fiscal year 1973 man-year requirements results from personnel reductions occurring during fiscal year 1972 and will have no impact on civilian personnel employment levels for fiscal year 1973.

AIR FORCE ACADEMY

Chairman Ellender. Would you please furnish for the record at this point, the comparative costs of maintaining the hospital over the fiscal year 1971–73 time period?

Colonel Kopas. The costs of operating and maintaining the U.S. Air Force Academy Hospital for fiscal years 1971, 1972, and 1973 are $1,929,000, $1,913,000, and $1,993,000, respectively.

AFROTC

Senator Young. I notice on page 74 that there are a number of new detachments being formed in 1973, in both the junior and senior programs. Would you please furnish the committee with a list of the schools that are coming on board?

Colonel Barsom. Yes, sir; I will furnish the list for the record.

(The information follows:)

NEW SENIOR ROTC UNITS (10)

Fayetteville State University, Fayetteville, North Carolina, Southeast Missouri College, Cape Giradeau, Missouri, Samford University, Birmingham, Alabama, Pan American University, Edinburg, Texas, Northern Arizona University, Flagstaff, Arizona, Wilkes College, Wilkes-Barre, Pennsylvania, Florida Technological University, Orlando, Florida, Lamar State University of Technology, Beaumont, Texas, Embry Riddle Aeronautical University, Daytona Beach, Florida, Livingston University, Livingston, Alabama.

NEW JUNIOR ROTC UNITS (42[1])

Carlsbad High School, Carlsbad, California, Ottawa Township High School, Ottawa, Illinois, Alpena Senior High School, Alpena, Michigan, Hickman Mills Senior High School, Hickman Mills, Missouri, Spaulding High School, Rochester, New Hampshire, Fairborn Park Hills High School, Fairborn, Ohio, Raleigh-Egypt High School, Memphis, Tennessee, Modesto High School, Modesto, California, Thomas Downey High School, Modesto, California, Argo Community High School, Summit (Argo P. O.), Illinois, Chicopee Comprehensive High School, Chicopee, Maine, Washburn Rural High School, Topeka, Kansas, Largo Senior High School, Upper Marlboro, Maryland, Chicopee High School, Chicopee, Maine, Lawrence County High School, Lawrenceburg, Tennessee, Kelso Senior High School, Kelso, Washington, Laurel Senior High School, Laurel, Maryland, Roseville High School, Roseville, Michigan, Oscar A. Carlson High School, Gibralter, Michigan, Murray-Wright High School, Detroit, Michigan, Plainwell High School, Plainwell, Michigan, Unicoi County High School, Erwin, Tennessee, Atascadero High School, Atascadero, California, Elkins High School, Elkins, West Virginia, Martinsburg Senior High School, Martinsburg, West Virginia, Homewood High School, Homewood, Alabama, Austin-East High School, Knoxville, Tennessee, Dodge City High School, Dodge City, Kansas, Jacksonville Senior High School, Jacksonville, Arkansas, Parkway High School, Bossier City, Louisiana, Liberal High School, Liberal, Kansas, Nevada Junior-Senior High School, Nevada, Missouri, Airline High School, Bossier City, Louisana, Seventy-First High School, Fayetteville, North Carolina, Armijo High School, Fairfield, California, Fort Pierce Central High School, Fort Pierce, Florida, North Marshall High School, Calvert City, Kentucky, Surry Central High School, Dobson, North Carolina, Manzano High School, Albuquerque, New Mexico, Irmo High School, Irmo, South Carolina, Muskogee Senior High School, Muskogee, Oklahoma, J. Frank Dobie High School, Houston, Texas.

SENIOR PROGRAM

Chairman ELLENDER. In the tables provided on page 74, you indicate the average student enrollment for the junior ROTC program but not for the senior program. Would you please furnish the senior program figures for the record?

Colonel BARSOM. Yes, sir.

(The information follows:)

Air Force senior ROTC program

Average student enrollment:

Fiscal year:	
1971	25,723
1972	23,724
1973	24,690

Chairman ELLENDER. Was there any particular reason for these average enrollment figures for the senior program having been left out of the justification in the first place?

Colonel BARSOM. No, sir. There was no particular reason for these figures having been left out of the justification. The table on page 74 is

[1] There were 194 established units at the beginning of fiscal year 1972. One school dropped out in mid-year leaving 193. The additional 42 schools will bring the total to the authorized 235 for fiscal year 1973.

similar to that furnished in previous budget submissions and repeated for the fiscal year estimate. We will include this information in future estimates.

SCHOLARSHIP GRANTS

Senator YOUNG. At the bottom of page 74, you indicate that, "The senior ROTC program increases $1.457 million and reflects the full year cost of the 1,000 additional grants awarded in mid-fiscal year 1972 and a rise in tuition and textbook costs at the participating universities." That would appear to average out to a little over $1,000 per grant per year. Is that amount correct and is it fairly consistent with current average?

Colonel BARSOM. Yes, sir; the amount is correct. Our current average cost per scholarship is $1,088 and is expected to cost approximately $1,200 per grant in fiscal year 1973.

MAINTENANCE OF SENIOR AND JUNIOR PROGRAMS

Chairman ELLENDER. Would you please furnish the committee with a breakdown of the $13 million requested to show how much goes for maintenance of the senior detachments, maintenance of the junior units, flight instruction program, operation of training camps, and financial grants. Please show this as compared to the amounts provided in fiscal year 1972.

Colonel BARSOM. Yes, sir; I will be happy to furnish this information for the record.

(The information follows:)

O. & M. COSTS OF AFROTC

[Dollars in thousands]

	Fiscal year—	
	1972	1973
Maintenance of senior detachments	$1,745	$1,736
Maintenance of junior detachments	1,857	2,353
Flight instruction program	1,272	1,281
Financial grants	6,209	,7666
Total	11,083	13,036

AFROTC: TUITION RATES

Senator YOUNG. You also mention that some schools have increased tuition costs. Which schools are these and how much has the tuition gone up in each?

Colonel BARSON. Sir, approximately 150 colleges participate in the AFROTC scholarship program. A list of specific institutions increasing their tuition fees for the ROTC cadets is not available at this time. The tuition for ROTC cadets is raised when the university raises the tuition for all students on their campus. The budget is based on the estimated national average increase in tuition rates which has been averaging between 5 and 6 percent.

OVERSEAS DEPENDENT SCHOOLS

Chairman ELLENDER. On page 75 of the justification, I note increases and decreases providing a net increase of $1.6 million. Please describe the actions that result in this increase.

Colonel BARSOM. Yes, sir. Savings from reduced staffing in the amount of $500,000 was offset by $2 million in higher personnel costs related to pay raises amounting to $1.1 million, in grade increases of $600,000, benefits and allowances of $100,000 and full year para-professional staffing at $200,000. An average rate increase of 8.7 percent for students attending tuition fee schools added another $80,000 for a total net increase of $1.6 million.

Chairman ELLENDER. By closing four schools and decreasing the enrollment in tuition free schools by 360, $549,000 will be saved. Why is this amount not larger?

Colonel BARSOM. Sir, reduced enrollments prompted savings amounting to $500,000. However, these savings were offset by a rate increase of 8.7 percent per student—$80,000—attending tuition fee schools, and higher personnel costs—$2 million—associated with pay raises, increased benefits and allowances, in grade increases and full-year para-professional staffing.

MEDICAL

Senator YOUNG. On page 76 of the justification you indicated that $132 million is necessary for the operation of Air Force hospitals. Further on page 78 I notice that this will provide for 93 hospitals, down two from 1972. Which hospitals are you closing?

Colonel KOPAS. USAF Hospital Teheran, Iran, is to be transferred to the Army, and USAF Hospital [delete] is to be closed. These are two very small facilities which provide care for only 13 inpatients per day, or about 0.18 percent of the total workload in Air Force hospitals.

Senator YOUNG. With the closure of these two hospitals, the increase in the costs for hospital operation is the sum of the amount saved by the closure of these two facilities plus the $1.5 million difference reflected on page 76. I don't believe you explained the increase that offsets these savings. How much was this savings and what expenses offset it?

Colonel KOPAS. The savings realized from the closure of the two hospitals was $0.5 million. Offsetting is an increase of $2 million for medical supplies based on full-year cost in fiscal year 1973 of the increased unit cost actually experienced in the first half of fiscal year 1971.

AEROMEDICAL EVACUATION

Chairman ELLENDER. With regard to the aeromedical evacuation, would you please tell the committee just what this provides for and who is eligible for transport via this service?

Colonel KOPAS. This provides for worldwide aeromedical evacuation on military aircraft of the following categories of authorized beneficiaries: All members of the U.S. Armed Forces and their dependents, U.S. Public Health Service and their dependents, civilian

seamen under the Military Sealift Command, and U.S. Government contract employees. In the United States, Veterans' Administration beneficiaries may be moved on a routine basis along with Department of Defense civilian employees who become ill while on temporary duty. Additionally, movement within an oversea area and from overseas to the United States is authorized for Department of Defense civilian employees assigned overseas and their dependents, U.S. Coast Guard members and their dependents, and other U.S. Government employees. Humanitarian aeromedical evacuation of civilian patients on a lifesaving basis is performed worldwide.

Senator YOUNG. How many personnel does this provide evacuation service for a year—domestically and internationally?

Colonel KOPAS. During the calendar year 1971, there was a total of 83,523 patients moved throughout the world. Of this figure, 40,709 were in the domestic system and 42,814 within the overseas area and from overseas to the United States. In the category of civilians who are not authorized travel in military aircraft but for lifesaving humanitarian reasons may be evacuated, there were 337 moved worldwide, of which 212 were in the United States and 125 within overseas areas.

MEDICAL OPERATIONS PERSONNEL COST

Chairman ELLENDER. On page 77, I notice that you are anticipating a decrease in personnel costs due to a reduction in the average grade level of GS-rated employees. How many personnel do you expect to have to reduce to be able to achieve this reduction in pay costs?

Colonel KOPAS. We expect to achieve a reduction in medical operations civilian personnel costs without a reduction in personnel. As vacancies occur in General Schedule positions, job requirements will be reviewed to determine the feasibility of reclassifying these positions to a lower level grade. When circumstances do not warrant a lower grade classification, vacancies will be filled to the extent possible at lower graded trainee levels. These actions, together with our normal review of individual position essentiality and organizational staffing patterns, are expected to result in an average grade reduction and an associated savings in civilian payroll dollars. Additional dollar savings will accrue as a result of having two less compensable days in fiscal year 1973.

MEDICAL OPERATIONS

Senator YOUNG. Is there any one area that will feel the reduction more than any other? If so, I wish you would indicate which area it is and why is it being affected more than the others.

Colonel KOPAS. Mr. Chairman, it is not possible to predict the particular areas that will be most affected by the average grade reduction since vacancies occur at random. The requirement to pay for 2 less compensable days in fiscal year 1973 will have an across-the-board effect.

MEDICAL SUPPLIES

Chairman ELLENDER. Do you have any comment on the increase in the cost of medical supplies? I see here that it amounts to a healthy $1.7 million and would like to think that that is not entirely due to inflation.

Colonel KOPAS. The requirements for medical supplies are based on computation of projected workloads and unit cost factors. The unit cost increase associated with medicines prescribed in connection with outpatient care, which constitutes our largest dollar requirement, is 6.3 percent over the fiscal year 1972 cost. Inflation as a factor in price increases of medical items contributes in some degree to higher cost of medical supplies. The principal factor, however, is associated with the rapid technological advancements—new items entering the market—which are the real cause for cost increases in medical supplies. An extensive study on this subject was accomplished by the Army Medical Services. Due to the volume of medical items, statistical sampling was utilized. The review of the new items involved those entering into the system from 1964 through 1971. It was evident that the unit price increases were due only partly to inflation and substantially to addition of new items.

MEDICAL CARE IN NONSERVICE FACILITIES

Chairman ELLENDER. On page 77, dealing with medical care in nonservice facilities, I see that you request an increase of $16.5 million. You seem to justify this increase on the basis of three things, increased number eligible, increased participation, and rising costs. I wish you would indicate for the record how much of the $16.5 million you would attribute to each area.

Colonel KOPAS. The retired military personnel population increases 32,000 and the dependents of retired and deceased military personnel increases 77,000 in fiscal year 1973. As a result, the workload increases by 11,391 inpatient days and 31,630 outpatient visits for retired personnel, and 43,058 inpatient days and 183,846 outpatient visits for the dependents of retired and deceased military personnel. This added workload in civilian medical facilities (CHAMPUS) accounts for $7.9 million of the increase and the associated rising medical costs in the civilian communities account for the balance, or $8.6 million.

RETIRED PERSONNEL

Senator YOUNG. How many more retired personnel will become eligible for these benefits this year and how many dependents do you expect to fall under this coverage as a result?

Colonel KOPAS. Approximately 32,000 more Air Force retired and 77,000 more dependents of retired and deceased Air Force personnel will become eligible during fiscal year 1973.

MEDICAL CARE IN NONSERVICE FACILITIES

Senator YOUNG. You indicated that, among the retired personnel, the program has become more popular resulting in greater participation. Would you care to comment on what proportion of the personnel eligible are participating and what proportion you expect will participate once the retirees are completely informed about the program?

Colonel KOPAS. Yes, sir. During fiscal year 1971, civilian medical facilities provided care of 26.5 percent of the total inpatient workload generated by Air Force retired personnel. In fiscal year 1973, we anticipate that this percentage will increase to 31.9 percent. Beyond fiscal

year 1973, the amount of medical care for retired beneficiaries to be provided in civilian facilities will be influenced by the capability within our medical facilities compounded by the continual population growth of retired beneficiaries who will be seeking medical care.

DRUG ABUSE AND REHABILITATION PROGRAM

Chairman ELLENDER. Before we move on to the administrative expenses that you are requesting, I would like to know how your drug abuse program is progressing. What is the status of that program?

Colonel KOPAS. The drug program is progressing exceedingly well. The incidence rate showing positive urinalysis tests which we initially anticipated is not materializing. However, with the proposed random system of testing, the scheduled dates when a test is to be performed cannot be predicted by drug users. This provides a deterrent effect on experimental and casual users, and enables earlier detection of drug abuses. This random sampling technique will be fully implemented by July 1, 1972, and includes all the bases in the continental United States. We anticipate that our epidemiological laboratory at Brooks Air Force Base, Tex., will accomplish 900,000 analyses annually in support of all armed services personnel assigned to 10 States located in central and southeast United States. Analyses in the remainder of continental United States will be performed by the Army and Navy. The epidemiological laboratory at Wiesbaden Airbase, Germany, will be able to provide an annual capability of 416,000 analyses by July 1, 1972, in support of all Armed Forces personnel stationed in Europe. Analyses for all personnel in Southeast Asia will be accomplished by the Army.

We have completed the assignment of our social action officers and noncommissioned officers to 152 bases which have 1,000 or more military population per base. In addition, 10 major commands were also assigned social action personnel for a total assigned to bases and commands of 322 military officers and airmen. Their efforts are primarily in the area of education and rehabilitation of drug abusers. The fact that patients are volunteering to participate in treatment and rehabilitation reflects progress since the beginning of the program. We are cautiously optimistic that once the drug user is rehabilitated he will acclimate to public life and become a useful citizen.

Chairman ELLENDER. For the record, where are the Air Force's drug abuse facilities and who runs them?

Colonel KOPAS. The drug abuse program consists of five phases. The first three phases are medically oriented and involve detection through urinalysis testing, detoxification of patients with confirmed positive urine test, and psychiatric evaluation of patients. These are managed and controlled by medical personnel. Phase IV involves behavioral reorientation and group therapy in a nonpatient status followed by social rehabilitation. Phase V is a 1-year period of follow-on support for successful rehabilitees from earlier phases. The rehabilitation program is carried out entirely at the local installation level when deemed medically appropriated. Both phases IV and V are managed and controlled by social action officers and airmen. Urinalysis testing facilities in the Air Force are at Brooks AFB, Tex., and Wiesbaden AB, Germany. Detoxification is provided Air Force patients at the Air Force medical facility nearest the drug user's unit

of assignment. Phase III which is psychiatric evaluation and phase IV, the behavioral reorientation for the more serious cases involving drug dependency, are performed at USAF Special Treatment Center, Lackland AFB, Tex. In essence, we have both a centralized drug abuse center at Lackland AFB and decentralized drug abuse programs at Air Force bases depending on the severity of the individual case.

Chairman ELLENDER. How much is in the present budget for the program?

Colonel KOPAS. This request contains $6.6 million for the Air Force drug abuse and rehabilitation program.

FORCE PROGRAM IX: ADMINISTRATION AND ASSOCIATED ACTIVITIES

Chairman ELLENDER. The summary information on page 80 of the justifications pertaining to the request of $193,268,000 for "Administration and associated activities" will be included in the record.

(The information follows:)

PURPOSE AND SCOPE

Administration and Associated Activities consist of the direct administrative support of the departmental headquarters, major administrative headquarters, and field commands (not otherwse accounted for). It also provides for servicewide support and miscellaneous activities.

TOTAL—OBLIGATIONS BY PROGRAM ELEMENT GROUPINGS

[In thousands]

Program element groupings	Fiscal year— 1971 actual	1972 estimate	1973 estimate
Departmental headquarters	$47,605	$47,992	$44,150
Field headquarters and activities	76,960	80,487	76,950
Servicewide support	49,277	55,242	61,124
Other support activities	13,292	12,100	11,044
Total, administration and associated activities	187,134	195,821	193,268

OPERATION OF HEADQUARTERS AND SERVICEWIDE ACTIVITIES

General DELUCA. The administration and associated activities program provides financing for the operation of Headquarters USAF and selected servicewide activities as detailed in the justification book.

Illustrative of these are: Headquarters Command, the Data System Design Center, USAF Inspector General, the Air Force Accounting and Finance Center, and the Military Personnel Center.

These are departmental headquarters, field headquarters, servicewide support and other support activities.

In 1972, our requirement was $196 million, and in 1973 our requirements are $193 million.

DEPARTMENTAL HEADQUARTERS

Chairman ELLENDER. Moving now into the administration and associated activities budget program and the departmental headquarters in particular, I see on page 81 that you anticipate keeping the same civilian personnel strength while at the same time you are forecasting

a reduction in the average salaries. I realize that I have asked this question before, but the personnel strength figures were not indicated and I presumed that the reductions were achieved by means of personnel reductions. How then are you able to achieve the indicated reduction without reducing personnel? It doesn't seem likely that they would take reductions in their pay.

General DeLuca. You are quite right, Mr. Chairman, not many people will volunteer for a reduction in pay and the Air Force, of course, is not proposing this as a means of reducing our budget. Employee salaries will be reduced because of 2 less compensable days but by the same token employees will work 2 less days. We discussed this earlier in general terms but let me give you a specific example. A GS–11 employe in step 4 of that grade has an annual salary of $14,641 based on the current general schedule salary table. For pay administration purposes, this annual rate is divided by 2,080, the hours in a normal 260-day compensable year, to derive an hourly rate of $7.04. In fiscal year 1972, compensable hours are 2,096 or 262 days and the basic pay cost for this employee would have been $14,755.84. At the same hourly rate of pay, the cost would be $14,643.20 in fiscal year 1973 because there are 2,080 compensable hours or 2 days less than fiscal year 1972. The difference of $112.64 represents a reduction in average salary. You also will recall from our earlier discussion that we are reflecting average salary savings associated with a projected reduction in average grade from 7.7 to 7.6. We plan to achieve the grade reduction primarily as attrition occurs.

COMMUNICATIONS COST

Chairman Ellender. The next item on the table of major changes on page 81 related to the "Realinement of communications cost to more properly reflect cost against primary user . . .—$1.655 million." Would you please explain this?

Mr. Collins. This is a DOD project to provide for improved visibility of telecommunications requirements and resources within the present budget and program structures. The improved visibility will promote better management of total telecommunications resources at all levels in DOD. This realinement consolidates and presents communications program data which were previously included in noncommunications programs into additional, discrete communications program elements. The latter, when used in conjunction with previously designated discrete communications elements, will serve to fully identify total communications dollar and manpower requirements to the various management levels within DOD. The implementation process entails some realinement of communications resources between FYDP force programs and between resource categories within the force programs.

COMPUTER SUPPORT COST INCREASE

Senator Young. Would you also explain that last item on the major change list; that is, the increase for computer support? What are these funds to be used for?

General DeLuca. It is unfortunate that the phrase "computer support" was used. Actually the increase results from the rental of 26 IBM

Selectric (MT/ST) typewriters, six remote record units, one ITEL word processor machine, and a microstar reader/printer. It is anticipated that the use of the Selectrics will increase productivity 20 to 30 percent, reduce overtime, and create faster response.

FIELD HEADQUARTERS AND ACTIVITIES

Chairman ELLENDER. I notice that 121 personnel are to be reduced, resulting in a savings of $3.3 million. Would you please indicate in which commands the reductions are to be made and the civilian personnel strength that will remain at each of the commands?

Colonel POSNER. The reduction will occur in four commands. They are: Headquarters Command, −23, remaining strength, 1,872; Accounting and Finance Center, −69, remaining strength 1,751; Southern Command, −20, remaining strength, 524; and Data Systems Design Center, −9, remaining strength, 288.

DATA SYSTEMS DESIGN CENTER

Chairman ELLENDER. The last item on the major change table on page 82 is one relating to the move of the Data Systems Design Center. Tell us why the move was necessary.

Mr. FRUCHTER. Since its inception in October 1967, the activities of the Data Systems Design Center were dispersed among three locations. Computer space was occupied at Bolling AFB, while the Directorate of Systems Control, training facilities, and the reproduction and distribution center were all located at Suitland Hall, Md. The majority of administrative personnel were housed in the Forrestal Building in downtown Washington, D.C. Problems associated with this situation included:

(*a*) Severe financial burdens on enlisted personnel and junior officers,

(*b*) Costly administrative support and overhead,

(*c*) Separation of computer skills from immediate access to the computer room,

(*d*) Inflexible work hours resulting from transportation to the Forrestal Building.

Gunter AFB, in Montgomery, Ala., became available for relocation when the 32d Air Division, ADC, was inactivated. In addition to the availability of quarters for junior officers and airmen, the SAGE building offered a facility with environmental control and power cabling, ideal for a computer facility.

Chairman ELLENDER. Would you also please tell us where the center was moved from and where it was moved to and at what expense?

Mr. FRUCHTER. The Data Systems Design Center was moved from its locations in the Forrestal Building, Suitland Hall, Md., and Bolling Air Force Base to Gunter Air Force Base, Montgomery, Ala. The total one-time cost of the move to the Air Force was approximately $1,200,000. This cost will be partially offset by the savings that accrue with reduced payments to military personnel for quarters and subsistence brought about by the use of available Government quarters and messing facilities at Gunter Air Force Base.

SERVICEWIDE SUPPORT

Chairman ELLENDER. On page 83, in dealing with the servicewide support, I notice again the large reduction in personnel costs without the accompanying reduction in the number of civilian personnel. I presume that what applied in the departmental headquarters explanation of the same occurrence applies here as well, am I correct?

General DELUCA. Yes, sir; that is correct. Savings in average salaries and decreased man-year requirements are expected to reduce payroll costs by $2.3 million.

REALINEMENT OF COMMUNICATIONS COSTS

Chairman ELLENDER. The realinement of communications costs, which is the last item on the major changes table, I presume is similar to that just discussed with regard to departmental headquarters, but this time there is an increase of over $6.3 million. Inasmuch as this is such a large figure, would you please explain this realinement again for the record and tell the committee what these funds are for?

Mr. COLLINS. As stated previously, the realinement of telecommunications resources is a DOD project to provide for greater visibility of telecommunications resource data within the force program and program element structure of the 5-year defense program. I might add that the improvement in visibility is intended to promote better management at all levels in DOD. The realinement will consolidate and present communications program data, which previously was not readily identifiable in the 5-year defense program, into discrete communications program elements. The new program elements when used together with previously designated communications program elements will serve to fully identify total communications dollar and manpower requirements at various levels in the Department, e.g., DOD-wide, individual military department and defense agency or by force program or aggregation. The implementation process entails some realinement of communications resources between force programs as well as as between resource categories within force programs such as between the departmental headquarters and the service-wide support categories in force program IX.

These funds are for base communications support, such as base telephone systems, wire communications services, and other base level communications requirements. Funds are also included for such areas as the command post alerting network, the emergency alerting teletype system and the alternate alerting network.

DATA SYSTEMS DESIGN CENTER

Senator YOUNG. I see that there are two items in this table that have to do with computers and data processing in general. First, I would like to know what the relationship is between the data systems design center funded by departmental headquarters and the headquarters USAF data services center. Perhaps a brief summary of the functions of each would be helpful.

Mr. FRUCHTER. The function of the data system design center is to design, develop, implement, and maintain standard computerized systems used by bases and major command headquarters, throughout the

Air Force. The data services center serves Air Force activities in the Washington area as well as the Office of the Secretary of Defense. It develops and provides automatic data processing, computing and management science services, and statistical support.

Senator YOUNG. With the increase provided in this request, what is the amount provided for the data services center?

Mr. RHODES. This request provides $8,869,000 for the data services center.

Senator YOUNG. Would you please explain to the committee the relationship of the increase in data processing service to the USAF data services center, if any, and also explain specifically what the increase of $108,000 is for?

Mr. FRUCHTER. The increase of $108,000 is the net effect of adjustments in ADP funding at two locations: A reduction of $110,000 in contract services for ongoing projects at the data services center, offset by increases of $218,000 for ADP contract services at the Air Force Military Personnel Center. Of this total, $209,000 is to support the conversion effort to the advanced personnel data system. The remaining increase of $9,000 is for systems simulation and weighted airman promotion system (WAPS) test evaluation assistance.

OTHER SUPPORT ACTIVITIES

Chairman ELLENDER. In other support activities we again find the reduction in personnel costs without the accompanying reduction in personnel. However, in the explanation at the bottom of the page you indicate that there is a reduction in man-years in the audiovisual activities. I hope you will explain this seeming inconsistency to us.

General DELUCA. Mr. Chairman, the seeming inconsistency of reduced personnel costs without a reduction in personnel strengths is related to the difference between man-years or average strength and end-year strengths. Man-years are an expression of the degree to which authorized positions are utilized throughout the fiscal year. Man-years take into consideration the time phasing of increases or decreases in authorized manning levels and the lapse between the time a position becomes vacant and it is refilled. You will note, Mr. Chairman, that the June 30, 1971, strength for other support activities was 628 and reduces to 546 by June 30, 1972. Since these reductions will be occurring throughout fiscal year 1972, man-year requirements are estimated to be 595, slightly more than an average of the beginning and ending strengths. End strength for June 30, 1973, is projected to remain at the June 30, 1972, level of 546. Fiscal year 1973 man-years are estimated to be 544, slightly less than an average of beginning and ending strengths, and results from the lapse in refilling vacancies.

FORCE PROGRAM X: SUPPORT OF OTHER NATIONS

Chairman ELLENDER. The summary information on page 85 of the justifications pertaining to the request of $205,823,000 for the "Support of Other Nations" will be included in the record.

(The information follows:)

Program requirements

Total direct obligations:	*Thousands*
Fiscal year 1971, actual	$147,017
Fiscal year 1972, estimate	151,357
Fiscal year 1973, estimate	205,823

PURPOSE AND SCOPE

The funds requested for this program are primarily for operational, logistical and training support of other Nations. Principal items of cost include over-ocean transportation of materiel; aviation POL and spare parts; supplies; contract maintenance of aircraft and equipment; training; and several contracts covering passenger and commodity movement; operation of a maintenance facility and air traffic control.

In addition to support of Free World Forces, funds are included for support of units and activities engaged primarily in providing the United States share of support of NATO, CENTO and SEATO military headquarters and agencies and for operating costs of Military Assistance Advisory Groups and Missions in Europe, the Pacific, the Middle East, South and Central America.

TOTAL DIRECT OBLIGATIONS, BY PROGRAM ELEMENT GROUPING

	Fiscal years		
	1971	1972	1973
Support of allies	$145,339	$149,000	$204,604
International military headquarters and agencies	547	540	441
Military assistance advisory groups and missions	1,131	1,817	778
Total direct obligations	147,017	151,357	205,823

FORCE PROGRAM 10: FREE WORLD FORCES

General DeLuca. We do have here a total of $205 million requested for 1973 for the support of the Vietnamese, Laotian, and Korean forces in Southeast Asia.

We are asking for $129.7 million for South Vietnam O. & M. cost, and $74.2 million for Laos O. & M. cost, and $0.7 million for Korea O. & M. cost.

FLYING HOUR PROGRAM

Now, what this primarily supports, of course, is the flying hour program for the free world force. The flying hour program is 910,000 hours in 1972, and it is going up to 1,008,000 hours total in 1973.

Now, for Vietnam, there is an increase from [deleted] hours in fiscal year 1972 to [deleted] hours in fiscal year 1973.

Laos is [delected] hours in fiscal year 1972, leveling off at [deleted] hours in fiscal year 1973.

Here, Mr. Chairman, we do support the cost of supplies, petroleum, maintenance, contract services; these O. & M. costs are to support those aircraft that we have provided.

Chairman Ellender. Is that apart from what is provided in what we call the foreign aid program?

General DeLuca. That is separate and distinct from that.

Chairman Ellender. It is in addition to it.

General DeLuca. It is in addition to it.

Chairman Ellender. I repeat, this is in addition to whatever is furnished through the foreign aid program.

General DeLuca. That is correct, sir.

THAILAND BASES: REVISION OF MILITARY ASSISTANCE PROGRAM

Chairman Ellender. What about the Thai bases? You did not include them here.

General DeLuca. The Thai operations are in this program in fiscal year 1972. In fiscal year 1973, they revert to the military assistance program (MAP), a separate appropriation—foreign aid.

Chairman Ellender. They seem to shift from one to the other. As I recall, the foreign aid program was at one time an entirely separate appropriation.

General DeLuca. I believe it was 1968 or 1967.

Mr. Rhodes. Yes, sir. As we got more involved in the Southeast Asia conflict, we picked up the costs of South Vietnam, Thai, Korea, and Lao forces.

Chairman Ellender. Are any others reverting to the foreign assistance program?

Mr. Rhodes. Just Thailand is reverting back in fiscal year 1973.

Revision Advantages

Chairman Ellender. What is the advantage of returning it to that program?

Mr. Rhodes. Mr. Chairman, this is being done by all services. It was a decision made at some time that I am not exactly familiar with. I can insert in the record what the rationale is behind it.

Chairman Ellender. I wish you would, as well as any other transfers.

Mr. Rhodes. Thai is the only one.

(The information follows:)

Rationale/Thailand Funding Reverting to Foreign Aid

This transfer was in accordance with Section 513, Public Law 92-226, dated February 7, 1972, which limited funding for Thailand after June 30, 1972, to the Military Assistance or Foreign Military Sales Act.

Possible Later Transfers

Chairman Ellender. I guess the funds that you are paying for Vietnam, Laos, and Korea, will probably be transferred to foreign aid in time.

Mr. Rhodes. I would imagine in time; yes, sir.

Air Evacuation on Korea Casualties

Chairman Ellender. The amount for Korea is small, but what does that $7 million consist of?

Mr. Rhodes. We pay for the operation of their medical air evacuation. They have a C-54 type aircraft. They take their casualties from Vietnam back to Korea. That is the major portion of this cost. We pay for the POL and other operating costs of the C-54 aircraft. They have to evacuate their own.

Chairman Ellender. This is in connection with the war in South Vietnam?

Mr. Rhodes. Yes, sir.

Chairman Ellender. It has nothing to do with Korea, itself?

Mr. Rhodes. No, sir.

Training of Korean Soldiers in Vietnam

Chairman Ellender. Have you any money here to train such soldiers as go from Korea to South Vietnam by way of replacement?

As I understand, two South Korean divisions were sent to South Vietnam. In order to be able to do that, we had to train two extra divisions to replace those two that were removed from South Korea.

Mr. RHODES. I don't believe there is any money in this budget for training Koreans, but I will doublecheck it for you and insert it in the record.

(The information follows:)

TRAINING FUNDS/SOLDIERS FROM KOREA TO SOUTH VIETNAM

There are no funds in the Budget request for training Koreans to go to South Vietnam.

PROGRAM COMPONENTS

Chairman ELLENDER. Have you anything in here for Philippine training?

General DE LUCA. No, sir.

Chairman ELLENDER. The only thing you have here is for Laos, Vietnam, Korea, and all of that is in connection with the war in South Vietnam?

General DE LUCA. That is correct.

VIETNAM FLYING HOURS

Chairman ELLENDER. The major changes in the program costs for this budget program as a whole are provided on page 86 of the justification and I would like to ask you a few questions with regard to each. The first item on the list is an increase of $4.7 million for increased depot/level type overhaul and maintenance of aircraft and equipment. I presume that this increase is based on the anticipated increase in flying hours for free world forces in Vietnam but I would like for you to break this down a little further and indicate how the figures were arrived at.

General DE LUCA. The $4.7 million is required to provide Laos with [deleted] attrition T–28D aircraft. Each aircraft will be reconfigured from a T–28A to T–28D model at an O&M cost of [deleted] each.

INCREASE IN TRANSPORTATION

Chairman ELLENDER. The second item on the list is "Increased transportation . . . $4.298 million." Would you please tell the committee what is included in this activity and why it needs to be increased by this much this year?

General DE LUCA. The transportation increase is to cover the shipping costs of ammunition and explosives, aircraft spares and supplies required to support the programed Vietnamese flying hour increases for tactical sorties and incountry training.

AVIATION FUEL AND SPARE PARTS

Chairman ELLENDER. With regard to aviation fuel and spare parts, the same question applies: what is the basis for your estimates?

General DELUCA. The basis for computing aviation fuel and spare parts is the application of historical factors to total flying hours by type of aircraft. The increased funding requested for aviation fuel and spare parts is the cost factors by type aircraft applied to the 98,159 flying-hour increase in fiscal year 1973.

TRAINING REQUIREMENTS

Chairman ELLENDER. The fifth item on the list shows a decrease in training program requirements for contract training and related travel of $1.3 million. Would you please explain what this reduction is? How many fewer personnel will be trained and of what nationalities?

General DELUCA. Sir, we pay the travel and living allowance costs for students enrolled in various training programs. The total student input goes from 3,886 in fiscal year 1972 to 2,634 in fiscal year 1973 for a net student decrease of 1,252. South Vietnamese student enrollments will drop from 3,695 in fiscal year 1972 to 2,307 in fiscal year 1973. Laotian inputs will increase from 191 in fiscal year 1972 to 227 in fiscal year 1973.

ONE-TIME CONTRACTS

Senator YOUNG. With regard to the other catchall decreases related to contractual services for maintenance of bases, how are you able to forecast decreases in this area? Are there bases being closed or phased out?

Mr. RHODES. These contractual services are one-time contracts utilized during the transition from Air Force to VNAF operations, which is normally 1 year. A contractor trains VNAF personnel in functions normally accomplished by civil engineering personnel. The decrease is directly related to the expiration of the contracts at Binh Thuy, Pleiku, and Bien Hoa.

CONTRACTS FOR BASE MAINTENANCE

Senator YOUNG. You refer to contractual services for the maintenance of bases. What bases are involved, and what sort of contracts are you referring to?

General DELUCA. The base maintenance contracts involved are for Binh Thuy, Pleiku, and Bien Hoa. The base maintenance contractual services we referred to are for bases transferred to the VNAF where we have withdrawn our USAF civil engineering personnel. We have a contractor perform the base facility operation and maintenance for the VNAF for 1 year at a reduced scope tailored to fit VNAF requirements. The contracts at these bases also include craft training for VNAF civil engineer personnel for Soc Trang and Phu Cat, as well as Binh Thuy, Pleiku, and Bien Hoa.

Senator YOUNG. In regard to these base maintenance contracts, would you please explain to the committee how these are negotiated, who holds the prime or major contracts at this time, and when these contracts come up for renewal if they do at all?

General DELUCA. These base maintenance contractors are selected through competitive negotiation which involves submission of technical and price proposals from each interested source, a review of each technical proposal for adequacy, and negotiation of price and other contract provisions with each technically acceptable proposal. The Logistics Services Corp. (a subsidiary of Philco-Ford) holds the prime contracts at this time. These contracts for maintenance of VNAF bases were for 1 year, but have been extended on a quarterly basis at reduced scope to provide maintenance of the facilities still occupied by

USAF personnel. The Bien Hoa contract was extended 90 days to provide training for VNAF civil engineer personnel scheduled to go to Phu Cat Airbase.

AIRLIFT AND MAINTENANCE

Chairman ELLENDER. The last item on page 86 is for an increase of $38.3 million for increased funding for airlift and maintenance. Please explain.

Mr. RHODES. It provides for cargo movement and aircraft maintenance in Laos to be contracted with Air America and Continental Air Service.

FLYING HOURS INCREASE IN VIETNAM

Chairman ELLENDER. I know that the matter of the increased flying hours and the rationale behind it have been discussed at length, both here and in other committees, but I wish you would explain to the committee just how the distribution of that increase, as given on page 87 of the justification, was determined. For example, how did you determine that the flying hours in Vietnam would be what you indicate?

Colonel RETTBERG. Distribution of the flying hour increases shown on page 87 results from changes in either the average number of aircraft during the year or the aircraft utilization rates. Flying hours are developed by multiplying the average number of programed aircraft—by type—times utilization rates that vary by type aircraft. These rates are developed based on factors such as aircraft capabilities, mission requirements, and past performance. Specifically for the VNAF, the average number of aircraft increases by 22 percent from fiscal year 1972 to fiscal year 1973 while flying hours increase by 27 percent during the same time period.

Chairman ELLENDER. Given the number of flying hours that you have just explained, I wonder if the costs vary by country for a comparable number of flying hours? If they do, I would like you to explain to the committee the hows and whys of any variations. Can you do this?

General DELUCA. Yes, sir. Standard costs established from historical data are used to compute costs for flying hours by type aircraft. There are no differences in the costs per flying hour for the same type and model of aircraft by country. For example, the cost per flying hour for a C–123 in the United States is the same as it is in Asia.

INTERNATIONAL HEADQUARTERS

Chairman ELLENDER. Turning now to International Military Headquarters and Agencies, you indicate that there is a decrease of $101,000, a decrease of a bit less than 20 percent. Your explanation on page 88 attributes this to decreased requirements associated with the travel program. As I look at the Summary of Requirements in the middle of page 88, I notice that $47,000 of the decrease is in civilian personnel and that another $47,000 is in travel. Would you please explain how the civilian personnel reduction is related to travel?

Mr. RHODES. The explanation on page 88 is in error. It should have read as you just stated it. There is no direct relation between the reductions in civilian personnel and travel. A reduction in average grades and two less compensable days in fiscal year 1973 is the primary reason for the decreases in civilian pay. The travel reduction is related to one-time movement costs in fiscal year 1972.

TRAVEL CUTBACK

Chairman ELLENDER. The $47,000 cutback in travel represents a cutback of over 20 percent, but it still is greater than the 1971 funding for travel. Would you please explain to the committee what sort of travel will be curtailed and what effect you think this will have on the Air Force performing its assigned mission?

Mr. RHODES. The reduction in travel from fiscal year 1972 to fiscal year 1973 results from one-time movement costs in fiscal year 1972. The reason the fiscal year 1973 estimate is higher than fiscal year 1971 actual is due to the change in the Joint Travel Regulation which increased per diem rates. The reduction will not have an adverse effect on performance of the Air Force assigned mission.

CENTO SUPPORT

Senator YOUNG. Inasmuch as the Air Force is the executive agent for the Central Treaty Organization (CENTO), does this mean that all of the funds requested here are to support that assignment? Or are some of the funds requested for other reasons? Please explain.

General DELUCA. Funds requested here are to support the Central Treaty Organization, for which Air Force is executive agent, plus the costs (primarily travel) for military personnel assigned to the North Atlantic Treaty Organization (NATO) and the Southeast Asia Treaty Organization (SEATO) military headquarters and agencies.

MILITARY ASSISTANCE ADVISORY GROUPS

Chairman ELLENDER. With regard to the military assistance advisory groups and missions that you handle, on page 89, you indicate a reduction in funding in fiscal year 1973 of a little over $1 million because of the transfer of funding responsibilities for Military Assistance Advisory Groups in the Middle East and South/Central America to the Army. Would you please explain to the committee why this transfer was made and what effect it has on the Air Force program in the various countries involved?

Mr. RHODES. First, I would like to make a correction in the justification book. Transfer for funding was for the Military Assistance Advisory Groups in the Middle East and Africa, south of the Sahara not the Middle East and South/Central America as stated. The transfer was made in accord with a Joint Chiefs of Staff change in the unified command plan which assigned administrative and logistics support for the Military Assistance Advisory Groups and Missions in the Middle

East and Africa, south of the Sahara to Army. The change has no effect on the Air Force program in the various countries involved as the responsibility was purely an administrative assignment not involving the Air Force mission.

Chairman ELLENDER. I presume that the Army, in picking up this added funding responsibility, has increased its request accordingly. Do you know how much the Army has increased its request to take care of this in 1973? If you don't have the information available right now you may supply it for the record.

General DELUCA. The Army request for fiscal year 1973 was increased $1.214 million for the support of Military Assistance Advisory Groups previously supported by the Air Force.

AIR FORCE SKILL CENTER

Senator YOUNG. On page 7 of the justification there is an increase of 138 employees reflected for the Air Force Skill Center. Would you please explain to the committee what the Air Force Skill Center is?

Colonel LUND. Sir, the skill center is a vocational training center which was established to provide airmen leaving the service with civilian marketable skills. The Air Force Center is located at Forbes Air Force Base, Kans., and currently teaches 11 courses. These subjects are auto tuneup; heating and air-conditioning; major appliance repair; hotel/motel clerk; sales manager; business machine repair; bricklayer; auto air-conditioning; wire splicing and welding. The average course length is 7 weeks.

The program is strictly voluntary and is available to airmen, technical sergeant and below, with no marketable civilian skills and have no more than a high school education.

Chairman ELLENDER. How many personnel are involved in the center at the present time, and how many of those are military?

Colonel POSNER. There are 34 people presently assigned to the Skill Center activity of which 26 are military. In addition, 42 airmen are assigned to the base operations activity supporting the center student load.

Chairman ELLENDER. Why are the additional personnel needed? Has some new requirement been placed on the center?

Colonel POSNER. Sir, the Skill Center was programed to begin operations during the third quarter of fiscal year 1972. This was a new program for the Air Force and the initial class consisted of 31 students. At the present time the student load is 240 and this is expected to climb to approximately 400 by the end of fiscal year 1972 and to a student load of 800 in fiscal year 1973. The additional personnel requested is based on this increased workload.

Senator YOUNG. How much is requested in this budget for the operation of the center and where is it located in this justification?

General DELUCA. Sir, the fiscal year 1973 O. & M. budget includes $5.3 million for the Skill Center.

These funds are included in the program element grouping "Training operations" under Force Program VIII.

FEDERAL SIMULATION CENTER

Chairman ELLENDER. Also on page 7 of the justification is a request for 41 additional full-time permanent employees at the Federal Simulation Center. What is the function of this organization?

Mr. FRUCHTER. The Federal Automatic Data Processing Simulation Center is a new organization, formed at the request of the General Services Administartion (GSA) for the purpose of providing technical support and services throughout the Federal Government for simulation and analysis of automated data processing systems. The support and services rendered by the Federal ADP Simulation Center will assist Federal agencies in two main areas; procurement or reutilization of automatic data processing systems, and management of automatic data processing systems. The Air Force will act as executive agent within the executive branch for the operation of the Federal ADP Simulation Center, and will be reimbursed for funds expended in operation of the center by the General Services Administration.

Chairman ELLENDER. How many personnel are employed at the Simulation Center at the present time and how many of those are military?

Mr. FRUCHTER. At present, there are no employees at the Federal ADP Simulation Center. Beginning on July 1, 1972, the center will be authorized 41 civilian and 11 military personnel.

Chairman ELLENDER. What is the cost of the military Air Force O. & M. personnel at the Simulation Center?

Mr. FRUCHTER. Mr. Chairman, all manpower and other costs associated with operation of the center will be reimbursed to the Air Force by the General Services Administration. Funds for this purpose will be generated by GSA through charges levied on the users of the center's services throughout the Federal Government. To the extent that the Air Force uses the services of the center, the Air Force will pay its proportionate share of aggregate cost.

Chairman ELLENDER. Why are the additional 41 personnel needed?

Mr. FRUCHTER. The Federal ADP Simulation Center is a new organization. The 41 full-time permanent employees reflected represent civilian manning required to staff the center, to fullfill anticipated workloads and growth of ADP simulation activity governmentwide. Specifically they will build simulation models to analyze ADP hardware and system requirements and design ADP systems to provide for more effective and economical use of ADP resources.

General DELUCA. My summary, pure and simple, Mr. Chairman, is every one of those O. & M. dollars is tight and we are stretching them. I heard you yesterday, and I am going to stop right there.

In the Air Force, in fiscal year 1972, Mr. Chairman, we are having difficulties making ends meet due to the lack of O. & M. dollars. Consequently, General Ryan and Secretary Seamans have asked everything prudently possible be done to make ends meet and hold down those reprogramings.

AIR FORCE STOCK FUND

STATEMENT OF GEN. JOSEPH R. DE LUCA, DIRECTOR OF BUDGET, HEADQUARTERS, USAF

Chairman ELLENDER. At this point in the record, there will appear a statement from the Department of the Air Force relative to the Air Force Stock Funds.

(The information follows:)

The Air Force Stock Fund is used for effective financial and supply management of specified consumable-expense-type stocks. The coverage of this fund remains essentially the same as in past years.

There are seven management divisions in the fund: The clothing store, the commissary, the fuels, the Academy cadet store, the medical-dental, the general support, and the systems support.

The Stock Fund facilitates the development of requirements, the execution of the procurement process, and the management of storage and issue, as a common function for the entire Air Force. Charges to the using Air Force program to reimburse the Stock Fund records expenses as they are incurred.

PROGRAM REQUIREMENTS

Program levels are determined by the sales program, which is based upon meeting customer requirements. For example, the number of hours in the Air Force flying-hour program is the key factor in setting the level of operations in the aviation fuels category of the fuels division of the Stock Fund. The hours flown by each aircraft, multiplied by the consumption rate, determine the amount of fuel required for that aircraft. Total fuel required, multiplied by a standard price, provides a calculation of the dollar value of projected sales from the Stock Fund.

Using sales requirements, inventory positions are determined to assure satisfactory logistical support for normal peacetime operations. However, operating inventories are maintained at levels required for emergency demands. A war readiness materiel (WRM) requirement is established based on stocks needed to support approved war plans. For example, the FY 1973 aviation fuel WRM requirement is $145.3 million.

CASH REQUIREMENTS

Inventory levels, both operating and WRM, fluctuate in response to changing requirements, changes in scope of operations, and supply management. These fluctuations result in capital drawdown or the generation of additional cash. The FY 1973 estimate projects a cash increase of $87 million in fiscal year 1972 and an additional $145.3 million in fiscal year 1973. Stock Funds are required to maintain an amount of cash on hand necessary to meet disbursements.

PLANNED OPERATIONS

Tables (I, II) to show actual and planned operations are presented in table I:

TABLE I.—AIR FORCE STOCK FUND—SALES, INVENTORY, AND PROCUREMENT

[In millions of dollars]

	Fiscal year 1971 actual	Fiscal year 1972 estimate	Fiscal year 1973 estimate
Total sales	$2,958.8	$2,945.0	$2,923.9
Total procurement	2,766.6	2,798.1	2,744.0
Total inventories	2,104.7	1,840.3	1,669.5

The decreases in sales are due to lower customer requirements resulting from reductions in Air Force programs. Procurement and inventory reductions are due to both reduced sale projections and the draw down of inventories as a result of continuing inventory retention policy evaluations.

The actual FY 1971 and projected FY 1972 and FY 1973 financial condition of the stock fund is shown in table II.

TABLE II.—DEPARTMENT OF THE AIR FORCE, AIR FORCE STOCK FUND, STATEMENT OF FINANCIAL CONDITION

[In millions]

	June 30, 1971 actual	June 30, 1972 estimate	June 30, 1973 estimate
Assets:			
Cash with Treasury	$89.4	$186.7	$332.0
Accounts receivable	111.0	113.2	111.9
Inventories:			
Operating and other	1,121.7	1,014.8	1,047.6
War readiness	171.8	185.1	186.0
Long supply	811.2	640.4	435.9
Total inventories	2,104.7	1,840.3	1,669.5
Other assets	47.5	72.2	72.2
Total assets	2,352.6	2,212.4	2,185.6
Liabilities:			
Accounts payable	277.1	308.2	300.1
Other liabilities	—75.0	—76.2	—75.6
Total liabilities	202.1	232.0	224.5
Government investment:			
Cash authorization	—827.0	—816.7	—816.7
Capitalized inventories	2,868.9	2,791.6	2,766.8
Operating results	108.6	5.5	11.0
Total Government investment	2,150.5	1,980.4	1,961.1
Total liabilities and Government investment	2,352.6	2,212.4	2,185.6

As shown in Table II, the total assets decrease about 7 per cent over the three year period. This decrease is due primarily to inventory decline. Offsetting inventory decline is the net increase of $10.3 million resulting from a cash transfer in of $69 million during FY 1972 from the Defense Supply Agency to more nearly equalize the level of operating cash in Department of Defense stock funds.

Table II also reflects an equity decrease of $189.4 over the three year period of which $170.1 million will occur during fiscal year 1972. Capitalized inventories decline $102.1 million due to item responsibility transfers. Operating results decline $97.6 million due to purging of unserviceable assets. These are offset by a net cash investment increase of $10.3 million.

AREAS OF ACTIVITY

Clothing Store Division. Uniform clothing items are sold directly to military personnel on a cash basis. Initial sales at the time of enlistment are charged against a credit established on the enlistee's pay record. Subsequently, each airman receives a cash monthly maintenance allowance for replacement items he needs. Revenue for the Clothing Store Division in FY 1973 is estimated at $35.1 million and total inventory at $9.6 million. Considering operating stocks of $6.7 million, this is a turnover rate of 5.2 which, because of the required stocking of back-up sizes, is quite satisfactory.

Commissary Division. Perishable and non-perishable subsistence items are included in the Commissary Division. Food sales are of two types—troop feeding, with charges against the Military Personnel appropriation, and sales to authorized individual customers from commissary stores on a cash basis. Total revenue in FY 1973 is estimated at $913.1 million and total inventory at $78.7 million. Based on operating stocks of $65.6 million, the turnover is 13.9.

Fuels Division. Aviation and missile fuels and related items are issued to and resulting charges are made to the appropriation of the using organization. Total division income in FY 1973 is estimated at $706.8 million and total inventory at $223.8 million. With operating stocks of $64.4 million, this reflects a turnover rate of 11. Half of the stocks in the fuels division are War Readiness Materiel.

Air Force *Academy Cadet Store Division.* Clothing, school supplies, and personal items are sold to the cadets on both a charge basis against their pay account and for cash. Revenue in FY 1973 is estimated at $3.9 million and end year inventory at $2.6 million. This reflects a turnover rate of 1.5. Inventory backup required at the end of the year to meet size demands in all of the cadet distinctive and other clothing items result in the low turnover rate.

Medical-Dental Division. The Air Force Medical Program is supported by this Division. Sales are made to Air Force medical facilities on a charge basis, with reimbursement to the fund from the operating appropriations. Income in FY 1973 is estimated at $56.5 million, inventory at $29.4 million. The bulk of this inventory is WRM. Considering operating stocks of $8.4 million, the annual turnover rate is 6.7.

General Support Division. All base procured items not included in another stock fund division, such as office supplies and equipment and housekeeping supplies, are included in the General Support Division. Sales are made from base supply outlets to base customers, and charged against the customers' accounts. Sales are estimated at $669 million in FY 1973, and inventory at $206.9 million. Operating stocks will constitute $142.7 million, so the resultant turnover rate is 4.7.

Systems Support Division. Inventory requirements for expense items procured and distributed through the Air Force depot system are financed in the Systems Support Division. Included are aircraft, missile, vehicular, communications, and electronics repair parts. These items are stocked in depots and base supply outlets. Issues are charged against customers' funds. Revenue in FY 1973 is estimated at $539.5 million and inventory at $11.1 billion. Considering operating stocks of $650.5 million, the turnover is .8. The turnover rate is lower than in other Divisions of the stock fund because necessity to maintain stocks at all bases and depots. Also the great variety of items for all Air Force supported systems results in requirement to maintain at least small quantities of many items at numerous operational locations.

This completes my statement, Mr. Chairman. I will be happy to answer any questions you might have.

AIR FORCE INDUSTRIAL FUND

STATEMENT OF MAJOR GENERAL JOSEPH R. DE LUCA, DIRECTOR OF BUDGET HEADQUARTERS, USAF

Chairman ELLENDER. Also at this point there will appear a statement dealing with the Air Force industrial fund.

(The statement follows:)

INDUSTRIAL FUND

Mr. Chairman and members of the committee, I shall review the planned operations of the Air Force Industrial Fund for Fiscal Year 1973.

The Industrial Fund is used to finance services, usually of an industrial or commercial type, that serve various users. The Industrial Fund concept originated in the National Security Act Amendments of 1949. The purpose of the concept is to control effectively the cost of programs and work performed; provide adequate, accurate and current cost data; and facilitate economical administration and operation. Costs of operation are initially charged to the fund which is, in turn, reimbursed by a using organization or program whose appropriated funds are charged at the time the service is performed. Reimbursement rates are determined so as to keep the fund solvent without making a profit or a loss. Cash working capital is provided each activity in the fund to pay operating expenses until reimbursements are received from customers for goods or services furnished. Development of the budget estimate and operating program is based upon users' stated requirements.

Authorized expenses include civilian pay and allowances, supplies and material, maintenance of plant and equipment, and other operating costs associated with the production of end items or services. The acquisition costs of plant and equipment and military personnel pay and allowances are not Industrial Fund expenses.

AREAS OF ACTIVITY

During FY 1973 the Air Force Industrial Fund will finance depot maintenance activities at the five Air Materiel Areas and Newark Air Force Station and Depot Maintenance contract work administered by them; the worldwide Military Airlift Command Airlift System; 9 Printing and Duplicating plants, and 30 Laundry and Dry Cleaning plants. The Alaska Communication System previously financed by the Air Force Industrial Fund has been sold pursuant to

Public Law 90–135. Three Research and Development activities, the Arnold Engineering Development Center in Tennessee, the Rome Air Development Center in New York and the Air Force Flight Test Center in California, which had been operating under Service Fund procedures within the Air Force Industrial Fund have been transferred to direct RDT&E financing for FY 1973. In FY 1973, the Air Force Industrial Fund activity is expected to total $2.0 billion. The Depot Maintenance activity accounts for the largest single portion of the Fund.

DEPOT MAINTENANCE

The Depot Maintenance activity provides for organic depot and contract depot maintenance for aircraft repair and modification, missile repair, engine overhaul, overhaul of exchangeable items, area support, local manufacture and other major item repair and modification.

Organic depot maintenance is performed by (1) Ogden Air Materiel Area; (2) Oklahoma City Air Materiel Area; (3) Sacramento Air Materiel Area; (4) San Antonio Air Materiel Area; (5) Warner Robins Air Materiel Area; and (6) Newark Air Force Station. Organic depot maintenance activities provides shop facilities, equipment and personnel of higher technical skill than are normally available at organizational and intermediate maintenance.

The Air Force organic depot level maintenance capability meets only mission essential requirements on a continuing depot level maintenance to sustain operations under emergency or wartime conditions. This means that organic depot maintenance capability is planned to accomplish no more than 70 percent of gross mission essential depot maintenance work-load requirements with a facility capacity loading at a minimum rate of 85 percent, on a 40-hour week, one shift basis.

Contract depot maintenance, and that done by the other DOD components on an interservice basis, is used to meet all other depot maintenance requirements beyond the defined organic depot maintenance capability.

Revenue in FY 1973 will total $1.3 billion. Service is provided primarily to the Air Force with financing from the Operation and Maintenance appropriation of the Air Force and Air National Guard and from the MAC Airlift Service Industrial Fund.

MILITARY AIRLIFT COMMAND AIRLIFT SERVICE

The principal and basic function assigned to MAC is that of maintaining and operating a global military airlift system designed to support an adequate emergency readiness position. This function is the key to the MAC mission of providing airlift services required by the Department of Defense under all conditions. To insure the capability to accelerate immediately to flying rates necessary to perform emergency and wartime missions, the entire military airlift system must be operated and exercised at a rate which will provide adequate training and realistic operational experience. MAC must have in being the necessary military airlift system, which consists of bases, aircraft, air crews, aerial ports, communication systems, supporting personnel, and equipment. The maintenance of high levels of training and readiness produces an airlift capability which, in the interest of economy, should be and is used to minimize DOD airlift and logistics costs. To be prepared for its wartime mission, MAC operates a peacetime airlift service under Air Force Industrial Fund.

The Airlift Service provides air transportation between the United States and overseas areas for the Department of Defense and for other authorized agencies of the U.S. Government. The service includes: (1) established channel scheduled transportation of passengers, cargo and mail; (2) joint service exercises and air-borne training; (3) special assignment missions; (4) international and domestic aeromedical evacuation; and (5) special missions for the President and other U.S. and foreign dignitaries.

The role of the commercial air carriers, in support of defense needs, is to replace airlift capability in routine, non-hazardous operations when the military force is performing its basic airlift mission under emergency and wartime conditions or participating in exercess and tactical training in non-emergency periods. We have been successful in obtaining continuing air carrier participation in the Civil Reserve Air Fleet (CRAF) program with modern aircraft, and this civilian cooperation is forecast to continue. By legislative direction and DOD policy, commercial airlift is used for the movement of DOD passengers and mail, except to locations where use of U.S. commercial air carriers is impractical.

Users' stated airlift requirements are for 0.7 billion passenger ton miles, 2.2 billion cargo ton miles, 1.1 billion special assignment and exercise and training ton miles, and 0.5 billion mail and other ton miles. To satisfy these requirements in FY 1973 will require augmentation of the MAC military airlift force with $320 million of commercial airlift. The airlift service revenue in FY 1973 will total $716 million, of which 34% will be from the Army, 15% Navy, 49% Air Force, and 2% non-DOD. In actual costs (which are less in total than revenue because of the recovery of prior year losses) the Transport Mission (which does not include Aeromedical and Special Air Missions) will incur expenses of $660 million, of which $320 million, or 49%, will be incurred with commercial carriers.

PRINTING AND DUPLICATING PLANTS

These plants provide area support for the Air Force and other military agencies. Sales in fiscal year 1973 are expected to total $18.9 million. These plants will produce 1.6 billion printing units, while 1.5 billion units are on contract. A printing unit is one 8 inch by 10½ inch sheet of paper printed on one side in one color.

LAUNDRY AND DRY CLEANING PLANTS

These provide area support for military personnel, hospitals, and other Department of Defense agencies. In fiscal year 1973 sales will amount to $8.5 million, of which 33 percent is for individuals. Total production will be 65.5 million pieces of laundry and dry cleaning.

FINANCIAL OPERATIONS

In table I, Air Force Industrial Fund operations are summarized for fiscal years 1971 through 1973. Revenue decreases over the period are due to elimination of the Alaska Communication Service and service funding of research activities. Also, customer requirements for airlift transportation and depot maintenance have declined. Expenses have also decreased in direct relation to reductions in overall Air Force operations and flying hours. Revenues and expenses will balance for the three year period due to rate increases at mid-fiscal year 1972 which were necessary to offset a deficit position projected for end fiscal year 1972.

TABLE I.—DEPARTMENT OF THE AIR FORCE, AIR FORCE INDUSTRIAL FUND, STATEMENT OF REVENUE AND EXPENSE

[In thousands of dollars]

	1971 actual	1972 estimate	1973 estimate
Revenue:			
Depot maintenance	$1,349,979	$1,353,227	$1,296,535
Military airlift	855,421	810,730	716,381
Printing and duplicating	17,430	18,433	18,918
Laundry and dry cleaning	8,130	8,431	8,465
Alaska Communication System	16,868		
Research activities	142,651	141,122	
Total revenue	2,390,479	2,331,943	2,040,299
Expenses:			
Materials, supplies and parts used	597,248	570,216	546,517
Salaries and wages	605,973	621,667	580,303
Contractual services	1,119,786	1,151,220	855,182
Other	24,320	19,251	17,897
Goods manufactured for inventory	−3,705		
Cost of goods and services produced	2,343,622	2,353,354	1,999,899
Decrease in unbilled cost	45,799	11,711	7,300
Cost of goods and services sold	2,389,421	2,365,065	2,007,199
Net income or loss	1,058	−33,122	33,100
Analysis of retained earnings:			
Retained earnings, start of year	−10,150	2,456	−30,666
Adjustment of prior year revenue	30,207		
Adjustment of prior year expense	−18,659		
Balance at end of year	2,456	−30,666	2,434

FINANCIAL STATUS

Table II shows the financial status of the Air Force Industrial Fund for end fiscal year 1971 and a comparable estimate for end fiscal year 1972 and fiscal year 1973. Cash is projected to increase in fiscal year 1973 because of the higher rates announced in mid-fiscal year 1972. Accounts receivable, inventories, and current liabilities will decline in consonance with lower sales as customer requirements decline due to reductions in the overall Air Force program. Government investment is forecast to equalize over the three year period after declining due to the projected fiscal year 1972 deficit and subsequent recovery in fiscal year 1973 due to the rate increase.

TABLE II.—DEPARTMENT OF THE AIR FORCE—AIR FORCE INDUSTRIAL FUND
STATEMENT OF FINANCIAL CONDITION

[In thousands of dollars]

	June 30, 1971, actual	June 30, 1972, estimate	June 30, 1973, estimate
Assets:			
Cash with Treasury	135,588	117,588	154,088
Accounts receivable	125,388	100,814	73,422
Inventories:			
Work in process	60,631	63,620	63,620
Work-in-process contract plants	81,729	67,029	59,729
Less progress payments	−106,290	−97,655	−97,326
Materials and supplies	103,150	99,322	95,555
Net inventories	139,220	132,316	121,578
Advances	450	335	335
Other assets	12,405	8,642	6,670
Total assets	413,051	359,695	356,093
Liabilities:			
Current liabilities	257,354	241,635	205,954
Reserve for major maintenance	35	10	10
Undistributed cash items	−15,341	−19,019	−19,019
Other liabilities	12,405	8,642	6,670
Total liabilities	253,453	231,268	193,615
Government investment:			
Cash authorization	113,000	113,000	113,000
Assets capitalized, less liabilities assumed	44,142	46,093	47,044
Retained earnings	2,456	−30,666	2,434
Total Government investment	159,598	128,427	162,478
Total liabilities and Government investment	413,051	359,695	356,093

SUMMARY

Mr. Chairman, in conclusion, the Operation of the Air Force Industrial Fund has improved the management and the visibility of the financial operations they encompass. By the application of proven business type accounting methods, funding is matched to operating results. Industrial Fund operations require managers to be fully responsible for a direct accounting of the money they spend, the cost of each job and the most economical method of accomplishing the work. This contributes to effective and efficient performance of these tasks.

Mr. Chairman, I will now be pleased to answer any questions that you or members of the Committee may have.

SUBCOMMITTEE RECESS

Chairman ELLENDER. Thank you very much, gentlemen.

The subcommittee will recess until 10 a.m. tomorrow.

(Whereupon, at 5:25 p.m., Thursday, February 17, the subcommittee was recessed, to reconvene at 10 a.m., Friday, February 18.)

DEPARTMENT OF DEFENSE APPROPRIATIONS FOR FISCAL 1973

FRIDAY, FEBRUARY 18, 1972

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, D.C.

The subcommittee met at 10 a.m., in room S–126, the Capitol, Hon. Allen J. Ellender (chairman) presiding.

Present: Senators Ellender, Young, Allott, Symington and Case.

DEPARTMENT OF DEFENSE

DEPARTMENT OF THE AIR FORCE

AIRCRAFT AND MISSILE PROCUREMENT, AIR FORCE

STATEMENT OF LT. GEN. OTTO J. GLASSER, DEPUTY CHIEF OF STAFF, RESEARCH AND DEVELOPMENT

ACCOMPANIED BY:

MAJ. GEN. JOSEPH R. DeLUCA, DIRECTOR OF BUDGET, HEADQUARTERS, U.S. AIR FORCE

MAJ. GEN. GEORGE H. McKEE, DIRECTOR OF MAINTENANCE ENGINEERING, DEPUTY CHIEF OF STAFF, SYSTEMS AND LOGISTICS

MAJ. GEN. JAMES A. HILL, DIRECTOR OF AEROSPACE PROGRAMS, DEPUTY CHIEF OF STAFF, PROGRAMS RESOURCES

BRIG. GEN. CHARLES E. BUCKINGHAM, ASSISTANT FOR R.D. & A. PROGRAMING, DEPUTY CHIEF OF STAFF, RESEARCH AND DEVELOPMENT

BRIG. GEN. JONAS L. BLANK, DIRECTOR OF SUPPLY AND SERVICES, DEPUTY CHIEF OF STAFF, SYSTEMS AND LOGISTICS

COL. E. H. STEELNACK, DEPUTY DIRECTOR OF SUPPLY AND SERVICES, DEPUTY CHIEF OF STAFF, SYSTEMS AND LOGISTICS

BUDGET REQUESTS

Chairman ELLENDER. The subcommittee will please come to order.

This morning we will continue with the appropriation needs of the Air Force.

The two appropriations "Aircraft Procurement, Air Force" and "Missile Procurement, Air Force" will be discussed by Lt. Gen. Otto J. Glasser as the principal witness.

The fiscal year 1973 budget estimate for "Aircraft Procurement, Air Force" is $2,612,700,000 and that for "Missile Procurement, Air Force" is $1,772,300,000.

PROGRAM AND FINANCING

At this point in the record there will appear certain program and and financing information from the justifications.

(The information follows:)

DEPARTMENT OF DEFENSE—MILITARY

AIRCRAFT PROCUREMENT, AIR FORCE, PROGRAM AND FINANCING

[In thousands of dollars]

	Budget plan [1]			Obligations		
	1971 actual	1972 estimate	1973 estimate	1971 actual	1972 estimate	1973 estimate
Program by activities:						
Direct:						
1. Combat aircraft	1,023,500	934,500	984,500	1,282,313	1,056,600	942,300
2. Airlift aircraft	581,900	343,900	226,600	494,319	504,000	269,600
3. Trainer aircraft	34,900	44,000	46,100	21,064	51,000	45,000
4. Other aircraft	73,900	9,100	148,100	117,003	60,300	103,000
5. Modification of inservice aircraft	538,000	563,700	465,600	539,195	572,000	511,000
6. Aircraft spares and repair parts	494,400	397,900	504,100	514,889	555,000	489,700
7. Aircraft support equipment and facilities	842,900	789,600	237,700	832,532	811,500	245,400
Total direct	3,589,500	3,082,700	2,612,700	3,801,315	3,610,400	2,606,800
Reimbursable (total)	613,967	1,250,000	425,000	370,943	772,447	661,700
Total	4,203,467	4,332,700	3,037,700	4,172,258	4,382,847	3,268,500
Financing:						
Receipts and reimbursements from—						
Federal funds	−90,038	−67,700	−62,200	−86,138	−67,700	−62,200
Trust funds	−685,112	−1,206,800	−362,300	−609,630	−790,250	−362,300
Non-Federal sources [2]	−500	−500	−500	−706	−500	−500
Unobligated balance available, start of year—						
For completion of prior year budget plans				−2,075,607	−1,896,802	−1,531,800
Available to finance new budget plans	−147,574	−176,695		−147,574	−176,695	
Reprograming from (—) or to prior year budget plans	−130,838	101,695				
Unobligated balance transferred from other accounts		−158,700			−158,700	
Unobligated balance transferred to other accounts		75,000			75,000	
Unobligated balance available, end of year—						
For completion of prior year budget plans				1,896,802	1,531,800	1,301,000
Available to finance subsequent year budget plans	176,695			176,695		
Budget authority	3,326,100	2,899,000	2,612,700	3,326,100	2,899,000	2,612,700
Budget authority:						
Appropriation	3,219,300	2,899,000	2,612,700	3,219,300	2,899,000	2,612,700
Transferred to other accounts	−37,200			−37,200		
Transferred from other accounts	144,000			144,000		
Appropriation (adjusted)	3,326,100	2,899,000	2,612,700	3,326,100	2,899,000	2,612,700

[1] Amounts for procurement actions programed.

[2] Reimbursements are derived principally from cash sales to foreign governments (24 U.S.C. 2315)

Note: The amounts shown above are estimates, pending final determination of the amounts to be requested when supplemental and amended estimates are formally transmitted.

FUNDING REDUCTION

Chairman ELLENDER. You may proceed.

General GLASSER. Thank you, Mr. Chairman and members of the committee.

It is a pleasure to appear before you once again to present the Air Force request for aircraft and missile procurement funds.

Our fiscal year 1973 request of $4.4 billion is $600 million below last year's request even though we are including for the first time funds for the F–15 air superiority fighter and the E–3A airborne warning and control system. The request for these two programs is about $730 million.

Overall, our fiscal year 1973 request, when compared to the 1966–67 time period in terms of actual purchasing power, is over two and one half billion dollars less.

NONFUNDING AND REDUCED FUNDING OF AIRCRAFT: F–4E, A–70 AND C–130E AND F–111 AND C–5A RESPECTIVELY

The reduction in the budget request from last year's is due primarily to several aircraft programs in the fiscal year 1972 budget which require either no funds or greatly reduced funds for fiscal year 1973.

Among these programs are the F–4E, A–7D, and C–130E which are not included in the fiscal year 1973 request and the F–111, C–5A and "Other support" programs which have been reduced significantly or transferred to another appropriation.

Chairman ELLENDER. General, does your statement imply that you are not going to buy such aircraft in the future?

General GLASSER. No, sir; I am referring to what is in the request as presented by the President to the Congress.

Chairman ELLENDER. Does that mean you have enough of these aircraft in your inventory to meet present requirements?

General GLASSER. It means on a balanced basis, all things considered, the conclusion was not to request additional quantities in this particular fiscal year.

Chairman ELLENDER. Because?

General GLASSER. Because of the need to finance the other requirements of the Air Force.

Chairman ELLENDER. Proceed.

General GLASSER. I believe that a careful review of this budget request will convince you that it is indeed an austere budget structured to provide only the most essential systems and equipment to support the Air Force role in the national strategy of realistic deterrence.

AIRCRAFT PROCUREMENT

Chairman ELLENDER. The summary information on pages 8, 9, and 10 pertaining to the request of $4,203,467,000 for "Procurement of Aircraft, Air Force" will be included in the record.

(The information follows:)

(In thousands of dollars)

Program Requirement—fiscal year 1973	$3,037,700
Program Requirement—fiscal year 1972	$4,332,700
Program Requirement—fiscal year 1971	$4,203,467

PART I PURPOSE AND SCOPE

This appropriation provides for the procurement of aircraft, spares and repair parts, components, industrial facilities, supporting aerospace ground equipment, and modification of in-service aircraft of all types. Management of the overall aircraft program is facilitated by bringing together, in a single appropriation, all funds for the prime aircraft weapon system and related specialized ground handling and test equipment.

In the activity justifications, which follow, additional details are provided by budget activity. The activities are: combat aircraft, airlift aircraft, trainer aircraft, and other aircraft; modification of in-service aircraft; aircraft spares and repair parts; aircraft support equipment and facilities; and the reimbursable program.

The four aircraft activities each provide the following elements:

1. Gross program cost.—Which includes:

a. *Flyaway cost.*—Complete aircraft ready to be flown away from the manufacturer's plant which includes airframe, engines, communications and electronics equipment, photographic equipment, armament, instruments, auxiliary equipment installed in the aircraft and certain non-recurring costs for tooling and other start-up costs.

b. *Peculiar aerospace ground equipment, training devices and technical data.*—Items of equipment which are applicable to a specific weapon system such as specialized equipment for maintenance, repair and test of a weapon system, subsystem, or its components; special training devices applicable to a specific weapon system such as mobile training units, flight simulators, instrument trainers, and airborne navigation trainers; and procurement of engineering handbooks, manuals and other technical data identified with the specific aircraft being procured. Requirements in these categories are established to provide for scheduled delivery of the support equipment to squadron organizations in phase with deliveries of the weapon system.

2. Credits from advance procurement prior year.—Application of assets to this program from advance procurement provided in prior year programs for items having a longer lead time than the airframe.

3. Advance procurement current year.—The items associated with follow on aircraft programs which have a longer procurement lead time than the airframe and therefore must be procured in advance of the airframe.

SUMMARY OF REQUIREMENTS

[In thousands of dollars]

	1971 actual	1972 estimate	1973 estimate
Combat aircraft	$1,023,500	$934,500	$984,500
Airlift aircraft	581,900	343,900	226,600
Trainer aircraft	34,900	44,000	46,100
Other aircraft	73,900	9,100	148,100
Modification of inservice aircraft	538,000	563,700	465,600
Aircraft spares and repair parts	494,400	397,900	504,100
Aircraft support equipment and facilities	842,900	789,600	237,700
Total direct program	3,589,500	3,082,700	2,612,700
Reimbursable program	613,967	1,250,000	425,000
Total program requirements (current)	4,203,467	4,332,700	3,037,700
Less: Portion of program to be obligated in subsequent fiscal years	1,414,246	1,270,800	961,700
Plus: Obligations incurred against prior year program funds	1,383,037	1,320,947	1,192,500
Total obligations	4,177,258	4,382,847	3,268,500

JUSTIFICATION OF FUNDS REQUESTED

The program to be financed with the appropriation for fiscal year 1973 includes additional modern aircraft for the combat forces, $984.5 million; the airlift forces, $19.0 million; training aircraft, $46.1 million, and other aircraft, $148.1 million. To support this request, the airframe and major components of new aircraft will be ordered during fiscal year 1973 and for the C–5 aircraft $207.6 million is required to cover prior year production costs in excess of those provided in the prior year budgets.

Provision is made in the estimates in the amount of $465.6 million for fiscal year 1973 for modification-modernization of in-service aircraft and components to insure correction of service-revealed deficiencies, to improve combat capabilities, and to extend the service life of active operating aircraft. This estimate compares with programs of $563.7 million and $538.0 million for fiscal years 1972 and 1971 respectively.

Aircraft spares and repair parts are also financed under this appropriation. The spares and repair parts activity includes centrally procured and managed, investment-type spare components and repair parts associated with the procurement of new aircraft; to support the modifictaion program, and peculiar and common aerospace ground equipment programs; and the replenishment spares category which provides support for Air Force opertaional, and maintenance and overhaul programs. For fiscal year 1973, the request amounts to $504.1 million compared to $397.9 million for fiscal year 1972; and $494.4 million for fiscal year 1971.

The aircraft support equipment and facilities activity provides for common aerospace ground equipment, component improvement, industrial facilities, war consumables, and other charges. The program requirements for fiscal year 1973 are $237.7 million as compared to $789.6 million in fiscal year 1972 and $842.9 million in fiscal year 1971.

The requirements for the reimbursable program for fiscal year 1973 are $425.0 million; for fiscal year 1972, $1,250.0 million; and for fiscal year 1971, $614.0 million. This program provides for those aircraft and related items which must be procured to satisfy customer orders.

General GLASSER. The aircraft procurement program request for fiscal year 1973 is $2,613 million; $466 million is for aircraft modifications; $504 million is for spares and repair parts; $238 million is for other support equipment and facilities, and the remainder of $1,405 million is for the procurement of 251 aircraft.

FUNDING ALLOCATION AND AIRCRAFT QUANTITIES

The allocation of these funds and aircraft quantities are detailed in table I.

(Table I follows:)

TABLE I.—DEPARTMENT OF THE AIR FORCE—FISCAL YEAR 1973 AIRCRAFT PROCUREMENT ESTIMATES

[In millions of dollars]

	Quantity	Estimates
Combat aircraft:		
E-3A: Command and control	3	$309.9
F-5E: International fighter	57	92.7
F-111F: Tactical fighter	12	160.3
F/TF-15A: Tactical fighter	30	421.6
Total	102	948.5
Airlift aircraft:		
C-5A: Cargo/Transport (prior year unfunded deficiencies)		207.6
VC-X: Special air missions	4	19.0
Total	4	226.6
Trainer aircraft:		
T-41D: Pilot trainer	1	(1)
T-43: Navigational trainer	8	46.1
Total	9	46.1
Other aircraft:		
AABNCP: Advanced airborne command post	2	103.8
UH-1H: Helicopter	120	35.9
CX-X: MAAG/Attaché	14	8.4
Total	136	148.1
Modification of in-service aircraft		465.6
Aircraft spares and repair parts		504.1
Aircraft support equipment and facilities:		
Common ground equipment		50.9
Component improvement		35.0
Industrial facilities		22.7
War consumables		15.5
Other charges		69.3
Classified projects		44.3
Total		237.7
Total, direct program	251	2,612.7
Financing: New obligational authority		2,612.7

[1] Less than $50,000.

MODIFICATIONS: A-7, B-15, C-5, C-130'S AND C-135'S

Chairman ELLENDER. I notice for modifications you have $466 million. What modifications do you contemplate making and to what airplanes?

General GLASSER. There is a rather extensive list of modifications, Mr. Chairman, which I can supply for the record.

The aircraft that are covered are the A-7, B-52, C-5, C-130's, C-135's, and so forth.

C–5: Flight Data Recorders and Fuel Tank Inerting

Chairman Ellender. How much have you allocated for the C–5?

General Glasser. The C–5 is a very modest amount at $10.4 million, covering two items. We are putting flight data recorders in for the purpose of being able to maintain a very careful history of what the airplane's experience is. We are putting in fuel tank inerting.

Chairman Ellender. What is the need for the flight data recorders?

General Glasser. That is because of the desire to get the maximum life out of the C–5's as was discussed with you previously. We need to know exactly what experience that aircraft has had; how many G's for how many hours. Then, by using those data, we are able to estimate what fatigue the aircraft has experienced and what is therefore remaining.

Chairman Ellender. That is unusual, is it not?

General Glasser. It is unusual in anything except a portion of the fleet. Normally, what we do is in some portion of the aircraft of any particular type we do this and then apply it as a statistical factor as against all the other aircraft of that group.

Chairman Ellender. I wasn't too much impressed with the C–5A. When you bought the plane, you expected 30,000 hours, as I recall the contract. You are now getting about 7,000 hours.

General Glasser. That is correct, sir.

Chairman Ellender. You hope to get it up to 21,000.

General Glasser. Something over 20,000; yes, sir.

Chairman Ellender. Have you any idea how much the modification cost will be to bring that plane to the point where it will be able to fly 20,000 hours-plus?

General Glasser. I don't have that information at this time, Mr. Chairman. As the Secretary indicated, we are conducting an analysis of that requirement. We will supply it to the committee as early as it is available.

(The information follows:)

C–5A/Mod Cost To Fly 20,000 Hours

The potential operational life of the C–5A, based on the limited amount of test data acquired to date, is judged to be approximately 20,000 hours, with the incorporation of those fixes currently planned. One of the most essential of these fixes is the incorporation of a lift distribution control system at an estimated cost of $3.0 million for all aircraft. A structural review team is presently analyzing the test results derived to date, as well as the entire aircraft structure, to assist in determining just what the potential life of the aircraft is and how it might be effectively extended. The review team will take the balance of this year to complete its task. With the incorporation of those fixes which the review team may suggest, together with other fixes currently being evaluated, it is possible that the service life may be extended beyond the estimated 20,000 hours now anticipated.

Possible Substitution of Other Aircraft

Chairman Ellender. Have you any other airplanes that could perform the basic mission of the C–5A?

General Glasser. Yes and no, the reason for that being that many of the things that the C–5 does, of course, can be accommodated by

other aircraft. There are certain features of the C–5, notably the outsize cargo area and certain of its unique capabilities, that other aircraft do not have. Because of this the other aircraft are not able to conduct certain of the C–5 missions.

Chairman ELLENDER. Is that the result of its size?

General GLASSER. Because of its size and because of its ability to get into short fields, unprepared fields, things of that sort; primarily because of its size.

Chairman ELLENDER. Well, the basic reason that many Members of Congress went along with the C–5A was to give us adequate airlift capability whereby we could decrease the number of U.S. forces deployed abroad. This was true especially in regard to the situation in Europe—the C–5A was to permit us to reduce the number of troops in Europe.

General GLASSER. That is my understanding, sir; that it is to enable rapid deployments to troubled areas, wherever they may be, Europe among others.

Chairman ELLENDER. As I understand it, and I have a pretty good memory, these planes are supposed to be made available so that we could prove to Europe that even though we withdrew our forces we would be capable of returning soon.

General GLASSER. Let me ask General Hill, who is in the directorate of programs, to speak to that.

General HILL. Mr. Chairman, of course, that was one of the considerations.

Chairman ELLENDER. Wasn't that the main one? Let us be frank with each other.

General HILL. I don't think it was the principal consideration. I would say the main consideration would be to develop an aircraft that could deploy all of the equipment of the several types of Army divisions, mechanized, armored, airborne, airmobile, and infantry. Prior to the C–5, the Air Force did not have the capability to do that. We could get most of an infantry division's equipment; we could get nearly all of an airborne division's equipment.

Chairman ELLENDER. By plane?

General HILL. By aircraft; yes, sir. We could not get all of an armored or mechanized division airlifted and that is your principal firepower, as you know, in an army force. If, in fulfilling treaty obligations or if, in serving United States and allied interests, it became necessary to do that, then we have the capability of doing it in a C–5. Heretofore, we did not.

Then, if the national policy should indicate a withdrawal of forces from where deployed, the C–5 could do that in much shorter time than by surface.

Chairman ELLENDER. This concept was well stated by the former Deputy Secretary of Defense David Packard. In testifying before the Senate Armed Services Committee in May of 1970 on the C–5A he stated:

> As I have stated before, this airplane is critical to augment our airlift capability. We must have a rapid response posture to deploy Army units and their equipment to many areas of the world. Only with this capability can we successfully withdraw a significant portion of our overseas committed forces and at the same time give positive assurance to our free world allies that we could rapidly redeploy our forces in time of tension.

General Hill. There is no question that the C–5 puts you in a position to introduce forces into an area quickly.

Chairman Ellender. It is my judgment that it will not fulfill its planned mission as originally contemplated, because you are not going to secure the number you desired.

Total Modification Cost

How much money do you contemplate spending for modifications of the ones for which you have contracted?

General Glasser. As I just indicated, Mr. Chairman, the complete analysis of what modifications will be required has not been completed. We are asking this year for $10 million for modifications but I am confident, of course, that this will be substantially more than that as we proceed through the IRAN's in future years.

Chairman Ellender. As I recall, we have lost two of these aircraft in fires. There have been troubles with the engines, and in one instance the engine actually dropped off the wing. You have had constant difficulty with the wings. There is the problem with the landing gear, and there are others.

Is it possible to give us a rough estimate of the cost of the modifications that will be required to permit you to obtain 20,000 hours of flying time during the lifetime of these planes?

General Glasser. It is, sir, and we are conducting that analysis.

Aircraft Losses

First of all, I would like to comment on the troubles that we have had as regards the loss of the two aircraft.

One of these was the consequence of a very unfortunate incident wherein a hydraulic pump caught fire and because the aircraft had pulled away from the ramp and was out in the middle of the field before they were able to put the fire out, we damaged the airplane heavily through fire and the conclusion was that it was not economical to repair it.

Since we needed the portions of the aircraft anyway we were able to avoid buying certain test fixtures by using the salvaged components.

The second plane that we lost was in the hands of the contractor and was lost through 100 percent personnel error. It had nothing to do whatever with the aircraft. It is unfortunate that the accident was caused in the manner in which we had previously lost airplanes.

There exist rules, regulations, procedures, and so forth that clearly militate against that kind of thing. Nevertheless, through human error, we did lose that airplane.

Engine Problems

On engine problems, I am not familiar with the fact that we have had any engine problems although you may be referring to the truss failure that we had where one of the engines parted from the aircraft. We do know what to do about that. We have been working on the problem.

The funds for repairing that are included within the amounts that we have been presenting to the Congress here as being the total cost for the C–5 program. That leaves me, then, with the wing as a troublesome part.

Wing Fatigue Problem

Now, the wing has a problem only insofar as its fatigue life is concerned. There is no hazard here; it is a perfectly safe airplane to fly.

We are instituting procedures for the use of this airplane which will preserve its life so as to be available for its intended role. It is true that it will not be able to have extracted from it as many hours as were planned for it, but it will be available to perform in a fashion required when and if it is ever needed.

Inspection and Repair as Necessary (IRAN) Program

What we will be doing, then, is, as you go through the IRAN, inspection and repair as necessary, program which every aircraft goes through on a periodic schedule from time to time; when the C–5 goes through that IRAN we will be inspecting them to see what damage has been incurred during their previous life and we will be applying the fixes which have been identified through the test program.

Modification Costs

As such, the modifications and the costs for those modifications that you are seeking will be simply an overlay or an increase in the cost of the IRAN. That is what makes it difficult for me to estimate it at this time.

Chairman Ellender. The costs of these modifications will be in addition to the current estimated program unit cost of $56 million per aircraft.

General Glasser. They will be added costs.

Senator Young. Mr. Chairman.

Chairman Ellender. Yes, Senator.

Life Expectancy of C–5 and B–52

Senator Young. How would you compare the life expectancy of a C–5 with a B–52? Will the wings be able to stand up over a long period of time after you modify them, or will this plane tend to have trouble after 10 or 15 years' use?

General Glasser. Of course, the B–52, you understand, has had to have substantial modifications to the wing, too, occasioned by going from high altitude down to the low altitude flying. These are the nature of aircraft.

It is aggravated by reason of the size of the C–5 and some unfortunate design problems which have crept into it.

It happens to be that in the case of the C–5 you have such a very, very large aircraft and with such enormous wings that the amount of fatigue damage that the wings sustain is very much a function of the loads that you carry in the aircraft.

You can dramatically reduce the fatigue damage to that airplane by a very modest reduction in the load you carry.

So, as you are able to use the aircraft in peacetime and preserve its life by some very simple expedients and yet retain in the structure all the capability necessary to do the job that it needs to do during the relatively brief period of a war.

Senator YOUNG. What you are saying is that if you carry the maximum or near maximum load, the life of the aircraft will be shortened?

General GLASSER. You just wear it out in an awful hurry. But if you operate it at low loads, then it will last forever.

This is the reason for the flight data recorders we spoke of earlier. We want to know exactly what this airplane has experienced because on the basis of that knowledge we will be able to tell you with considerable precision what remaining life is in that airplane.

Senator YOUNG. What do you consider a reduced load? How would a reduced load in the C–5 compare with other Air Force cargo planes?

General GLASSER. It is still an enormous load compared to other aircraft.

Senator YOUNG. Specifically, how many tons are we talking about?

General HILL. Fifty tons versus 100 tons.

General GLASSER. You see, most of the time in aircraft of this sort they tend to fill up in cubage before you ever approach the weight that you require. In other words, the size of the equipment is so great and the density is so low that you end up filling up the airplane and you can't put anything more in it but it is nowhere near close to maximum gross.

The only time you run into a situation of having very heavy gross weights is when you are carrying bulk cargo, ammunition or something of that sort, which is very dense. You stack a lot in there. Then you end up with a problem where you have weight restriction but it is the only one.

Senator YOUNG. Will it carry our biggest tanks?

General GLASSER. Yes, sir.

Senator YOUNG. How many?

General GLASSER. I would like to correct this for the record, but it should carry five, as I recollect.

B–52 MODIFICATION

Senator YOUNG. I have just one other question. There is $210 million, I believe, of the $466 million requested for aircraft modifications, programed for the B–52.

General GLASSER. That is correct.

Senator YOUNG. What modifications are these? Are these wing related?

INSTALLATION OF SRAM MISSILE

General GLASSER. No, sir. The biggest one of these is to modify the B–52 to make it capable of employing the SRAM missile which we are just beginning to procure. That accounts for $94.5 million of it right there.

UPDATING OF ECM CAPABILITY

The Phase VI ECM is the next largest for $48.3 million. This is updating the B–52's ECM capability to accommodate what we now know as new equipment in the Soviet inventory.

Installation of Electro Optical Viewing System

The next largest item which accounts for most of the remainder is the electro optical viewing system which is a new set of equipment whereby the pilot is able in a closed curtain environment to look outside to see through television and IR systems the terrain he is flying over. He can see the targets he is coming up on without opening his flash curtains.

This is an improvement we are putting on the aircraft.

Wing Flexibility

Senator Young. Are the B–52's experiencing wing fatigue to the extent that they will have to be phased out?

General Glasser. We will eventually cut down the B–52G's and H's. Those are perfectly adequate for now insofar as their fatigue life is concerned.

Senator Young. I am amazed at how the B–52 wings have held up so many years with the four engines extending so far out. There must be considerable flexibility in those wings.

General Glasser. Indeed there is. They are very flexible wings. If they were not, they would wear out very, very much faster. That very flexibility is what gives them the life.

Early-Year Modifications

Chairman Ellender. In the case of the B–52's, you didn't have the difficulties that you had in the C–5. They came nearer meeting the specifications than your C–5's.

General Glasser. I would not want to open too many doors but we had a great many difficulties with the B–52's in the early years and had to put rather substantial modifications in the B–52's because of structural problems.

Chairman Ellender. Was that after you had bought them?

General Glasser. That is correct, sir.

F-111 Modification

Chairman Ellender. You also have modifications on the F–111. That is another plan that you have had difficulty with. What do you contemplate doing with those planes?

General Glasser. The F–111 has $29.9 million, the bulk of which is in the MOD update program. There are some very modest safety of flight items in addition to that.

Inventory and Contracted Aircraft

Chairman Ellender. How many of those have you on hand now?

General Glasser. The number delivered, sir?

Chairman Ellender. The number that you have on hand.

General Glasser. The inventory on hand as of now, as of January 31, is 260, with an additional 146 that are in production.

Chairman Ellender. When do you expect delivery on those?

General GLASSER. They will be delivering out in December 1973, that will be the final delivery of those on contract now.

Chairman ELLENDER. Have you experienced such difficulty that you had to make extensive modifications?

General GLASSER. No, sir. We did have a considerable amount of difficulty a few years back which we have been working our way out of. As of this time, I think the F–111 is in quite good condition.

Chairman ELLENDER. Proceed.

SUGGESTED ABANDONMENT OF C–5A IN FAVOR OF C–141

Senator SYMINGTON. Mr. Chairman, may I ask something there?

Chairman ELLENDER. Surely.

Senator SYMINGTON. General Glasser, we had trouble with the F–111. It now looks as if it is going to be all right, but that is a combat airplane. The C–5A is not a combat airplane. The figures, as I understand it, are that we expected to get 120 for $3.4 billion and now are going to get 81 for $4.5 billion.

Inasmuch as the C–141 is a good airplane, made by the same company, why don't we just forget the C–5A after what we have, take it with the wing loading we can get under present restrictions, in effect not run the risk of pouring a lot of good money after bad; and buy more C–141's for the mission?

Nobody was stronger for the C–5A, as you know, but to date it has been a failure.

The Air Force cannot, in my opinion, afford to have more of this type and character of failure, regardless of whose fault it is.

Why don't we go ahead with 141's? They are not as big, but work well, and are twice as big as the C–130's.

General GLASSER. Senator, first of all, we have bought the C–5. We are in the situation now where the 81st airplane is essentially produced.

Senator SYMINGTON. After those 81?

General GLASSER. We have no plans to purchase any more than those 81. That is our program.

C–54 WING STRENGTH

Senator SYMINGTON. The question of the money that is going to be put in the wings: how much will that be?

General GLASSER. As we were discussing with the chairman, we don't know exactly what that will be because we have not run all the trade-offs of what we ought to do.

Senator SYMINGTON. Suppose you cut down the load factor to, in effect, what you can load in a 141. Would you still have to fortify the wings because of poor design?

General GLASSER. We can carry substantially more than we can carry in the 141.

Senator SYMINGTON. Even though you did not change the wing?

General GLASSER. And still not change the wing.

I am afraid that we are exaggerating the problem in our desire to be completely candid. If we were to make a rather modest relaxation in the maximum gross weight, we would have no problem at all.

Senator SYMINGTON. Why do we take a chance, then, on running into heavy cost for wings which might not work?

General GLASSER. We are not taking that chance. What we are doing is flying the aircraft in a very conservative fashion in peacetime.

Senator SYMINGTON. You are not going to ask for money to fix the wings?

General GLASSER. We are not. We have no money in this program which contemplates that sort of effort.

As I described earlier, that is something which comes up for analysis and which will be included in IRAN in future years. I think it will be prudent to apply some of those because in many cases, as you know, this is the changing of some taper lock bolts or adding a doubler on some portion of the wings. It is a very inexpensive thing to do when you have the aircraft opened up, anyway. It pays off handsomely.

Senator SYMINGTON. You will come up here and tell us what you are going to do and how much it will cost?

General GLASSER. Indeed we will be. It will be an insertion in the MOD program for whatever particular year we ask for it.

Senator SYMINGTON. Thank you.

ALLOCATIONS OF AIRCRAFT: AIR FORCE INVENTORY

General GLASSER. Returning to page 2, only 73 of these aircraft are for the Air Force inventory. They include 30 F/TF–15A's, 12 F–111F's, and three E–3A AWACS aircraft, eight T–43A navigation trainers, 14 attaché aircraft, four VC–X's for our Special Air Mission wing and two Advanced Airborne Command Post aircraft.

The remaining aircraft are being procured for direct or indirect support of our allies.

One hundred and twenty UH–1H helicopters are being purchased to pay back to the Army the UH–1H's they have transferred to the Vietnamese Air Force. Also, 57–5E international fighters are being procured for the military assistance service fund program.

Chairman ELLENDER. Will the Army appear to justify before us the necessity for these?

General GLASSER. I do not know the answer to that, Mr. Chairman.

These aircraft have been previously justified and purchased by the Army. They then provided them to the VNAF, which was an Air Force obligation. What we are requesting now is the appropriation to buy airplanes to pay them back. So, it brings them back to a level that was previously established.

EVIDENCE OF ARMY'S AIRCRAFT REQUIREMENT AND REQUEST

Chairman ELLENDER. Have they made requests of you for them?

General GLASSER. Yes, sir.

Chairman ELLENDER. Did they do it by letter?

General GLASSER. I would have to verify that, Mr. Chairman.

Chairman ELLENDER. Will you give us evidence that they do need them and that they requested them of you?

General GLASSER. Yes, sir.

Chairman ELLENDER. We will put it in the record at this point.

General GLASSER. We will do that.

(The information follows:)

The Army request for the payback of 120 UH–1H helicopters was in the form of a memorandum to the Assistant Secretary of Defense (Installations and Logistics), dated 25 August 1971, and signed by the acting Assistant Secretary of the Army for Installations and Logistics (Atch 1). As a result of the Army memorandum, the Deputy Secretary of Defense wrote a memorandum to the Secretary of the Air Force, on 16 Sep 1971, amending the Air Force Program Decision Memorandum of 25 Aug 1971 "to procure 120 UH–1Hs in fiscal year 1973 and [deleted] UH–1Hs in fiscal year 1974 as payback to Army for helicopters transferred to the VNAF" (Atch 2).

DEPARTMENT OF THE ARMY,
OFFICE OF THE ASSISTANT SECRETARY,
Washington, D.C., August 25, 1971.

MEMORANDUM FOR THE ASSISTANT SECRETARY OF DEFENSE (INSTALLATION AND LOGISTICS)

Subject: Vietnamese Air Force (VNAF) UH–1H Helicopters.

The Army has been providing UH–1H helicopters to the VNAF out of Army assets since 1969 with the agreed understanding they would be replaced one for one by the Air Force.

Total UH–1H requirements for the VNAF by end fiscal year 1974 are estimated to be [deleted] aircraft of which [deleted] will be provided from the Army inventory. The requirements are estimated on a Unit Equipment (UE) of [deleted] plus 50 repair cycle float and attrition computed at [deleted] per hundred UH–1H authorized as UE per month. Actual VNAF UH–1H attrition rate for fiscal year 1971 was [deleted] USAF has funded 642 UH–1H for payback to the Army, resulting in a projected deficit by end fiscal year 1974 of [deleted] VNAF attrition, which could result in a further drawdown of Army inventory beyond fiscal year 1974, is now estimated at 90 UH–1 per year. This estimate will be updated as experience dictates.

The Air Force POM for fiscal year 1973 does not contain UH–1H for payback to the Army. Informal discussion with Air Staff representatives indicates that the Air Force does not intend to add any paybacks of UH–1H to the Army in the fiscal year 1973 budget.

The Army baseline AAO (Blue Case) for Utility Tactical Helicopter is [deleted] with projected assets end fiscal year 1974 of [deleted] This includes 150 substitute UH–1B not considered fully capable in the lift ship role. In order to produce UH–1H for Army essential requirements, to maintain a warm production base and to replace future VNAF attrition beyond FY 1974, it is considered most important that the Air Force fund a minimum buy of 120 UH–1H paybacks in fiscal year 1973 with deliveries beginning in January 1974.

I would greatly appreciate your attention to this matter to assure that the Air Force does include funds for procurement of 120 UH–1H paybacks to the Army in the fiscal year 1973 budget.

VINCENT P. HUGGARD,
Acting Assistant Secretary of the Army.

THE DEPUTY SECRETARY OF DEFENSE,
Washington, D.C., September 16, 1971.

MEMORANDUM FOR SECRETARY OF THE AIR FORCE

Subject: Amended Program Decision Memorandum for the Department of the Air Force (U).

I have given careful consideration to the issues raised in your memorandum of 3 September, regarding the decisions in the Program Decision Memorandum of 25 August.

I approve the program designated in the Air Force Program Objective Memorandum (POM) Base Case with the specific changes identified in the Program Decision Memorandum (PDM) of 25 August, as amended below, in response to consideration of the Air Force reclamas.

I. STRATEGIC PROGRAMS

A. *SCAD:* No change to PDM.
B. *Satellite Basing:* Approve Air Force reclama to allow additional $6 million in fiscal year 73 for transportation costs.
C. *Advanced Airborne Command Post (AABNCP):* No change to PDM.
D. *Program* [deleted] Approve AF reclama.

II. TACTICAL AIR FORCES

A. *F–111:* Approve Air Force POM program of 12 squadrons (270 UE) in fiscal year 1973, decreasing to [deleted] squadrons [deleted] UE) in FY [deleted]
B. *Active Reconnaisance Force:* Approve Air Force POM program of 10 active squadrons, fiscal year 1973 [deleted] OSD (ISA) will seek to amend the DPQ–71 response.
C. *Fact-of-Life:* Approve explicit changes on pages 19 and 20 in Air Force PDM Reclama, dated 3 September 1971, with the following exceptions:
1. ANG RB–57 conversion to B–57G is disapproved.
2. Inactivation of two F–4 squadrons in disapproved.

III. MOBILITY FORCES

A. *C–130:* Approve Alaskan C–130D squadron, fiscal year 1973–77.
B. *C–5A:* Add additional funds to be determined by Air Force to avoid necessity of later reprogramming fiscal year 1973 funds.
C. *Interim STOL:* No change to PDM.

IV. SUPPORT TO OTHER NATIONS

A. *UH–1 Payback:* Air Force will procure 120 UH–1s in fiscal year 1973 and [deleted] UH–1s in fiscal year 1974 as payback to Army for helicopters transferred to the VNAF.

V. GENERAL SUPPORT

A. *Undergraduate Pilot Training:* Provide a UPT rate of 2,700 pilots per year in fiscal year 1973–77.
B. *General:* Approve additional support funding to support the approved force levels.

VI. INTELLIGENCE AND SECURITY

A. Make adjustments as specified in Intelligence and Security amended PDM.

Approved TOA and outlay changes to the POM Base Case, as amended by the PDM, which are to be used to implement these amended program changes, are provided in the attached Appendices A and B. In addition, I am providing for your information an Air Force Manpower Summary in Appendix C.

The budget to be submitted on 30 September, and the 5-Year Defense Plan (FYDP) to be updated on 15 October should include these decisions and their associated costs, as reflected in Appendices A and B, and be based on the guidance of Mr. Moot's 23 August memorandum.

I am concerned that, as a result of the additions approved above, total DoD fiscal year 1973–77 spending levels will be too large in the light of current economic and budgetary considerations. Accordingly, I would like the Air Force to prepare a list of potential reductions to the Base Case POM program, as amended by the Air Force PDM of 25 August and my decisions in this amended PDM. These reductions should at least offset the total annual outlay amounts for each year added by the following items:

I.D. Program [deleted].
II.A. F–111.
II.C. Fact-of-Life.
III.A. C–130.
III.B. C–5A.
IV.A. UH–1 Payback.
V.B. General.

I will review these reductions and adopt them as necessary to make adjustments to the fiscal year 1973–77 program during the fiscal year 1973 budget review.

These reductions should be prepared within the following guidelines:
1. No base closures before fiscal year 1974.
2. No reductions to R.D.T. & E. funding.
3. No changes to the Intelligence and Security and Support to Other Nations fiscal guidance categories.
4. No reductions to strategic forces or strategic forces major procurement.
5. No reductions in air munitions war reserve procurement unless matched to force structure reductions.
6. No effect on the fiscal year 1972 budget.

In addition, these reductions should be distinct from the reductions which you may propose to offset the costs of possible increases in]deleted].

This list of reductions should be submitted to me no later than 15 October 1971. The OASD(C) will provide further instructions regarding the submission of these changes.

DAVID PACKARD.

REGULATION IMPOSING FUNDING RESPONSIBILITY FOR VIETNAMESE AIR FORCE ON U.S. AIR FORCE

Senator SYMINGTON. Were the Hueys bought originally by the Air Force?

General GLASSER. No, sir.

Senator SYMINGTON. Then why do you buy them?

General GLASSER. The arrangement for equipping the Vietnamese forces is that the Air Force procures everything that the Vietnamese Air Force uses and, unlike us, the helicopters in Vietnam are flown by the Air Force.

Senator SYMINGTON. By the Vietnamese Air Force?

General GLASSER. Yes, sir. So the source of the availability was in the U.S. Army.

Senator SYMINGTON. But this is part of the Army budget. Why don't they put it in their budget?

General GLASSER. Because of the funding rule that says the Air Force would fund for those things that can do the VNAF and the Army fund for those things that go to the Army.

General DE LUCA. Sir, before we put this in the budget for fiscal 1973, we did have a meeting with the Army and the OSD comptroller to see which budget it should be in, either the Army or the Air Force, because it was a valid requirement for the Army approved by the Secretary of Defense. As General Glasser said, the rule is that the Air Force will budget for whatever——

Senator SYMINGTON. Who made that rule?

General DE LUCA. The Secretary of Defense.

Senator SYMINGTON. The Army must have people in the plant from where they are buying the planes.

General DE LUCA. Yes; we will buy through the Army.

But it is recorded in our budget to maintain consistency that the Department of the Air Force buys and budgets for whatever the allied air force uses. It is to keep that propriety of accounting straight.

Senator SYMINGTON. Is that because you think, in the theoretical aspect of it, that it is better to have helicopters under the Air Force than under the Army?

General DE LUCA. No, sir; there is no relationship whatsoever.

General GLASSER. It just happens that the Vietnamese Air Force is organized that way.

Senator SYMINGTON. We would be organized that way, too, if it had not been for that deal made a few years ago.

General GLASSER. No comment.

E–3A AWACS AIRCRAFT

Chairman ELLENDER. The request includes $309.9 million for the procurement of three E–3A AWACS aircraft. Please provide the aircraft data sheet with appropriate security deletions for the record on this new aircraft.

(The information follows:)

FISCAL YEAR 1973 PRESIDENT'S BUDGET ESTIMATE, AIRCRAFT DATA SHEET

Service: Air Force. P–1 line item No. 5.
Nomenclature: E–3A (AWACS). Popular name: Unknown.

Description/Mission: AWACS will be an airborne surveillance, command, control, and communications system for use by tactical and defensive forces. The airborne platform, a modified Boeing 707 aircraft, will be common for both defensive and tactical operations. Interchangeability in missions will be easily accommodated with change of central processor software. Additional operational requirements can readily be accommodated with plug-in plug-out of electronic equipment. The system will be capable of detecting and tracking low flying aircraft targets in the presence of ground clutter, detect bomber aircraft at distances of [deleted] nautical miles, tactical aircraft up to [deleted] nautical miles against the horizon, tracking of [deleted] targets, 7–9 hours on station time at 1000 nautical miles from base, and active interrogation of aircraft using a cooperative beacon in crytographic secure or standard mode. Tactical forces will use AWACS for command and control during the movement of a Composite Air Strike Force (CSAF); while achieving and maintaining air superiority in a battle area: in providing direct air support to ground forces; and in accomplishing rescue and airlift missions. Its flexibility and versatility will enable it to be deployed at any level of military action ranging from a show of force through general war. Defensive forces will use the AWACS to provide early detection of enemy aircraft and for battle management of interceptors. AWACS will operate in the 1977 and following time period.

[Dollar amounts in millions]

Cost data	Fiscal year 1970 and prior	Fiscal year— 1971	1972	1973	1974	1975	1976	1977	Cost to complete	Current estimate, total program
Aircraft procurement:										
Quantity				3	2	23	14			42
Cost				$309.9	$121.4	$770.8	$341.6			$1,543.7
Less advance procurement						−11.7				11.7
Net calendar year program				309.9	121.4	759.1	341.6			1,532.0
Advance procurement, calendar year					11.7					11.7
Weapon system cost				309.9	133.1	759.1	341.6			1,543.7
Initial spares						96.1	114.3	$27.0		237.4
R.D.T. & E	$91.9	$87	$139.3	160.0	196.8	93.9	71.6	28.8	$10.9	880.2
Milcon										
Program acquisition cost	91.9	87	139.3	469.9	329.9	949.1	527.5	55.8	10.9	2,661.3
Program unit cost										63.36

Basis for fiscal year 1973 Budget Request.—The two radar subcontractors, Hughes and Westinghouse will undergo competitive flight testing and evaluation, starting late March 1972 and will complete November 1972, utilizing two modified Boeing 707 aircraft. Successful review of test results by the DSARC, November 1972, allows the program to proceed into the next phase, Design, Development,

Test and Engineering (D.D.T. & E.). Mission avionics subsystem development, in support of the System Integration Demonstration, will be continued. The avionics subsystems will be integrated with the selected radar and testbed aircraft to permit early evaluation of operational suitability. Flight testing will begin during March 1974. Procurement will be initiated for three initial production aircraft (two in fiscal year 1974). The five initial production aircraft will be utilized to conduct airborne operational effectiveness and operational suitability. Decision for final phase, Full Production, is scheduled for fiscal year 1975 (December 1974).

AWACS

TEST DATA

a. System acquisition contract was awarded July 1970.

b. Program and contract arranged in three phases with established performance milestones within each phase that must be successfully completed and DSARC approval provided before program can proceed into next phase.

c. AWACS has been in radar development phase since contract award.

d. Competitive radar subcontractors, Westinghouse and Hughes, have completed radar fabrication and radars are undergoing functional testing in Boeing ground facility—the Branch Test Laboratory—start of tests, Jan 1972.

e. Competitive radar flight testing and evaluation will begin late March 1972 and will be concluded with selection of radar and a DSARC in Nov 1972.

f. The two airborne platforms for the radar flight test program will be modified commercial Boeing 707 Aircraft.

g. The modified Boeing 707 Aircraft will undergo airworthiness flight testing during February 1972.

h. Category I tests scheduled Oct. 75 through Sept. 76 and Category II tests Feb 76 through Mar 77. Category III schedule is being determined by the using commands.

CONTRACT DATA

Major subsystem and contractor	Phase	Contract
System acquisition: Boeing Co., Seattle, Wash	Radar	CPIF
	D.D.T. & E	CPIF
	Production	CPIF
Radar:		
Hughes Aircraft Corp., Fullerton Calif	Radar	FPIF
	D.D.T. & E	CPIF
	Production	FPIF
or Westinghouse Corp, Baltimore, Md		

AWACS

[Dollar amounts in millions]

Cost history comparison	Quantity	Amount
Initial planning estimate:		
Procurement	42	$1,785.1
R.D.T. & E		876.5
Milcon		
Total program costs	42	2,661.6
Current estimate total program (fiscal year 1972 budget submission):		
Procurement	42	1,785.1
R.D.T. & E		876.5
Milcon		
Total program costs	42	2,661.6
Current estimate total program (fiscal year 1973 budget submission):		
Procurement	42	1,781.1
R.D.T. & E		880.2
Milcon		
Total program costs	42	2,661.3

Chairman ELLENDER. Proceed, General.

General GLASSER. The airborne warning and control system (AWACS) is being developed as a survivable airborne control and communications system to provide radar surveillance of aircraft at all altitudes over any type of terrain. The airborne platform will be a modified Boeing 707 aircraft. The AWACS will be used in the strategic or continental air defense role to detect, identify, and track aircraft approaching the United States and to direct our interceptors against those aircraft which are hostile. The tactical air forces will use the AWACS to perform direction and control functions related to tactical operations such as directing air support for the ground forces.

The present ground-based strategic air defense system, limited to line-of-sight ranges and ineffective against low altitude aircraft, is costly to operate and continues to be phased down. The risks associated with this phase down prior to attaining a new capability are to amortize the costs of acquiring AWACS and other components of a modernized air defense system. The new look-down radar with capability to detect and track targets against an earth background, land or water, makes airborne surveillance feasible. AWACS, as a result, will be uniquely effective against low-altitude penetrating aircraft and will replace less capable airborne elements now in use.

The fiscal year 1973 budget request of $309.9 million will buy the first three of a planned buy of 42 AWACS aircraft together with their support equipment. The first five prototype aircraft will be used for specification and operational testing and will then be upgraded to the full operational configuration to enter the operational inventory. Decision on procurement of the remaining aircraft will be sought in fiscal year 1975. The radar will be demonstrated in a flyoff competition between the Hughes and Westinghouse brassboard designs; this competition is scheduled for completion in November 1972. Thereafter, system integration and specification testing will remain to be accomplished prior to attaining initial operational capability in early 1977.

AIRCRAFT COSTS

Chairman ELLENDER. You are requesting $309.9 million for the procurement of these aircraft, which is over $100 million each. Just why are these aircraft so expensive?

General GLASSER. That is misleading, Mr. Chairman.

The aircraft, themselves, of course, do not cost anything like that amount of money.

Chairman ELLENDER. Why are you asking for that much money?

General GLASSER. Because these are the first aircraft being produced at this time. All of the funds required to initiate the procurement of the E–3A together with the three airplanes aggregate to that amount. The individual airframes, themselves, for example, cost only $24.3 million apiece plus $8.43 million for the engines that go with them. But there are a variety of other costs that aggregate together this amount.

Chairman ELLENDER. Let me ask General Buckingham to describe in detail what goes into that.

MODIFICATION 707 AIRWAY

General BUCKINGHAM. There are many types of things that go in to the E–3A that make it different from the basic 707 airframe, Mr. Chairman. For example, you have to modify the body for the rotodome that fits up on top, the large rotating dome that the radar fits in.

Chairman ELLENDER. You are using a plane that is already in production?

General BUCKINGHAM. Yes, sir; but it is substantially modified. It is a 707 commercial version modified for this mission.

PHASE I MODIFICATION AND TESTS

Chairman ELLENDER. Have you bought any of the 707 aircraft in your R. & D. program?

General BUCKINGHAM. Sir, we have two brassboard aircraft that are modified 707's, but not to the full extent that this aircraft will be modified or changed.

Chairman ELLENDER. Can't you modify those so as to save the cost of buying three more for these tests?

General GLASSER. Mr. Chairman, we will be modifying those.

Chairman ELLENDER. I realize that, General. But I cannot understand why these existing aircraft are not adequate for the operational tests.

General GLASSER. I think the program we have laid out really is the best way to go. Let me describe it very briefly.

We started out very early by taking existing aircraft and putting the basic overland radars in and checking those out. They worked very well in their elemental form. We then purchased these two aircraft that General Buckingham has just described and we are installing in them the full design radar together with its rotodome, but without making any more changes to the aircraft than just those necessary to conduct those tests. The first of those airplanes flew last week.

We will be conducting the radar test program with those.

PHASE 2 MODIFICATION

The next phase will be to take those same two airplanes, find out which of these radars is a successful winner, install the rest of the equipment that goes to make a full blown AWACS, in what is called a single thread configuration and test that out.

PRODUCTION OF TEST AIRCRAFT REQUISITE

At the same time, one needs to get on with building the test aircraft that will go out and conduct the remainder of the test programs and those are the three aircraft we are talking about here. When these three aircraft become available, we will then go back to the two previous ones, complete the rest of the modifications necessary to bring those up to speed and deliver them to the operational forces. So that nothing is wasted in the process.

AWACS Program Expenditures

Chairman Ellender. How much have you spent to date on AWACS?

General Glasser. In prior years, we have spent a total of about $320 million on this program.

Chairman Ellender. Was that spent in connection with the two airplanes you bought?

General Glasser. And all of these other developmental programs that I described leading up to that.

Chairman Ellender. What would be the impact on the initial operational capability of the AWACS system if funds were not provided for these five initial production aircraft, that is, the three you are requesting in fiscal year 1973, and the two you plan to request in fiscal year 1974?

General Glasser. The AWACS program and contract are arranged in a milestone concept designed to minimize program investment and to systematically address the major technical risks through successive test programs. The program will utilize two R. & D. test aircraft and five operationally configured prototype production aircraft to satisfy the testing requirements. If funds are not provided for the five prototype production test aircraft, the program will have to be restructured and the contract renegotiated with the system acquisition contractor. Without these five test aircraft, it is anticipated that the delay in the initial operational capability will be over 2 years.

Chairman Ellender. How much do you contemplate spending in order to determine whether or not you should go into production on them?

General Glasser. That is the amount. This $320 million is the amount that we estimate is required together with the quantities that will be in the 1973 budget, that we estimate being required to reach the decision to go.

Chairman Ellender. You have spent, as you say, $320 million and you are asking for $309 million more?

General Glasser. That is correct.

Chairman Ellender. To buy the three planes and also to buy the equipment to equip them?

General Glasser. Yes, sir.

Chairman Ellender. That will be five planes altogether?

General Glasser. That is correct.

Chairman Ellender. You are buying these before the system has been proven to be workable?

General Glasser. I don't think that is correct. We have already prototyped, as I indicated, the basic equipment that goes in the aircraft. The aircraft, itself, is a Boeing 707 that has a substantial amount of background experience. What we have done to it is put this rotodome on. As I say, this aircraft has already started flying. We will have a considerable body of test data on it by the time we will be getting the 1973 appropriations and, seeking the contract for that.

ECONOMIC RESTRAINT AND POSSIBLE POSTPONEMENT

Chairman ELLENDER. How long is required to complete the tests contemplated on these two first airplanes?

In other words, what I am trying to find out is what is the requirement for haste? You already have warning systems. This is a brand new one. With our budget in the condition in which it is, I would think that you could go on with your tests with fewer airplanes. When you request for this budget $309.9 million, that is quite a chunk of money.

General GLASSER. That is correct.

Chairman ELLENDER. We might be able to defer such a purchase. That is the purpose of my question.

PROGRAM LAG AND DEFENSE GAPS

General GLASSER. Let me say, if I can respond to that Mr. Chairman, in the following way:

As has been described to the committee before, the ground installations that were put in for warning have in major measure been reduced over the past years in anticipation of new techniques like AWACS. As a matter of fact, we are behind in our development of AWACS over what we ought to have because there exist today gaps in the defenses of the continental United States.

In addition to that, we are in desperate needs of a capability like this for employment by the tactical forces. An aircraft of this type had to be available in Southeast Asia which, with the environment over there, would have been a major contribution to the programs over there.

Chairman ELLENDER. Comment briefly on the mission of the AWACS aircraft.

General GLASSER. AWACS provides the capability for airborne surveillance, command, control, and communications. The AWACS radar will detect and track aircraft targets at all altitudes, at extended distances over land and water. AWACS will have the capability to detect and track low-flying aircraft against ground clutter. AWACS will be used in tactical air operations and in the air defense of the continental United States. Tactical forces will use AWACS for command and control during the movement of Composite Air Strike Forces, for control of tactical forces achieving and maintaining air superiority, for surveillance over the battle area, for control of tactical forces providing direct air support to ground forces and for controlling rescue and airlift missions. Defensive forces will use the AWACS to provide detection and tracking of enemy aircraft and for the battle management of interceptors.

Since the AWACS radar is accommodated in a jet aircraft which can fly at high altitudes, the surveillance volume is greatly increased as compared to ground based radars which are line-of-sight limited. AWACS is survivable due to its ability to flush on warning, to maneuver at jet speeds, to maintain awareness of the developing air situation and to command weapons as appropriate, including weapons for its own defense.

TOTAL PROCUREMENT AND COST

Chairman ELLENDER. How many do you contemplate purchasing altogether?

General GLASSER. Forty-two aircraft, sir.

Chairman ELLENDER. What will be the entire cost by the time you receive delivery on your 42 aircraft?

General GLASSER. The total cost is $2.66 billion, including all the research and development.

Chairman ELLENDER. That is a very substantial sum of money.

General GLASSER. It is, indeed, sir; but it also eliminates the requirement of a very substantial amount of ground environment.

THREAT OF RUSSIAN BOMB ATTACK

Chairman ELLENDER. Are you convinced that there is a threat by Russia of a bomb attack?

General GLASSER. Indeed, I am, sir; and it is growing.

Chairman ELLENDER. Give me your evaluation of that and tell us where do you get your information.

RUSSIAN AIRCRAFT INVENTORY AND CAPABILITY

General GLASSER. The national intelligence estimates reflect the aircraft in the possession of the Soviets and what their capabilities are.

Chairman ELLENDER. Do you know how many there are?

General GLASSER. Yes, sir; we have them here.

Chairman ELLENDER. And what is the vintage?

General GLASSER. Let me get them out in a moment for you.

Chairman ELLENDER. I can tell you that they are of a 15-year vintage. They also have some that they are working on with no capability except through refueling.

General GLASSER. Which capability they have demonstrated.

Chairman ELLENDER. Do you take into consideration the time element before they have those in operation?

General GLASSER. Yes, sir. We are also aware of brandnew airplanes which are of much more modern vintage than our own forces which they appear to be [deleted].

BACKFIRE AIRCRAFT

Chairman ELLENDER. What are those?

General GLASSER. The so-called Backfire aircraft.

Senator SYMINGTON. Is that the one which in size is between the B–1 and F–111?

General GLASSER. That is correct.

Senator SYMINGTON. It is more modern than the F–111.

General GLASSER. It is much more modern than the B–52 fleet.

Senator SYMINGTON. It is not a long-range bomber. Why don't you compare it with the F–111?

General GLASSER. Because it is a longer range and capable of carrying a bigger load.

NEW MEDIUM-RANGE BOMBER

Senator SYMINGTON. What is the estimated range of the new Soviet medium-range bomber. We have been briefed on this by CIA. Do you differ with their position on it?

General GLASSER. I hope not, sir.

The numbers that we are using on that is that their high altitude subsonic mission with a [deleted]-pound pay load is [deleted] nautical miles round trip or [deleted] miles one way.

Senator SYMINGTON. [Deleted]miles round trip?

General GLASSER. Yes.

Senator SYMINGTON. So, they would have to refuel before they attacked this country in any quantity?

General GLASSER. That is right.

BADGER AND BEAR AIRCRAFT VERSUS F-111

Senator SYMINGTON. The same thing would be true of the Badger. The only one that it wouldn't be true of is the Bear, which is an obsolete B-36.

General GLASSER. That is right.

If you lay those ranges down on a map from their potential launch bases and run them on missions through the United States, drop the weapon on potential targets and the continued range beyond there, it goes well down into South America.

Senator SYMINGTON. I have one comment. You say, in addition to the F-111, you need the B-1. But you are arguing against the B-1 if you are arguing for this new Soviet bomber, in my opinion.

General GLASSER. I am not arguing for this new bomber. I am saying it is a very significant threat against the United States.

Senator SYMINGTON. You have to argue for the new bomber to justify AWACS. In other words, you can do, with refueling, with the F-111, what you can do with refueling with this new Soviet bomber. If the premise is that they can attack us with refueling—and in any case it would be a suicide mission—if you do need AWACS against them, then you can use the F-111.

General GLASSER. I would rather discuss this with you in a better forum.

Chairman ELLENDER. Why in a better forum? This committee is going to have to pass on this and I am not satisfied with the amounts that we are spending.

General GLASSER. The difficulty of pulling numbers out of the air, Mr. Chairman, is that there are so many conditions that one has to apply and it needs be run with a map and with refuelings considered, high altitude, low altitude, and so forth.

I believe that with a bit of time and some preparation I can show that there is a very substantial threat to the continental United States from an aircraft having the backfire characteristics which are not duplicated in the FB-111.

I want to emphasize, however, that the FB-111 is a very formidable aircraft.

FUNDING REDUCTION IMPERATIVE

Senator SYMINGTON. Even though the range of backfire is more than the F–111, you are trying to have it both ways and we are running short of money. I look forward to discussing it with your further in more detail.

Chairman ELLENDER. That is my position, also. We have to cut somewhere. I have serious doubts, for one reason because our adversary doesn't have any of these in production. They are merely testing them. Those that have been on hand are 15 years old. That is considered a sufficient threat to lead us to suspend $2 billion to complete AWACS and then probably $12 billion for the B–1. That is what you are presenting or will present to us.

RUSSIAN BOMBER INVENTORY: BEARS AND BISONS

General HILL. Mr. Chairman, to respond to your question on the number of Soviet bombers, the current defense intelligence projection for the Bears and Bisons is [deleted] aircraft.

As for 1976, the current projection is for [deleted], of which some [deleted] would be Backfires, the new development.

Senator SYMINGTON. Do you know when the Bear was built? It is a piston airplane, an inferior B–36.

General HILL. Some 80 credited to the Soviet inventory in 1962.

Senator SYMINGTON. It is an airplane designed and built before any jets were built by anybody. It is really a museum piece from one standpoint, modern defenses.

The Bison is a B–52. What they could do with it is another matter.

The case is not made because they have a lot of obsolete bombers. Forty million dollars apiece. That is a lot of money and we are running out of money.

AWACS AIR DEFENSE AND TACTICAL SUPPORT MISSIONS

General GLASSER. I would like to reiterate, if I may, Senator Symington, that we are not founding the case for the AWACS on the air defense role alone, as important as that is. We feel equally strong for this need to exploit the tactical forces.

TOTAL REQUIREMENT

Chairman ELLENDER. You state that this aircraft will be used by both tactical and defensive forces, and that the current program calls for procurement of 42 of these expensive aircraft. Just how was that total computed, and how many of these aircraft are dedicated to the tactical mission, and how many are dedicated to the defensive mission?

General GLASSER. In late 1969, the Air Force conducted a review of the AWACS program. This review considered force size alternatives submitted by the Aerospace Defense Command (ADC) and Tactical Air Command (TAC) under varying threat and surveillance

situations. As a result of the review, the Air Force proposed 35 aircraft dedicated for the operational capability for both the tactical and air defense missions and seven for training/maintenance requirements without degrading the basic combat capability, for a total of 42 aircraft. The seven training/maintenance aircraft were considered in the total number that would also be available if a situation demanded.

The Air Force has not made an operational breakout of the 42 AWACS to the Tactical and Aerospace Defense Commands. Rather, we expect to use a common manager for the AWACS force with the total force being available for the Joint Chiefs of Staff to use on a priority basis as the occasion demands.

Judicious utilization of these interchangeable aircraft will provide the minimal capability needed for both the continental United States (CONUS) defense and worldwide tactical/defense applications.

TEST AIRCRAFT

Senator YOUNG. The fiscal year 1973 request for R. & D. includes $160 million to continue the development of the AWACS system. Through fiscal year 1972, $318.2 million has been made available for the development program. However, I note that, after fiscal year 1973, an additional $402 million will be required to complete the development program. Just what is included in the R. & D. program for test aircraft?

General GLASSER. The R. & D. program includes two commercial Boeing 707 test aircraft that have been minimally modified to accommodate the AWACS radar equipment. A 30-foot-diameter rotodome is mounted above the aircraft fuselage. The two R. & D. aircraft will serve as the airborne platform for the brassboard radar flyoff between the competing radars developed by the Westinghouse Corp. and the Hughes Aircraft Co. The AWACS radar will be selected during November 1972, with selection based on demonstrated performance.

The AWACS prototype mission avionics subsystem will be developed following the flyoff and then integrated with the selected radar. Utilizing one of the R. & D. test aircraft, testing will be conducted to establish subsystems compatibility and testing of the AWACS avionics suit of equipments under operational type conditions. The testing will demonstrate detection, tracking, and the conducting of intercepts of low-flying targets in ground clutter. This integration test program will be completed during December 1974. Developing the total AWACS system and applying the results to the tooling and fabrication of the prototype production test aircraft will also be in progress following the selection of the AWACS radar.

Senator YOUNG. On page 489 of the R. & D. descriptive summaries, I note the following statement: "The design, development, test, and evaluation phase requires five initial production aircraft to demonstrate completion of all systems objectives including training adequacy and logistic support aspects, as well as airborne operational effectiveness and operational suitability." I do not recall the initial production aircraft being included in the test program when we discussed this aircraft last year. Just when was this added to the program?

General GLASSER. This is the first budget year that we are requesting funds for the prototype production aircraft. However, the five aircraft requirement has been an integral part of the AWACS system acquisition contract that was awarded to the Boeing Co. during July 1970.

Senator YOUNG. As I read the data sheet, a decision for full production of this aircraft is not scheduled until fiscal year 1975. Am I correct?

General GLASSER. The date is correct and is predicated on the test results of the system integration demonstration. This test program integrates the AWACS prototype mission avionic subsystems with the radar selected as a result of the competitive flyoff. The test must demonstrate avionic system integration and testing of the avionics under operational type conditions as a prerequisite to a decision on full production. The test will demonstrate detection, tracking, and the conducting of intercepts of low-flying targets in ground clutter.

FLYAWAY COSTS

Chairman ELLENDER. Of the $309.9 million requested for these three aircraft, how much is for the flyaway cost, and how much is for support cost?

General GLASSER. The $309.9 million consists of $206 million in flyaway cost for the three aircraft and $103.9 million in peculiar support. The fiscal year 1963 unit flyaway cost of $68.60 million is reduced to a unit flyaway of $24.39 million for the planned fiscal year 1976 procurement based on a total procurement of 42 AWACS.

Chairman ELLENDER. Within the total for support cost, I note that $38.7 million is for peculiar training equipment. Please comment on the nature of this equipment.

General GLASSER. The training equipment that will be procured is peculiar to the AWACS system. The equipment consists of a simulator for training the mission crew members, a simulator for training the flight crew members, equipment for training the avionics maintenance and operator personnel at technical training centers and mobile training sets for on-going training and evaluation of aircraft maintenance and flight crew personnel.

INITIAL SPARES

Chairman ELLENDER. I note that no funds are requested for initial spares for the support of these aircraft. Please comment on this.

General GLASSER. Our request for $309.9 million includes $6.5 million for the equivalent of initial spares. These spares, including engines, will be nondeliverable spares used to support the three aircraft. After completion of the test program, the spares will be used in the construction of outyear production aircraft. For this reason, the cost of spares was included as a flyaway cost.

Senator YOUNG. When will these three aircraft be delivered?

General GLASSER. The three prototype production aircraft are scheduled for first flight during January 1975, October 1975, and November 1975. These aircraft will be used for operational suitability testing and upon completion, cycled into the operational inventory.

PROGRAM COST AND AIRCRAFT INVENTORY: SAVINGS RESULTING FROM ELIMINATION OF OTHER PROGRAMS

Senator YOUNG. General, how much did you say the AWACS program would cost? How many planes?

General GLASSER. $2.66 billion, 42 aircraft.

Senator YOUNG. You mentioned that AWACS would eliminate some existing radar systems in the United States. There is one in my own State. When this is completed, will it reduce the personnel in the military service now in the program or will there be reduced cost in operation?

General GLASSER. I would anticipate that there should be because the ground environment, some of the radars and BUIC's, control centers and so forth, would be eliminated as a consequence of having the AWACS in being.

Senator YOUNG. In the smaller BUIC site, such as located in my State, I believe there are about 130 personnel?

General GLASSER. I am not familiar with the detailed numbers, sir.

Senator YOUNG. Could you furnish us with the numbers of military personnel that you have engaged in this program and the number when the new system is installed and in operation? I know this new system will be better than the present one, but I wondered what the savings in personnel will be, if any.

General GLASSER. I would like to point out that substantial amounts of the previous ground environment have already been taken out in anticipation of the new system coming in.

Senator YOUNG. Please provide the committee with a comparison of the cost. I know the capability will be greater with the new system.

General GLASSER. Yes, sir.

(The information follows.)

The present command and control radar system has 13,650 military manpower authorizations, and reduces to 12,468 in fiscal year 1973. When the new system is installed and operational, we estimate it will require approximately 10,600 military authorizations. This is a net savings of approximately 3,050 from the present system.

In terms of a dollar cost comparison, the cost for operating, maintaining, and manning the present system is $203.8 million, and reduces to $195.5 million in fiscal year 1973. The estimated cost for operating, maintaining, and manning the new system is $160.9 million. This represents a net savings of approximately $42.9 million when compared to the present system. An even greater savings in costs and manpower can be derived for the new system if you go back to the beginning of the amortization period in 1967.

POSSIBLE ADEQUACY OF FEWER AIRCRAFT: TACTICAL SUPPORT MISSION

Chairman ELLENDER. As I stated earlier, I was under the impression that the basic purpose of the AWACS was the detection of enemy bombers—that is air defense. If that was its only purpose I am sure you would not have to buy 42 of these aircraft.

General GLASSER. No, sir; I think not. I could submit for you coverage charts showing how these aircraft will be deployed in various situations and showing what the coverage would be and the numbers that

would be required to do that. I think this is a rather modest number for the task put in front of it.

Senator SYMINGTON. The figure is $63 million apiece, not $40 million.

Chairman ELLENDER. In any event, will you give us a little more information as to how necessary these are for tactical purposes?

General GLASSER. Yes, sir; we will be very happy to do that.

(The information follows:)

The AWACS radar is a line-of-sight radar with a larger usable surveillance volume (Chart A) than the large conventional ground-based line-of-sight radars. There are basically two reasons for this. First, the AWACS clutter rejection techniques will permit AWACS to detect targets in the presence of background clutter generated by radar returns from both land and sea masses. The second is the extension of the radar horizon due to the altitude of the aircraft. The radar horizon of a ground-based radar is on the order of 15 to 30 miles depending on the location of the radar and the height of the target aircraft. The AWACS radar horizon, on the other hand, is roughly [deleted] nautical miles when the AWACS is operating at normal station altitude. The AWACS radar detection capability permits it to pick up aircraft *beyond*-the-horizon, and there is a beyond-the-horizon mode of operation provided. However, the AWACS radar propagations do not follow the curvature of the earth and should in no way be considered as providing an *over*-the-horizon capability.

The command and control functions of AWACS are equally as important as the detection function. The tactical air commander can take advantage of the data processing capability as he personally views the developing battle situation to make command and control decisions relative to assignment of available resources on a real-time basis. The data processor also furnishes information to control consoles which are then used by onboard controllers to vector fighters for the purpose of maintaining air superiority and/or intercepting hostile bomber aircraft. The functions of detection and command and control are of equal importance in air defense and tactical operations.

Chart B shows a representative air defense deployment of the AWACS during a wartime situation. Studies reveal that it would require 25 AWACS to properly support the deployment depicted.

Chart C is a graphical depiction of how the AWACS could have been used during the 1961 Cuban Crisis or at any time to help prevent unauthorized intrusions of aircraft into U.S. sovereign airspace.

Several studies have been made of the AWACS use in the tactical environment. These studies show it to be extremely valuable in providing responsible authority the necessary real-time data to control U.S. forces intelligently and economically in pursuing our National objectives. Chart D portrays typical worldwide deployments. These deployments can be accomplished on short notice for the purpose of establishing tactical surveillance and command and control stations which will enable the U.S. to ensure positive control of its forces in crisis situations.

To maintain one station 24 hours a day for 30 days, requires the assignment of [deleted] AWACS aircraft. In the case of [deleted] (Chart E), one station would be sufficient for the situations considered. In Europe (Chart F) a minimum of [deleted] stations would be required although only one is depicted. This number would have to be increased as the level of hostility increases.

As a result of the studies concerning the ADC and TAC utilization of these aircraft, the Air Force arrived at 42 as the minimum number of AWACS which can discharge the responsibilities generated under the air defense and tactical requirements. To insure proper use of this limited number, operational commitment decisions will not be made below unified command level.

(The charts have been made available to the committee.)

E–3A

Senator SYMINGTON. Mr. Chairman, may I ask a question on the E–3A?

You have three for $100 million each. Is it the learning curve that brings the cost down or do you plan to produce these on a different tool and die jig and fixture basis? What is the reason the first three are over $100 million apiece?

General GLASSER. It is as you say, the initial investment that one must make in tools and so forth and the learning curve in combination.

Senator SYMINGTON. Don't you prorate that over all of them?

General GLASSER. No, sir. You pay that as you install them.

Senator SYMINGTTON. Then you will get the benefit later on in future price; correct?

General GLASSER. That is correct.

Senator SYMINGTON. As a matter of interest, will you supply figures for the record, so we can understand the accounting procedure, the reason for some $40 million per plane for the first three above the $63 million?

General GLASSER. We can supply this, giving you the cost for each element.

Senator SYMINGTON. If you will make that part of the record.

General GLASSER. We will do that, sir.

(The information follows:)

The $63 million figure is the unit program acquisition cost and is based on the RDT&E and procurement costs for the total program. The $100 million figure is based solely on the FY 1973 procurement request. Therefore, they cannot be directly compared.

The $309 million of procurement funds requested for FY 73 is for four major elements.

	Millions
Flyaway cost	$206
Peculiar ground support equipment	62
Peculiar training equipment	38
Technical data	3
Total	309

The flyaway cost is the recurring cost of the aircraft and its on-board equipment. Initial tooling costs, combined with the high relative position on the learning curve will make this figure higher for the first few aircraft. As additional quantities of aircraft are ordered, the flyaway cost will reduce. The amount of reduction is a function of the learning curve which reduces cost per aircraft in relation to the quantity procured. Hence, the flyaway cost will decline from an average of $68.6 million for the first three aircraft to an average of $24.4 million for the last fourteen aircraft.

The other three elements are for items needed to operate and support the AWACS aircraft. In the case of AWACS, approximately three-fourths of the peculiar ground support equipment, peculiar training equipment and technical data costs are incurred in the first year.

Chairman ELLENDER. Off the record.

(Discussion off the record.)

U.S. PROTECTION OF TOTAL FREE WORLD

Chairman ELLENDER. We are attempting to protect the whole free world against one potential enemy. Is that your view?

General GLASSER. I am the wrong man to respond to this, Mr. Chairman.

Chairman ELLENDER. I don't think you are, when you say a weapon can be used in so many areas.

General GLASSER. My point is that I have responsibility to meet certain established objectives. One of the objectives is to be able to deploy forces throughout the world wherever they may be. My job is to equip them. I cannot respond to whether or not we should be doing that.

OTHER COUNTRY PRESSURE TO CONTINUE VOICE OF AMERICA PROGRAM

Senator SYMINGTON. In support of the chairman's position, we have an interesting development in RFE, Radio Free Europe. The pressure to continue this program is as strong as any since I have been in the Senate.

The Ambassador of one of the leading countries came to emphasize to the chairman of the Foreign Relations Committee how important he thought this program was and why we should continue it. The chairman said, "If it is that important, come in and help us with the cost of it." That was the last of that. It gets pretty ridiculous.

Chairman ELLENDER. I presume we should interrogate the Joint Chiefs on this. You say you are ordered to provide these aircraft and missiles to perform a certain mission and the purposes are defined by the Joint Chiefs and the Secretary of Defense.

General GLASSER. That is correct, sir.

Chairman ELLENDER. Do you take part in any of these discussions?

General GLASSER. I participate in some of them; yes, sir.

RUSSIAN THREAT

Chairman ELLENDER. You, as a good American, believe that a serious threat exists from our main adversary?

General GLASSER. I am overwhelmingly convinced of that.

Chairman ELLENDER. What causes you to say that?

General GLASSER. Because of the preponderance of evidence which I have seen which I cannot accommodate in any other way than that they have these capabilities and probably these intents.

Chairman ELLENDER. How do you arrive at the intent?

General GLASSER. That is why I say probable. Using my construction of it, I wouldn't do the things that they are doing unless I had the intent. Therefore, I must impute the same to them.

Chairman ELLENDER. Don't you think that they were prompted to do what they are now doing because they fear our intent and desire to match our capability?

General GLASSER. I have heard that theory.

Chairman ELLENDER. Isn't that true?

Senator SYMINGTON. Mr. Chairman, that is a tough question to answer in the chain of command.

Chairman ELLENDER. I know, but won't that work two ways?

General GLASSER. It is difficult for me at this late date to separate cause and effect. I only know what the threat is and what the intent seems to be. Beyond that, I can't go.

Chairman ELLENDER. You have never visited Russia?

General GLASSER. No, sir. I wouldn't be very welcome.

Chairman ELLENDER. I know.

E–3A AIRCRAFT TACTICAL ADVANTAGE AND PROHIBITIVE COST

Senator SYMINGTON. General Twining visited there, had a good time; also a lot of other Air Force generals. If the President can go to Peking, I would think you could go to Moscow.

I see the possible tactical advantage of this airplane. But the price is so high. It is like these new command post planes they now want, to have a command up in the sky, $482 million for seven airplanes.

These figures will be meaningless and worthless if we are not careful with the deficit we are running up in order to handle the world defense.

Senator YOUNG. In defense of the military, their primary responsibility is to provide the most capable military force possible. I can't blame them for wanting newer and better equipment.

In regard to our relationship with Russia or some other country, that is a political matter.

Senator SYMINGTON. I agree with that but I do think we ought to pay more attention to the cost, the price.

Senator YOUNG. If I were a military man, I would want the best airplane, missile, and other materiel I could get.

Senator SYMINGTON. I know General Glasser agrees with me on that particular point because we have discussed it. These prices have just about run everything out of line.

Senator YOUNG. I think how much we can afford is more a determination of the Congress than of the executive department.

Senator SYMINGTON. I agree. That would seem the purpose of these hearings.

F–5E INTERNATIONAL FIGHTER

Chairman ELLENDER. $92.7 million is requested for the procurement of the F–5E international fighter aircraft. This sum, along with $7.1 million advance procurement provided in the fiscal year 1972 program, will provide a total of $99.8 million for the procurement of 57 of these aircraft. Please provide the aircraft data sheet on this aircraft for the record.

(The information follows:)

FISCAL YEAR 1973 PRESIDENT'S BUDGET ESTIMATE, AIRCRAFT DATA SHEET

Service: Air Force. P–1 line item No. 12.
Nomenclature: F–5E (MASF). Popular name: Int'l Fighter.

Description/Mission.—The International Fighter Aircraft (IFA) will provide nations of South Vietnam, South Korea, Taiwan, and other allies an air superiority capability to counter the MIG–21 threat. It is designed to have a relative advantage in a self air defense role against the MIG–21 or an aircraft having similar performance characteristics. The aircraft is also capable of performing close air support.

COST DATA

[Millions of dollars]

	Fiscal year 1970 and prior	Fiscal year— 1971	1972	1973	1974	1975	1976	1977	Cost to complete	Current estimate total program
Aircraft proc.:										
Quantity			21.0	57.0						78
Cost			72.1	99.8						171.9
Less: Adv. proc			8.8	7.1						15.9
Net calendar year progress			63.3	92.7						156.0
Adv. Proc. calendar year		8.8	7.1							15.9
Weapon system cost		8.8	70.4	92.7						171.9
Initial spares			8.6	7.9	7.5					24.0
R.D.T. & E	28.0	10.7	42.5	17.7	2.6					101.5
Milcon	0	0	0	0						
Program acquisition cost	28.0	19.5	121.5	118.3	10.1					297.4
Program unit cost										3.583
Total additional cost										

Basis for Fiscal Year 1973 Budget Request.—The F–5E MASF fiscal year 1973 Aircraft buy out option was based on the increasing incursion of North Vietnamese fighter aircraft and the buildup of air bases in the southern sector of

North Vietnam. These bases close to the DMZ present a threat to the RVNAF interdiction campaign. The buy-out in fiscal year 1973 is within contractual limitations and will not require renegotiation. Under the provisions of the F–5E contract, the nominal buy for fiscal year 1974 is 120 aircraft with a ±50 percent quantity option, i.e., minimum 60, maximum 180 aircraft. Without firm Military Assistance Program (MAP) or Foreign Military Sales (FMS) quantities for fiscal year 1974, the 28 MASF aircraft procurement would not meet the contract minimum of 60 aircraft and would require renegotiation. In addition, a MASF buyout in fiscal year 1973 will provide the Air Force the flexibility of completing the F–5E contract with the fiscal year 1973 buy if firm MAP/FMS quantities fail to materialize for fiscal year 1974.

TEST DATA

a. First flight of Avionics test bed aircraft was completed 18 October 1971.
b. Fire Control System Critical Design Review (CDR) was completed 29 October 1971.
c. The first flight of integrated Fire Control System was completed 7 December 1971.
d. High altitude wind tunnel tests were completed 9 December 1971.
e. GE flight tests of the propulsion system were completed 30 December 1971.
f. Engine Military Qualification Test (MQT) scheduled in May 1972.
g. First flight scheduled in September 1972.
h. Cat II flight tests start in May 1973.

CONTRACT DATA

Major subsystem	Contractor	Type of last contract
Airframe	Northrop	Fixed price incentive.
Engine	General Electric	Fixed price, redetermined annually (modified) 75/25 split below target cost.

Performance:	Class	Demostrated Operational requirement:
Radius combat [1]	U	145 NM.
Speed max/altitude	U	1.51M/36000'.
Ceiling/combat	U	53,000.
Characteristics:		Item model, series, class, etc. (F–5E international fighter aircraft):
Crew		1.
Engines, No./Desig		2/J–85–GE–21.
Design mission T.O. Wt		15,745#.
Length/wing span		48'2"/26'8".
Ordnance [1]		2 AIM–9 missiles and 2 20mm. guns.

[1] Counter air mission.

F-5E

Cost history comparison	Quantity	Dollars (millions)
Initial planning estimate:		
Procurement	(1)	$150.0
R.D.T. & E	(1)	
Milcon	(1)	
Total program costs		150.0
Current estimate total program (fiscal year 1972 budget submission):		
Procurement	82	216.0
R.D.T. & E	5	104.1
Milcon		
Total program costs	87	320.1
Current estimate total program (fiscal year 1973 budget submission):		
Procurement	78	195.9
R.D.T. & E	5	101.5
Milcon		
Total program costs	83	297.4

[1] Not specified.

DIFFERENCE BETWEEN FISCAL YEAR 1972 BUDGET SUBMISSION AND FISCAL YEAR 1973 BUDGET SUBMISSION

Reflects decision to buy out the Military Assistance Service Funded (MASF) program in fiscal year 1973. Decrease of four aircraft is the result of program realignment due to elimination of Thailand from MASF program in fiscal year 1973.

General GLASSER. The international fighter aircraft, designated the F–5E, is an advanced version of the twin-jet Northrop F–5 aircraft. Improvements include greater thrust, higher top speed and altitude, and better maneuverability. Primary air-to-air armament consists of two 20-millimeter M–39 cannons and two AIM–9 Sidewinder missiles. The F–5E is to be used primarily in a defensive air superiority role where the using nation has radar for control and battle management of the air space. It has a secondary mission capability of ground attack. This aircraft is in the "support to other nations" category and will not be additive to the U.S. Air Force inventory.

The purpose of the F–5E is primarily to improve and modernize the self-defense capabilities of South Vietnam, South Korea, and Taiwan. This aircraft will be available to modernize the air forces of other friendly nations around the world through a developing foreign sales market and the military assistance grant-aid program. The concept supports the aims of the Nixon doctrine in assisting our allies to shoulder more of their own defense in the future.

Congress appropriated $70.4 million in fiscal year 1972 for procurement of 21 production aircraft and advanced buy of long-lead items for fiscal year 1973. The fiscal year 1973 request is $92.7 million for 57 aircraft for the military assistance service funded (MASF) program. This procurement will complete the planned MASF program buy of 83 aircraft which originally extended into fiscal year 1974. The accelerated completion of the MASF aircraft procurement is intended to supplement the Vietnamization program.

F–5E's, beyond the 83 aircraft MASF program, are expected to be funded from either military assistance or foreign military sales programs. Options in the Northrop Corp. contract project a total production of 325 F–5E's over the next 5 years.

PROCUREMENT FOR SOUTH VIETNAM AND FOREIGN MILITARY SALES

Chairman ELLENDER. Those are the ones you are buying for our allies?

General GLASSER. Yes, sir. It is also available for military sales, foreign military sales, and there are some such sales contemplated.

Chairman ELLENDER. For whom are these 57 being furnished?

General GLASSER. These are in addition to the 21 purchased in fiscal year 1972 for the VNAF, the Vietnamese Air Force.

MODIFIED F–5 AIRCRAFT

Chairman ELLENDER. This is a modified version of the earlier F–5?

General GLASSER. Yes, sir. The aircraft is basically an F–5 with an upgraded engine and with a number of improvements on the F–5's

around the world. There are a great many F–5A's throughout the world and those improvements that had been generated in various countries have all been aggregated together with a new dash 21 engine into this airplane making it an F–5E.

1972 Procurement

Chairman Ellender. Are the 21 you say you purchased now in use in South Vietnam?

General Glasser. No, sir; they are in production. They are in the fiscal year 1972 procurement program and are in production at this time.

Comparison With French Mirage

Senator Young. May I ask a question, Mr. Chairman?

Chairman Ellender. Surely.

Senator Young. How does the F–5 compare with the French Mirage? Is it about the same type of aircraft, the same range and same weight?

General Glasser. It is in the same category as the Mirage 5.

Senator Young. Do you think it has better capabilities than the Mirage?

General Glasser. Whenever you describe an airplane, you have to be careful of the words "which is better," because each of them is better in certain portions of the flight envelope.

Senator Young. The reason I ask is that the French are apparently selling a great many of them.

General Glasser. Indeed, they are. They are a very tough competitor.

Senator Young. Do you think the F–5 would be a good competitor?

General Glasser. We have every reason to believe that quite a few of these airplanes will be sought after by various countries, either through the military assistance programs or through foreign military sales. As a matter of fact, there already has been consummated a sale to [deleted] for 30 of these aircraft.

Senator Young. How do the speed and altitude compare with those of the Mirage?

General Glasser. They are approximately the same. I can give you a detailed description of these for the record as to what their characteristics are.

Senator Young. And the weights are somewhat alike, too?

General Glasser. Yes, sir; they are.

(The information follows:)

Mirage Versus F–5 Characteristics

The following comparison is derived from contractor information on the Mirage F–1 (originally known as the Mirage III–E2), and from Air Force estimates on the F–5E. The French are currently promoting sales of the F–1 to foreign nations:

	Mirage F-1	F-5E
Crew	1	1.
Span	27.5 ft	26.7 ft.
Length	49 ft	48.2 ft.
Height	14.5 ft	13.2 ft.
Wing area	269 sq. ft	186.2 sq. ft.
Maximum T.O. wt	32,000 lbs	22,000 lbs.
Propulsion:		
Manufacture	1 ATAR 9K 50, Proto/M.53 Prod	2 J-85 GE-21.
Thrust	15,784 lbs. max	10,000 lbs. max.
Speed at S. L	1.2 mach	1.0 mach.
Speed at Alt	2.2 mach	1.51 mach.
Take-off distance (sea level) (maximum wt.).	2,600 ft	3,000 ft.
Avionics	Cryano IV Radar (Martel Arm Missile).	Emerson Search and Track Radar (AIM 9 missile).
Armament:		
Guns	2 x 30 mm. optional	2 x 20 mm.
Missiles	2 x IR	2 x IR.
Rockets	Pods	Pods.
Bombs	8 hard pts. (8,000 lbs.)	5 hard pts. (7,000 lbs.).
Maximum altitude	60,700 ft	53,000 ft.

AIRCRAFT TESTING

Chairman ELLENDER. General, I am informed that the first tests of the F–5E will not be made until September.

General GLASSER. That is of the delivered aircraft. That is correct, sir.

Chairman ELLENDER. Did you have sufficient tests made before to indicate——

General GLASSER. Yes, sir.

Chairman ELLENDER. How many of these have you tested?

General GLASSER. One F–5B aircraft and one F–5A have been put together modified and incorporate the new features of the F–5E, including the installation of the J85–21 engines which are a principal feature. The F–B engine test bed aircraft has been thoroughly tested to the point where we are completely satisfied.

Chairman ELLENDER. Did that test prompt you to place an order for fiscal year 1972 for the 21?

General GLASSER. That is correct. We have test aircraft coming in which will conduct further tests but they are not of the type that will be of any concern as to whether we should produce the aircraft. They are more for the purpose of accumulating handbook data, things of that sort.

TOTAL REQUIREMENT

Chairman ELLENDER. I note on the aircraft data sheet that the 57 aircraft being requested will complete your planned program of 78 aircraft. As I recall, the testimony last year, it was indicated that this procurement program would be continued in fiscal years 1973 and 1974. Please comment on the reasons for the acceleration of this procurement program.

General GLASSER. The F–5E military assistance service funded (MASF) fiscal year 1973 aircraft buy-out option was based primarily on the increasing incursion of North Vietnamese fighter aircraft and the buildup of air bases in the southern sector of North Vietnam. These bases close to the DMZ present a threat to the Republic of Vietnam Armed Forces (RVNAF) interdiction campaign. An additional influencing factor is that the military assistance program (MAP) is not

yet firm and without MAP or foreign military sales aircraft identified for procurement in fiscal year 1974, the original MASF quantity of 28 aircraft programed for fiscal year 1974 procurement would not meet contract minimums.

Chairman ELLENDER. Are all of the 78 aircraft in the currently approved program for transfer to the South Vietnamese Air Force?

General GLASSER. All of the 78 aircraft are earmarked for South Vietnam. Ten aircraft will be utilized in the training program at Williams AFB, 14 aircraft are identified as advance attrition, and the remaining 54 aircraft comprise the three incountry squadrons.

FUTURE PROCUREMENT

Senator YOUNG. I note that the request does not include funds for advance procurement to support the procurement of this aircraft in fiscal year 1974. Does this mean that any future procurement of this aircraft will have to be funded under the military assistance program?

General GLASSER. Yes; that is correct. The fiscal year 1973 MASF buy completes the Air Force portion of the total program. Any follow-on quantities must be funded under the military assistance program or as foreign military sales.

Senator YOUNG. I note that the engine military qualification test is scheduled for May 1972. Do you expect to meet this milestone date?

General GLASSER. Yes. The preliminary phase points are on schedule and the engine military qualification tests should be completed as programed.

Senator YOUNG. Do you expect to meet the first flight schedule of September 1972?

General GLASSER. Yes, the overall program is on schedule.

DELIVERY OF AIRCRAFT

Chairman ELLENDER. What is the delivery schedule for the 21 aircraft funded in the fiscal year 1972 program?

General GLASSER. Contractor deliveries are scheduled in calendar year 1973 as follows: February 1; March 1; April 1, May 2; June 2; July 3; August 3; September 4; October 4. The first 10 aircraft will be allocated to the training school at Williams AFB. The remaining 11 are part of the first VNAF squadron of 18 U.E. aircraft.

Chairman ELLENDER. When will the 57 aircraft requested in the 1973 program be delivered?

General GLASSER. Current contractor delivery schedule completes delivery no later than December 1974.

SUPPORT COSTS

Chairman ELLENDER. How much is included in the request for aircraft spares and repair parts for initial spares for the support of these 57 aircraft?

General GLASSER. The amount included for initial spares is $7.9 million.

Chairman ELLENDER. Of the estimated total cost of $99.8 million for these 57 aircraft, how much is for flyaway cost for the 57 aircraft, and how much is for support cost?

General GLASSER. Flyaway cost is $95 million and support cost is $4.8 million.

F–5E INTERDICTION CAPABILITY

Chairman ELLENDER. Will the F–5E have the capability to fly missions to interdict the Ho Chi Minh trail?

General GLASSER. It is not anticipated it will be used for that sort of role. Its primary purpose in Vietnam will be to prevent incursions by the North Vietnamese aircraft into the air space of South Vietnam. It does have some ground attack capability, however, but that is not its primary purpose.

Senator SYMINGTON. May I ask a question, Mr. Chairman?

Chairman ELLENDER. Surely.

AIRCRAFT GRANTS TO SOUTH VIETNAM AND POSSIBLY TO SOUTH KOREA AND TAIWAN

Senator SYMINGTON. General, these planes will obviously be given to South Vietnam and South Korea; and presumably to Taiwan. Correct?

General GLASSER. There are programs discussed for South Korea and Taiwan. The status of them I don't have at the moment.

Senator SYMINGTON. I know of our aid program to South Vietnam. They have no money, to the best of my knowledge; nor has South Korea. We have given many billions of dollars to Taiwan.

You say these planes are built primarily to improve and modernize the self-defense capabilities of these countries and that will go out as military aid.

(The following information was subsequently supplied:)

F–5's/RECIPIENT COUNTRIES

The MAP programs being discussed in OSD for South Korea and Taiwan include projections for [deleted] F–5E's for Korea and up to [deleted] for Taiwan. Korea has expressed a desire for early delivery of the F–5E. Taiwan has not yet been formally approached on the question.

Firm sales have been consummated to [deleted] and Iran [deleted].

The total Military Assistance Service Funded Program includes five RDT&E, ten training and 68 VNAF aircraft.

TOTAL PRODUCTION INCLUDING STOLS

Senator SYMINGTON. Then below you say the projected total production is 325 F—5E's. A lot of these will be STOL's, won't they?

General GLASSER. Yes, sir.

RECOUPMENT PERCENTAGE

Senator SYMINGTON. We have discussed before this whole question of running out of money. Inasmuch as we finance all the development, all the tools, dies, jigs, and fixtures, if they sell an airplane to another country, do we get back any money? We have totally financed the job. Is there anything that comes back to us?

General GLASSER. There is a recoupment.

General BUCKINGHAM. Yes, sir; there is an OSD formula which does recoup some of the R. & D. and tooling cost.

Senator SYMINGTON. What percent do you recoup?

General BUCKINGTON. I don't recall. It varies by aircraft.

FOREIGN SALES RECOUPMENT

Senator SYMINGTON. We are talking about the F–5E.

Do we get any royalty from any manufacturer for supplying all the tools, dies, fixtures for nothing as well as the blueprints?

General BUCKINGHAM. In royalty as such; no, sir. We recoup through the sale to the country concerned.

Senator SYMINGTON. Do they add so much to the price to give us something back?

General BUCKINGHAM. That is correct.

Senator SYMINGTON. How much?

General BUCKINGHAM. I will check this but in the case of the F–5E's we sold to [deleted] it is around $70,000.

Senator SYMINGTON. Per plane?

General BUCKINGHAM. Yes.

Senator SYMINGTON. What is the total cost of the plane?

General BUCKINGHAM. About $2 million. I will have to check that to be more precise. They add in a lot of other ground support equipment and so forth. The $2 million figure I am quoting is approximate fly-away cost.

Senator SYMINGTON. Who decided that would be a fair return?

General BUCKINGHAM. OSD.

General GLASSER. This is handled through ISA, International Security Agency.

Senator SYMINGTON. A subsidiary of the Department of Defense?

General GLASSER. Yes, sir.

ESTIMATED TOTAL RECOUPMENT

Senator SYMINGTON. Again we are getting into the problem of how far we can go, not only in defending but in financing the entire free world. Will you supply a statement for here as to what the deal is, what is the percent of the total price? Also details of any sales.

General GLASSER. We will do that.

(The information follows:)

F–5E SALES/ROYALTIES, ET CETERA

The base price for the [deleted] sale was determined by pricing it along with the FY 73 program for MASF. The price was then increased by the amounts necessary to pay for the [deleted] approved configuration changes, and insurance and interest charges. In addition, a charge of $68,000 per aircraft was made which is the amount determined by OSD as the applicable portion of the F–5 RDT&E costs. Also included in the total price is 2% for administrative charges and 3½% for packing, crating and handling costs for items shipped. The unit Flyaway cost of these aircraft, including the special options desired by [deleted] is $2.2 million. The total case value of the sale is $106.7 million.

SALE STATUS, DOWN PAYMENT AND TERMS

Chairman ELLENDER. What is the status of this sale?

General BUCKINGHAM. It has been consummated, sir.

Chairman ELLENDER. How much cash have they paid you?

General GLASSER. We will have to ask for that, sir. That is handled through a different organization. We can find out and submit it for the record.

Chairman ELLENDER. Was the sale on a cash basis?

General GLASSER. I am not informed on that. I will have to investigate it for you.

SALE TERMS

Chairman ELLENDER. In addition to that, will you be able to give us the terms under which they are sold?

General GLASSER. Yes, sir.

Chairman ELLENDER. I would like to know whether or not we will get back whatever we have spent in R. & D.

General GLASSER. Yes, sir.

(The information follows:)

F–5E SALE STATUS, ET CETERA

The sale to the [deleted] Government was completed in September 1971. No cash has been paid down. Payments are to be made during the period September 1972 through March 1975 in accordance with the terms and conditions of the sale.

FOREIGN MILITARY SALES CASE

Chairman ELLENDER. We put the order in for them.

General GLASSER. It is handled as a foreign military sales case which means that the Air Force in this case handles the procurement for them and are reimbursed by the country making the purchase.

FOREIGN COMPETITIVENESS

Senator YOUNG. Does the Air Force consider the F–5 to be competitive pricewise with the Mirage? Will it regain some of the foreign market that the United States had?

General GLASSER. It is a little difficult to answer, Senator, because some of the other countries seem to take a much more benevolent attitude on military sales cases, you know, with trade conditions and things of that sort. It is hard to tell just exactly what your attractiveness is. I will look into that with people who handle these programs and submit a discussion of this point for the record.

(The information follows:)

F–5A VERSUS MIRAGE/COMPETITIVE DISCUSSION

The French are currently promoting the sale of the Mirage F–1 (originally known as the Mirage III E–2). The price of this aircraft is estimated to be $4–5 million, as compared to the F–5E weapon system procurement cost of about $2.2 million.

There are strong indications that the F–5E will garner a significant part of the aircraft foreign sales market. Thirty F–5Es have been sold to [deleted] and 36 more to Iran with negotiations under way for an additional [deleted] for Iran. The F–5E is designed to be relatively simple, easy to maintain and to operate at a relatively low cost. The Mirage F–1 by contrast is a more sophisticated aircraft with somewhat higher performance than the F–5E. The much lower cost of the F–5E, however, places it in an excellent competitive position as reflected by the sales to Iran and [deleted] which were consummated even before the first flight of the aircraft scheduled in September of this year.

The base price for sales is determined by pricing it along with the applicable fiscal year program. Current sales cases are priced along with the FY 73 program for MASF. The price is then increased by the amounts necessary to pay for any special configurations desired by the country. In addition, a charge of $68,000 per aircraft is made which is the amount determined by OSD as the appropriate reimbursable portion of the F–5 RDT&E costs.

SALE REIMBURSEMENTS

Senator YOUNG. Will the United States be reimbursed for the sale of these planes to other countries?

General GLASSER. Any that are on a foreign military sales case there is a reimbursement by the country buying.

Senator YOUNG. Full reimbursement?

General GLASSER. Identically so as was discussed here, including a partial recoupment of R. & D. and nonrecurring charges.

Senator YOUNG. I have a lot of confidence in General Buckingham. He was a good witness here when he was a colonel. I would like to see him provided with a couple more stars.

General GLASSER. I would, too. I could not make it over here without him.

CONTRACT PROVISION RELATING TO SALE PRICE

Senator SYMINGTON. If we are putting stars on people, let us put another one on General Glasser.

Mr. Chairman, I would ask, is there anything in the contract that specifies that we cannot sell these foreign countries for less money than we sell our own country? You can buy a Toyota in Japan for around $3,500, in this country for around $2,500. Are they allowed to sell for less money than in the United States?

General GLASSER. I do not know what provisions are in the contract.

Senator SYMINGTON. They "give away" such planes to South Vietnam. With the learning curve aspect of any production item of this character, the best profit is profit resulting from overabsorbed fixed overhead. With that premise, I would like to know the terms of sale.

Do they have to sell at the same price, or are they allowed to sell for less money?

General GLASSER. If I may look that up, I will come back to you.

(The information follows:)

F-5E/SALES TO FOREIGN COUNTRIES

Foreign Military Sales policy provides that items will be sold without loss or gain to the U.S. Government. Aircraft are sold for the prices paid by the U.S. Government, and add only what is required to recover RDT&E costs, packing, crating, handling and administrative charges.

In the case of a commercial sale, the prices are negotiated by the country directly with the aircraft manufacturer. Usually, such prices are higher than they would be under a Foreign Military Sales case because the aircraft manufacturer pays higher prices than the Government does for items provided as Government Furnished Aeronautical Equipment (GFAE). As in the case of a Foreign Military Sale, the aircraft manufacturer is required to collect the RDT&E amount determined by OSD as applicable to the weapon system involved, and turn it over to the U.S. Government.

F-15 AIR SUPERIORITY FIGHTER

Chairman ELLENDER. $421.6 million is requested for the initial production of 30 of the Air Force's F-15A air superiority fighter aircraft. The aircraft data sheet with appropriate security deletions will be included in the record at this point.

(The information follows:)

FISCAL YEAR 1973 PRESIDENT'S BUDGET ESTIMATE, DATA SHEET

Description/Mission.—The F–15 is an advanced tactical fighter being developed for the Air Superiority mission. It will replace the F–4 as the primary Air Superiority aircraft in the mid-seventies. It is a twin engine, single crew, fixed swept wing aircraft. It will be characterized by high thrust to weight and low wing loading for maximum turnability, acceleration, and agility.

Service: Air Force. P–1 Line item No. 14.
Nomenclature: F/TF–15 Popular name unknown.

COST DATA

[In millions of dollars]

	1970 and prior	Fiscal year— 1971	1972	1973	1974	1975	1976	1977	Cost to complete	Current estimate total program
Acft. proc.:										
Quantity				30.0	77.0	144.0	144.0	144.0	190.0	729.0
Cost				421.6	801.9	1,111.2	1,004.5	967.4	1,219.4	5,526.0
Less: Adv. proc				0	0	0	0	0	0	0
Net calendar year prog				421.6	801.9	1,111.2	1,004.5	967.4	1,219.4	5,526.0
Adv. prog. calendar year				0	0	0	0	0	0	0
Weapon system cost				421.6	801.9	1,111.2	1,004.5	967.4	1,219.4	5,526.0
Initial spares				34.3	132.6	171.1	122.5	78.2	21.0	559.7
R.D.T. & E	252.6	349.5	419.9	454.5	196.3	47.1	33.5	0	0	1,753.4
Milcon	0	0	0	0	0	0	0	0	0	0
Program acquisition cost	252.6	349.5	419.9	910.4	1,130.8	1,329.4	1,160.5	1,045.6	1,240.4	7,839.1
Program unit cost										
Total additional cost										10.466

Basis for FY 1973 Budget Request.—Continued engineering, design and wind tunnel testing. Category I flight tests begin with first flight in July 1972. Military Qualification Test (MQT) for engine complete in February 1973. Procurement of 30 production aircraft under the terms and conditions of the existing contract for the first wing. The procurement quantity is based upon an Oct 1972 production approval, 24 months lead time, and monthly deliveries to meet the Wing Initial Operational Capability as reflected in the Selected Acquisition Report.

Test Data:

a. Category I flight tests begin with First Flight in July 1972 and will terminate in November 1974.
b. Category II flight tests begin in April 1974 and will terminate in November 1975.
c. The Category III flight test schedule is being determined by the Tactical Air Command at this time.

CONTRACT DATA

Major subsystem	Contractor	Type of last contract
Airframe	McDonnell Douglas	Cost plus incentive (R. & D.), fixed price incentive, successive target (R. & D./procurement).
Engine	Pratt & Whitney	Cost plus incentive (R. & D.), fixed price incentive, successive target (R. & D./procurement).
Radar	Hughes Aircraft	Fixed price, incentive fee.

F-15

Cost history comparison	Quantity	Amount (millions)
Initial planning estimate:		
Procurement	729	$5,576.6
R.D.T. & E	20	1,778.6
Milcon		
Total program costs	749	7,355.2
Current estimate, total program (fiscal year 1972 budget submission):		
Procurement	729	5,587.2
R.D.T. & E	20	1,721.4
Milcon		
Total program costs	749	7,308.6
Current estimate, total program (fiscal year 1973 budget submission):		
Procurement	729	6,085.7
R.D.T. & E	20	1,753.4
Milcon		
Total program costs	749	7,839.1

The $32.0M increase in RDT&E is caused by schedule and requirement changes in TEWS (+$3.0M), impact on R&D, as a result of the Navy's reduction of engines for the F-14B (+$30.6M), deletion of Test Center Service funding (−$3.7M), addition of funds for missile test hardware (+$2.1M). The +$498.5M increase in procurement is caused by revised estimating factors for peculiar AGE and training Spares (−$7.2M) and the impact on procurement costs associated with the Navy's decision not to exercise production options on the F401 engine.

[In millions of dollars]

	Fiscal year 1972	Fiscal year 1973	Difference
Procurement	$5,587.2	$6,085.7	+$498.5
R.D.T. & E	1,721.4	1,753.4	+32.0
Total	7,308.6	7,839.1	+530.5

General GLASSER. The F–15A is being developed specifically for the air superiority mission to counter a series of new Soviet fighter aircraft which will have a counter air capability superior to the F–4E. The design of the F–15 is characterized by a high thrust to weight ratio and low wing loading for maximum maneuverability. The F–15 cost has been kept to a minimum by incorporating only that equipment which is essential for mission accomplishment.

Fabrication of the first flight test article is under way and the first flight is scheduled for July 1972. Preliminary flight test rating of the engine is scheduled for completion by the end of February 1972.

The first flight will initiate the development, test, and evaluation phase of the flight test program and will lead to a decision on approval of long lead item production in October of this year. We expect to complete sufficient flight testing in time to exercise our contract option for the first wing in February 1973.

BUDGET REQUEST

The fiscal year 1973 request is $421.6 million to buy 23 F–15A's and seven TF–15A's. We plan to buy a total of [deleted] aircraft, including [deleted] TF–15A's, to support a force of [deleted] wings. The first F–15A squadron is scheduled to be operational in mid-19 [deleted].

As a result of a Navy decision not to exercise production options on the Pratt & Whitney F–401 engine for the F–14B, there will be a significant cost impact on the F–15 program. This, of course, is not all additive costs to the Government because much of the cost would have been borne by the Navy F–14B program had it continued. The exact magnitude of the additional procurement funds needed for the F–15 is currently under negotiation. The requirement for these funds will be spread over the life of the program.

FIRST FLIGHT

Chairman ELLENDER. As I recall, the first flight for this aircraft is not scheduled until July 1972. Am I correct about this?

General GLASSER. Yes, sir. The first flight of the F–15 is scheduled for July 1972.

Chairman ELLENDER. Here you are requesting $421.6 million for the procurement of these first 30 aircraft before the first flight of the aircraft. Isn't this a complete departure from the "fly-before-buy" concept of aircraft production?

General GLASSER. The Air Force is convinced that the F–15 program meets the present Department of Defense "fly-before-buy" policy. Secretary Packard defined his interpretation of "fly-before-buy" as having reached an acceptable level of confidence in each phase of a program prior to moving to the next. Within this definition the Air Force has proceeded conservatively and deliberately toward the development and acquisition of the F–15. The heart of the program is the requirement that critical demonstration milestones be successfully accomplished prior to reaching key program decisions. As an example, prior to the release of long lead production funds in October, ten specific milestones must be met. Further conformance with the "fly-before-buy"

concept has been achieved through competitive development of program high-risk items such as the engine, radar, and 25 millimeter gun. In addition, the F–15 program maintains a low production rate throughout the early flight test program. Specifically, the 20 test aircraft are being initially built at a rate of one every other month, reaching a rate of one per month 21 months after first flight. The production delivery rate will increase to three per month 30 months after first flight and will reach the maximum planned rate of 12 per month 4 years after first flight.

Chairman ELLENDER. What is the exact current status of the F–15, and why is it essential that funds be provided in fiscal year 1973 for the production of the first 30 operational aircraft?

General GLASSER. At this time, we have the first airplane essentially assembled. It sits in the hangar in St. Louis and it looks like an F–15 today. It will be flying in July of this year. We are contemplating the initiation of the contract for the very first airplane something over a year from now, March of next year.

In order to be able to make that contract in March a year from now, we must include this request for funds in the fiscal year 1973 request.

Chairman ELLENDER. And that full amount is——

General GLASSER. That is the amount that we are asking for, only the initial 30 aircraft of the——

Chairman ELLENDER. $421.6 million.

General GLASSER. That is right.

PENDING AUTHORIZATION

Senator YOUNG. These 30 aircraft require authorization.

General GLASSER. It is in the process of the authorization cycle.

F–15A AND F–14 DIFFERENTIATION

Chairman ELLENDER. Can you tell us the difference between the F–15A and the Navy's F–14?

General GLASSER. The F–14 is a Navy aircraft which is primarily for the fleet defense. It is a somewhat larger aircraft than the F–15. It is a swing wing airplane; it is a variable geometry airplane, primarily to improve its performance for operating from carriers and it does give it the opportunity to swing the wings forward for extended loiter in its role as a key defense aircraft.

Chairman ELLENDER. The objective of the F–14, as I understand it, is that of an intercept aircraft.

General GLASSER. Intercept aircraft in defense of the fleet.

Chairman ELLENDER. And yours?

General GLASSER. Ours is a land-based aircraft and is primarily an air-to-air fighter in the theaters of operation, primarily Western Europe.

Chairman ELLENDER. Wherein you engage in dogfights with the enemy?

General GLASSER. Yes, sir; it is a dogfighter. That is its specific design. We have very, very deliberately set out to in no way compromise its abilities as a dogfighter.

PRODUCTION APPROVAL

Senator YOUNG. I note the following statement on the aircraft data sheet: "The procurement quantity is based upon an October 1972, production approval." Who makes the decision to approve the production of this aircraft?

General GLASSER. The initial approval for the release of procurement funds, $15 million, to support long lead requirements is required in October 1972. Approval for the release of full production funding to support the fiscal year 1973 buy of 30 aircraft is scheduled for February 1973. In both cases these are Secretary of Defense approvals and are entirely dependent on associated congressional approval of funds.

Senator YOUNG. As I recall, we are procuring 20 of these aircraft under the R. & D. program. Am I correct about this?

General GLASSER. Yes, sir; that is correct.

OPERATIONAL AIRCRAFT

Senator YOUNG. As I read the aircraft data sheet, the 30 aircraft being requested in fiscal year 1973 are in no way associated with the F–15 test program but are the aircraft for equipping the first F–15 wing. Am I correct about this?

General GLASSER. Yes, sir; that is correct. These aircraft represent the initial buy leading toward eventual equipage of the first F–15 wing.

Chairman ELLENDER. How was the number of 30 arrived at for the initial production of the F–15?

General GLASSER. The fiscal year 1973 initial production buy quantity of 30 aircraft was established to meet several objectives, such as:

To eliminate additional tooling costs and fully utilize the initial set of tooling already provided during the development program to fabricate test aircraft. This tooling set supports a production rate of three aircraft per month.

To meet the required initial operational capability date.

To establish a firm base from which the production rate could transition during the fiscal year 1974 buy to the planned maximum rate of 12 per month.

To mate with leadtime requirements in the follow-on fiscal year 1974 production buy.

CONTRACT PROVISIONS

Chairman ELLENDER. It is my understanding that, under the terms of the contract, you could buy as few as 15 aircraft in fiscal year 1973. Is this correct?

General GLASSER. Yes, sir; that is correct. Although the current contract provides for a buy of 30 aircraft in fiscal year 1973, it allows for an option to buy aircraft within plus or minus 50 percent of the proposed 30. Aircraft pricing is dependent upon the number of aircraft procured, from the minimum of 15 to the maximum of 45.

Chairman ELLENDER. On January 6, 1972, the committee was advised that the Navy's decision to defer procurement of their planned F–14B aircraft would result in a cost increase in the F–15 program of $532 million. It was made clear that this was a preliminary estimate. Do you have any further information on this matter?

General GLASSER. The $532 million, previously estimated to cover added F–15 costs caused, in part, by deferment of the Navy F–14B program, will cover the expected total impact. During recently completed negotiations the Air Force was able to establish revised target costs for the initial buys of the F–100 engine that, after appropriate factors are applied, confirm the estimated total impact. It should be reiterated that the dollar increase cited is applicable to the total F–15 program and not an incremental number of aircraft.

INITIAL SPARES

Chairman ELLENDER. I note on the aircraft data sheet the current program calls for inital spares for the F–15 program totaling $559.7 million, with an initial increment of $34.3 million requested for fiscal year 1973. Earlier I referred to the report of the Comptroller General of January 31, 1972, concerning the procurement of initial spares. In planning your initial spares procurement for the F–15, have you taken into consideration those recommendations of the General Accounting Office to prevent a reoccurrence of those practices of which he was so critical in connection with the procurement of initial spares for the F–111 aircraft?

General GLASSER. The initial spares total program estimate of $559.7 million will procure the initial spares required for the F–15 force through fiscal year 1979. This spares estimate was initially developed in late 1969 with full consideration of the then known F–111 and other program experience.

The F–15 SPO integrated logistic support directorate personnel have investigated problems encountered in the initial provisioning of the F–4, F–111, C–5 and A–7 aircraft. Our investigation revealed the problems highlighted in the General Accounting Office report to Congress B–133396. Our review of the report revealed we have already implemented the GAO suggestions to the maximum extent practical.

Additionally, we have streamlined our management of initial spares procurement which should further prevent reoccurrences of the practices as outlined in the F–111 report. The initial increment of $34.3 million is the minimum funding level required to adequately support the aircraft delivered during fiscal year 1975.

ENGINE DEVELOPMENT

Senator ELLENDER. Earlier, we discussed the scheduled military qualification test for the engine for the F–15. We have had considerable discussions with respect to the delay in the advance technology engine for the Navy's F–14B aircraft. Just what is the current status of the development of the advanced technology engine for the F–15 aircraft?

General GLASSER. The schedule for development of the advanced technology engine in the F–15 aircraft as originally established include completion of a 60-hour preliminary flight rating test (PFRT) in February 1972 and of a 150-hour military qualification test (MQT) in February 1973. Successful completion of the PFRT 60-hour endurance test was achieved on February 16, 1972, lending high confidence in our ability to complete on schedule engine development through MQT in February 1973.

TOTAL REQUIREMENT

Chairman ELLENDER. I note on the aircraft data sheet that the current total program calls for the production of 729 F–15 aircraft. Just how was this total of 729 computed?

General GLASSER. The total of 729 aircraft is computed on the basis of 432 aircraft to support a force of six wings. To this number is added the requirement for 108 aircraft for training, 54 for command support and 135 for attrition. Experience in past programs as well as evaluation of the anticipated threat provides the basis for provisions for training, command support, and attrition aircraft.

Chairman ELLENDER. It is indicated that the initial planning estimate for the F–15 aircraft was $7,355.2 million for the development and production of 749 aircraft. What was the date of this initial planning estimate?

General GLASSER. The initial development estimate of $7,355.2 million was established and reported in the December 31, 1969, SAR. This baseline estimate reflected the negotiated system contractor prices and a precontract award estimate for propulsion and Government-furnished aeronautical equipment (GFAE).

Chairman ELLENDER. I note that the current estimated total program for the same number of aircraft is $7,839.1 million. Does this reflect the anticipated increase of something over $500 million resulting from the Navy's deferral of the F–14B aircraft?

General GLASSER. Yes, sir. All costs associated with the Navy decision are reflected in the current estimated total program cost of $7,839.1 million.

SUPPORT COSTS

Senator YOUNG. Of the total of $421.6 million being requested for these aircraft, $70.1 million is for support cost. Please comment on the various items included in the $70.1 million.

General GLASSER. The fiscal year 1973 production budget request of $421.6 million includes $70.1 million for F–15 peculiar organizational, intermediate, and depot aerospace ground equipment, mobile training sets for maintenance training, technical manuals and engineering/management data.

DEVELOPMENT OF AIRCRAFT BY ALLIES

Chairman ELLENDER. Do any of our allies have in their inventory an aircraft comparable to the F–15, and are they developing this type of aircraft?

General GLASSER. They do not have anything like this in their inventory, although there is a program in development at this time by a consortium of the United Kingdom, Germany, and Italy, where they are looking at a multirole aircraft, as they call it, MRCA, which has some of these capabilities but is not up to the capability of this aircraft.

Chairman ELLENDER. If they develop and produce this aircraft, will you need to build as many of the F–15's as you now plan?

General GLASSER. I think that the number that we are contemplating is a very modest number when one looks at the opposition inventory.

I will ask General Hill to read the Soviet strategic defense fighter inventory.

General HILL. On July 1, somewhere between 2,800 and 3,150 could be engaged by such aircraft as the F–15.

Chairman ELLENDER. Where are those located?

General HILL. I don't have the location. I would say the aircraft as deployed in the Soviet Union and forward deployed in the Warsaw Pact countries.

Chairman ELLENDER. Are they actually deployed? You are so accurate about the number I wondered if you knew where they are. How did you find out there were 2,300?

General HILL. I have data on that, sir. As I said, I don't have the precise location. We can furnish that for the record as to where they are specifically located.

(Classified information was furnished to the committee.)

U.S. BURDEN IN WESTERN EUROPE AND POSSIBLE ASSISTANCE OF ALLIES

Chairman ELLENDER. General, in planning for the development and production of the F–15, did you consult with our allies in Western Europe to see if they were willing to share part of the cost?

General GLASSER. We did not consult with them in that regard. We have certainly consulted with them insofar as general discussion of what their intentions are and what the performance of aircraft programs that they have in being and in contemplation are; but insofar as their working with us on a joint program, no, sir; we have not done that.

Chairman ELLENDER. Don't you think it might be well for us to do that, General?

As I have stated on many occasions, we are being called upon to continue bearing the major portion of the tremendous cost for the protection of the free world. Here we are developing an expensive new aircraft that is required to cope with the new aircraft developed by the Soviet Union. It seems to me we should try to get our allies in Western Europe to help with the costs of these developments.

General GLASSER. Mr. Chairman, I would like to say several things about that topic.

DETERIORATING EUROPEAN AEROSPACE INDUSTRY

First of all, the Europeans are very anxious, and, understandably so, to develop and produce an aircraft of their own. They are very concerned over the deteriorating aerospace industry that they have and it is very much of a necessity. So they have been more or less reluctant to join with us in a development program.

EUROPEAN PURCHASES OF U.S. AIRCRAFT

On the other hand, I would point out that both the United Kingdom and the Federal Republic have bought and are still buying substantial quantities of U.S. produced aircraft. There is a lot of speculation as to where this MRCA aircraft will go.

Development can be a very expensive proposition, as we predicted, and it is entirely possible that the day will arrive when they will find that they cannot afford to produce that aircraft. When that happens, I have every expectation that the Germans in particular will turn right back to the United States and seek to purchase F–15 aircraft.

AIRCRAFT UNIT COST

Senator SYMINGTON. If the Chair will yield, what is the current price of the F–15?

The price of the F–14 already is over $20 million apiece. Adding up the spare parts, et cetera on a comparable basis, what is the cost of the F–15?

General GLASSER. On that same identical basis, we are at [deleted]. That is as a consequence of having to increase the program by some $500 million as a result of the Navy dropping out of the F–14B program.

ELIMINATION OF UNNECESSARY EQUIPMENT AND FEATURES

Senator SYMINGTON. Are you pressing the manufacturer, all the time, on the importance of keeping the price down so he does not price himself out?

General GLASSER. This is the most common remark to aircraft, not only aircraft but every program contractor we have in the Air Force today.

Senator SYMINGTON. I mention this primarily for one reason. This airplane, and perhaps I had a little to do with it back in 1965, an air superiority fighter without a lot of junk on it—as Senator Goldwater said in his letter, garbage. When a Defense witness last year was up, he said he put more range in the F–15. But you don't need range in an air superiority fighter.

I said, "Who decided to put the additional range in it?"

He said, "The Defense Department."

General GLASSER. I don't know the origin of his statement that we put more range in it.

In the basic profile of the F–15, the range is [deleted] nautical miles.

Senator SYMINGTON. And still is?

General GLASSER. And still is as of today.

Senator SYMINGTON. That witness, it is in the record, was Secretary Packard. I asked the question. He gave the answer. If you all don't hold it all down, it will be priced off the market.

General GLASSER. Senator Symington, I credit myself, among many other people, with very vigorously holding this down. I recall some years back insisting that the size of the engines be kept at what they were in face of heavy competition of those who wanted to put some pad in there. They said, you know airplanes always get heavier when you add things.

My response was that we are not going to add anything. We have not added anything. As a matter of fact, Secretary Seamans and General Ryan feel so strongly about this that on two individual occasions they have forced scrubbing exercises to go back through the airplane

and take things out. They have reduced the equipment on board the airplane rather than adding anything.

There have been great pressures from the operators to add this, that and the other thing. On every occasion, we have been taking out rather than adding. That is what gives me confidence that we are going to hang in there with these numbers.

The flyaway cost of the airplane is still below $7 million. For an aircraft of that performance, I think that is phenomenal.

Senator SYMINGTON. One of the reasons we canceled out a lot of 4's was that this lowered the Navy price on the plane. That is past history.

EFFECT ON PROGRAM OF NAVY F–14A AND F–14B PROGRAM

On the other hand, an effort was made to sell the F–14 on the grounds it could do the job as well as the F–15 could. Of course, in doing that, they would need the F–15 engine, which the F–14B if ever built, would take.

Now the Navy has the F–14A in production, well ahead of the F–15 because they took the F–111 Navy money and went to work with it to preserve the Phoenix missile system, et cetera. Now I see also they are canceling the concept of the F–14B because of not wanting the engine required for the F–14B. That will raise your cost half a billion dollars, will it not?

General GLASSER. That is correct.

Senator SYMINGTON. What is the story behind that?

General GLASSER. I believe, sir, that it would be better to question the Navy about what is their program because I have heard that this is not a permanent decision but rather that they are delaying their program. They will be coming back in with an F–14B.

Senator SYMINGTON. In the meantime your price automatically goes up half a billion dollars on the F–15; correct?

General GLASSER. Of course, a lot of that you understand is not money out of the Treasury. That is a difference of accounting.

Senator SYMINGTON. I don't understand.

General GLASSER. Because of the fact that the Air Force is now having to pay for all of the tooling rather than sharing it with the Navy because the Air Force is now having a higher overhead rate but no higher overhead aggregate.

Senator SYMINGTON. More clear when you put it that way.

General GLASSER. Those are things that are really not dollars out of the Treasury. Part of this will be dollars out of the Treasury because you are operating at a less efficient rate than you would have had you been producing those engines.

Senator SYMINGTON. The unit cost goes up?

General GLASSER. That is right, but the half billion dollars is not an increased cost to the Government.

Senator SYMINGTON. Do you know if there has been any effort to substitute the F–4 for the F–14?

General GLASSER. I don't know.

Senator SYMINGTON. I imagine the price of the F–14A has gone up so high it would not be a comparable situation.

General GLASSER. Senator, on any aircraft of this sort, particularly when they have some similarities like these new aircraft, there are

always people in the organization that are stirring up the pot. But I have been, because of my long tour in Washington, very closely associated with the F–14A and F–15A since the day they were called the FX and the VFAX.

We have worked throughout that entire period, recognized what each service was after and what were the similarities and what were the differences. There is a complete understanding.

I have spoken with Admiral Weiser as recently as 2 days ago about this very topic. We both recognize that these airplanes are different; they are both needed.

This country, as you have said so many times, has not produced a new fighter aircraft in all these years. It just does not seem reasonable to be concerned about building two fighter aircraft in a decade.

KELLY JOHNSON AIRCRAFT

Sentor SYMINGTON. One more question.

There are rumors around about other fighters that will be considerably less expensive.

Have you had any price estimates on such airplanes?

General GLASSER. I am not sure of the airplanes you are describing. There is an aircraft which is an outgrowth of the 104.

Senator SYMINGTON. Does it have comparable performance with the F–15?

General GLASSER. In some portions of the envelope.

Senator SYMINGTON. Secretary Packard at one point made a statement that there were going to be some less expensive fighters. He and I had correspondence about it. I would like to know about any program.

Thank you, Mr. Chairman.

F/TF–15A FIGHTER AIRCRAFT

Chairman ELLENDER. Did I understand that the cost of the F–15, without regard to the research and development effort, will be a little over $7 million each?

FLYAWAY UNIT COST

General GLASSER. Our estimates as of now is that it will be less than $7 million each on a flyway basis.

Chairman ELLENDER. That is for the purchase of how many?

General GLASSER. The overall program, the [deleted].

INFLATIONARY COST

Chairman ELLENDER. Have you added the inflationary costs?

General GLASSER. Yes, sir; we have.

Chairman ELLENDER. Have you a formula for escalation?

General DELUCA. On the F–15, it is a best estimate basis, depending on contractual provisions for escalation, the labor contract that they have and the general economics.

I would say the rates in there must be around 4 percent.

ENGINE DEVELOPMENT

Senator YOUNG. You are continuing the development of the new technology engine?

General GLASSER. Yes, sir.

Senator YOUNG. The F–14B were to be equipped with the same engine?

General GLASSER. Let me clarify that, Senator.

We have two engines which are based on a common core which has been jointly developed. The engine for the F–15 is one version of that, using that common core and the engine for the F–14B is another engine. They are different engines but they have a very common core to them. The Navy is still participating jointly with us in the development of that basic engine. It is a procurement contract that they have backed out of.

Senator YOUNG. If they desire to go into the larger engine later, the cost would be less because of what you are doing?

General GLASSER. It is available to them and it will cost them less because we will have picked up many of those charges.

F–111F TACTICAL AIRCRAFT

Chairman ELLENDER. The request includes $160.3 million for the procurement of F–111F tactical aircraft. This sum and $20.1 million advance procurement will provide a total of $180.4 million for the procurement of 12 of these aircraft. Please provide the aircraft data sheet with appropriate security deletions for the record.

(The information follows:)

AIRCRAFT DATA SHEET

FISCAL YEAR 1973 PRESIDENT'S BUDGET ESTIMATE AIR FORCE, F–111A/D/E/F—P–LINE ITEM NO. 6[1]; POPULAR NAME: UNKNOWN)

[Description/mission: The F-111 A/D/E and F are an advanced tactical fighter series. They have surpassed all-weather tactical capability with both nuclear and conventional weapons. The F-111 is unique in its all-weather long-range attack capability and has secondary capabilities in close air support, counterair and other tactical missions. It supplements the present USAF capability to perform these missions by the F-100, F-105, and F-4]

Cost data (millions of dollars)	Fiscal year 1970 and prior	Fiscal year— 1971	1972	1973	1974	1975	1976	1977	Cost to complete	Current estimate total program
Aircraft procurement: Quantity	413	12	12	12						449
Cost	4,273.1	224.3	112.0	[1] 180.4						[1] 4,789.8
Less: advance procurement	−165.0	−60.9		−20.1						−246.0
Net calendar year progress	4,108.1	163.4	112.0	[1] 160.3						[1] 4,543.8
Advance procurement calendar year	225.9		20.1							246.0
Prior year overtarget and unfunded deficiencies	−782.6	433.4	349.2							
Weapon system cost	3,551.4	596.8	481.3	[1] 160.3						[1] 4,789.8
Initial spares	475.1	29.5	5.3	[1] 0	0.8					510.7
R.D.T. and E	1,567.9	49.4	19.2	5.0						1,641.5
Milcon	19.1									19.1
Program acquisition cost	5,613.5	675.7	505.8	165.3	0.8					6,961.1
Program unit cost										14.938
Total additional cost										

[1] P–1 includes $8,900,000 of initial spares in weapon system cost.

Note: Basis for fiscal year 1973 budget request: The remaining tactical F–111 program development work will be completed in fiscal year 1973 and consists primarily of category I and II flight tests to examine stall/spin, flutter, flight loads stability and control, and avionics. The procurement of 12 aircraft in fiscal year 1973 will fully equip the F–111F wing to the required level of 1972 UE aircraft; the remaining 22 of 94 total aircraft are to be used for training, command support, and/or attrition.

TEST DATA

SCHEDULE FOR COMPLETION

	F-111D	F-111F
(a) CAT I (contractor)	August 1972	February 1972.
(b) CAT II (AF technical)	November 1972	June 1972.
(c) CAT III (using command)	January 1973	August 1972.

CONTRACT DATA

Major subsystem and contractor:
Airframe—General Dynamics (fixed price incentive), Fort Worth, Tex.
Mark II Avionics—Autonetics (Sub to General Dynamics), Anaheim, Calif.
Engine—Pratt & Whitney (fixed price incentive), East Hartford, Conn.

Characteristics	Class	Item model, series, class, etc. F-111A	F-111E	F-111D	F-111F
Take-off weight [1]	U	82,632 pound	84,433 pounds	85,406 pounds	85,589 pounds.
Length/wing span	U	75.5 feet/32 feet swept, 75.5 feet/ 63 feet unswept.	Same	Same	Same.
Speed/max	U	2.2 Mach	2.4 Mach	2.4 Mach	2.4 Mach.
Radius combat	C	800 nautical miles total, 30 nautical miles dash.	800 nautical miles total, 14 nautical miles dash.	800 nautical miles total, 16 nautical miles dash.	800 nautical miles total, 20 nautical miles dash.
Engines, no/desig	U	2 TF-30-P-3	2 TF-30-P-3	2 TF-30-P-9.	2 TF-30-P-100.
Ceilings/combat	C	57,900 feet	53,300 feet	55,150 feet	58,050 feet.
Crew	U	2	Same	Same	Same.
Payload/max practical	U	31,500 pounds	do	do	Do.
Range, ferry	U	2,750 nautical miles.	2,585 nautical miles.	2,500 nautical miles.	2,585 nautical miles.

[1] Basic nuclear mission with 1 internal nuclear weapon.

F-111

Cost history comparison	Quantity	Amount (millions)
Initial planning estimate:		
Procurement	1,370	$4,642.5
R.D.T. & E	18	863.0
Milcon		
Total program costs	1,388	5,505.5
Current estimate total program (fiscal year 1972 budget submission):		
Procurement	437	4,822.8
R.D.T. & E	17	1,640.3
Milcon		19.1
Total program costs	454	6,482.2
Current estimate total program (fiscal year 1973 budget submission):		
Procurement	449	5,300.5
R.D.T. & E	17	1,641.5
Milcon		19.1
Total program costs	466	6,961.1

Note: The Ad Hoc Committee on Tactical Air Power of the Senate Armed Services Committee was advised in April 1971 that the F-111 program could be completed by the addition of $193,300,000 ($1,200,000 in R. & D. and $192,100,000 in procurement). This included a decrease of 12 aircraft at $57,700,000 in the fiscal year 1971 program. The procurement increase was subsequently offset by a $7,600,000 reduction in initial spares due to definitized requirements being priced lower than our original estimates. Our fiscal year 1972 requirement was increased by 12 F-111F aircraft approved at $112,000,000 by a supplemental budget request. A fiscal year 1973 requirement for 12 additional F-111F aircraft at $181,200,000 (fiscal year 1972 advanced procurement $20,100,000, fiscal year 1973 $160,300,000, fiscal year 1974 initial spares $800,000) was identified prior to the submission of the fiscal year 1973 budget to Congress

[Dollar amounts in millions]

	Fiscal year 1972	Fiscal year 1973	Difference
Quantity	(454)	(466)	(+12)
Procurement	$4,822.8	$5,300.5	+477.7
R.D.T. & E.	1,640.3	1,641.5	+1.2
Milcon	19.1	19.1	0
Total	6,482.2	6,961.1	+478.9

General GLASSER. The F–111 has now accumulated over 131,000 flight hours, and this operational experience has validated the aircraft's capability to accomplish the very important night/all-weather tactical mission. Its long-range/large-bomb load capability, together with the high survivability that results from the aircraft's very low-altitude high-speed attack characteristics, combined to provide an unequaled capability.

All of the F–111A's and E's, as well as the Strategic Air Command's FB–111's, have been delivered. Delivery of the F–111D's to Cannon Air Force Base, N. Mex. have started. Those deliveries will be completed a year from now in February 1973. Over 30 of the new F–111F's have been delivered to Mountain Home Air Force Base, Idaho. We are very pleased with this latest model in the series.

Our fiscal year 1972 approved funds of $461.2 million are for over-target costs and procurement of 12 F–111F's. The fiscal year 1973 appropriation request contains $160.3 million for an additional 12 F–111F's which will finish equipping this fourth wing for a total of 94 aircraft. Long leadtime advanced buy funds of $20.1 million for this procurement will be accommodated in the fiscal year 1972 budget. These last 12 aircraft will be produced at a one-a-month rate from January to December 1974.

AIRCRAFT COST INCREASE

Chairman ELLENDER. General, to what extent has the price fluctuated compared to your original estimates?

General GLASSER. It is very substantial, as I am sure the chairman appreciates.

Chairman ELLENDER. I think we had in the record the estimated development cost of $1,641.5 million, of which $1,636.5 million has been made available through fiscal year 1972. The total program acquisition cost, including R. & D. is $6,961.1 million, which equates to $14.9 million per aircraft based on a production of 449. Are those figures correct?

General GLASSER. Yes, sir. The estimated cost of $1,641.5 million is correct. The numbers that you quoted are correct. It has increased in cost to the $6,961 million figure that you described. The reasons for this are a great many. Certainly inflation has a lot to do with it.

QUANTITY REDUCTION

Perhaps more importantly has been the quantity reduction. At the time that the original estimate was made, we were contemplating something like 13 or 1,400 aircraft. We are now contemplating 460 aircraft, so when you spread the fixed charges across one-third the number of aircraft you get a dramatic increase in the unit cost.

Model Changes

Additionally, as you know, we have changed models on several occasions. Originally, we had only the F–111A model contemplated. This has been changed to F–111E's, F–111D's, F–111F's, each of which added to the development test cost. Since they were procured in small quantities, there was a relative high unit cost.

Other Problems

Finally, by no means less in importance are the difficulties we have encountered. There is no question that this aircraft had a great many difficulties, some of which were the consequence of trying to do the Navy job and the Air Force job with the same aircraft, some of which were just poor engineering on our part in trying to make too far an advance without the necessary development work being completed before we got into it.

You add all of those together and it has been a very substantial increase in the cost of the aircraft.

Type Productions

Chairman Ellender. You have described the various types. Can you put in the record the number of each type?

General Glasser. Yes, sir; I can.

Chairman Ellender. Do you contemplate increasing the number of FB–111's?

General Glasser. No, sir; we do not. That program has been completed. We do not plan to go ahead with any more.

(The information follows:)

[As of Mar. 7, 1972]

Type	Number delivered	Number to be delivered	Total
F–111A	158	0	158
F–111C	24	0	24
F–111E	94	0	94
F–111D	11	85	96
F–111F	44	50	94
Total	331	135	466

Cannon Air Force Base Location

Senator Allott. Where is the Cannon Air Force Base in New Mexico?

General Buckingham. It is near Carlsbad.

Fiscal 1972 Program

Chairman Ellender. The original budget request for fiscal year 1972 did not include funds for the procurement of additional F–111 aircraft. However, as I recall, about $350 million was included for the over target cost of aircraft funded in previous years. On this point, Secretary Laird stated, "No F–111 procurement is planned beyond

fiscal year 1971, but funds are needed to pay for aircraft procured in previous years." Then on July 30, 1971, the President submitted a budget amendment requesting $112 million for the procurement of 12 F–111 tactical aircraft, and these funds were provided by the Congress. Now, we have a request for the procurement of 12 additional aircraft in the 1973 budget. Just what happened to change the DOD decision not to procure any additional F–111 aircraft after the fiscal year 1971 program?

General GLASSER. I believe Secretary Laird's view of procuring more F–111's beyond the fiscal year 1971 buy has been the same as the Air Force; that being that we wanted more F–111F's, in particular the F–111F model, but that our other requirements to modernize our equipment and attain a balanced force structure precluded further F–111 buys within our expected budget. However, we continually reassess our priorities and, in the case of the F–111F's, have concluded that it is very important to complete the equippage of the fourth F–111 wing. Therefore, we requested the additional procurement of 12 F–111F's in each fiscal year 1972 and 1973.

Chairman ELLENDER. As I indicated, the fiscal year 1972 program included 12 of these aircraft at a total cost of $112 million for a unit cost of about $9,330,000. Now I note that the fiscal year 1973 estimate is based on 12 of these aircraft at $180 million for a unit cost in excess of $15 million. Just what accounts for this very large increase?

General GLASSER. The 12 F–111F aircraft in fiscal year 1973 are estimated to cost $180.4 million including the $20.1 million of fiscal year 1972 advance buy funds. Included in the $180.4 million is $8.9 million worth of initial spares, $4.6 million in missionized equipment and $9.5 million for peculiar ground support equipment that were not included in the fiscal year 1972 buy. The initial spares amount was inadvertently included in Budget Activity 1—combat aircraft—rather than Budget Activity 6—spares and repair parts. The missionized equipment consists of tanks, pylons, and the like, required for the fiscal year 1973 aircraft but not procured for the fiscal year 1972 aircraft because of funding constraints. Peculiar ground support equipment required in fiscal year 1973 was not included with the fiscal year 1972 buy since the intent at that time was to use factory support equipment available at the end of production for the last F–111F squadron. Subtracting these items, together with $22.2 million of prior-year assets available for the fiscal year 1972 buy, results in a comparable cost of $135.2 million for the fiscal year 1973 aircraft versus the $112 million for the fiscal year 1972 aircraft or an increase of $23.2 million. This increase is a result of three factors: First, the fiscal year 1972 cost is a contractually negotiated figure while the fiscal year 1973 cost is based on an estimated not to exceed price; second, inflationary effects; and third, an increase in the allocation of plant overhead since there is no other work planned at the General Dynamics Fort Worth plant after December 1973 to share the overhead.

ADVANCE PROCUREMENT

Senator YOUNG. I note in the P–1 exhibit an item of $20.1 million in the 1972 column for advance procurement for the F–111 aircraft. Is this the $20.1 million that was reported to Congress in DOD reprograming number 13 for fiscal year 1972?

General GLASSER. That is right, sir.

Senator YOUNG. Exactly what was the $20.1 million obligated for, and when were these funds obligated?

General GLASSER. No funds have been obligated to date. Obligations are forecast for March, April and May 1972, for procurement of long lead items, for example, materials, vendor parts, subassemblies, engines and other GFAE.

Senator YOUNG. I note a footnote on the data sheet indicating that the $180.4 million total estimated cost for these 12 aircraft includes $8.9 million for initial spares. Why are these funds included in this P–1 line rather than being included in the request for aircraft spares and repair parts?

General GLASSER. The procurement costs of $180.4 million provided by the Air Force to OSD included $8.9 million for initial spares which was inadvertently included in Budget Activity 1—combat aircraft—rather than Budget Activity 6—spares and repair parts.

OVER TARGET COSTS

Chairman ELLENDER. No funds are requested for over target cost. May I conclude from this that adequate funds have been provided to totally fund all the aircraft that were funded through fiscal year 1972?

General GLASSER. That is correct.

Chairman ELLENDER. What is the current status of the cold proof test and recovery program for F–111 aircraft?

General GLASSER. All of the aircraft that had been pulled back from the operational inventory have been proof tested. Only two remain to be redelivered to the flying organizations, and these will be delivered after they have completed their post-test systems checks. We have now made this proof test a part of the production program for those aircraft still to be delivered.

LOSS OF F–111 AIRCRAFT

Senator YOUNG. It is my understanding that we lost an F–111 aircraft in a fire in January of this year. Would you please comment on that aircraft loss?

General GLASSER. Yes. The fire occurred at the Fort Worth plant during a ground engine check. The aircraft had not yet been flown or contractually accepted. The fire was caused by an engine failure. We do not know at this time whether the aircraft can be rebuilt or not.

Senator YOUNG. I call your attention to the information on aircraft losses on page 506 of last year's hearings. I wish you would update this information and submit the revision for inclusion in this record.

General GLASSER. Yes, sir.

(The information follows:)

UPDATED INFORMATION OF F-111 MAJOR ACCIDENTS SINCE APR. 26, 1971

Date and location	Aircraft number	Purpose of flight	Cause and remarks
Apr. 23, 1971, Edwards Air Force Base.	SN 67-117, F-111E	CAT II M-61, gun firing test.	Aircraft entered spin during gun fire test. Ejection initiated within safe envelope; however, main parachute failed to deploy. 2 fatalities. (All previous F-111 ejections successful when initiated within safe envelope.)
Sept. 1, 1971, Cannon Air Force Base.	SN 66-029, F-111A	TAC training-TAC	Bird strike—Penetration of windshield, crew ejected due to incapacitation and disorientation. Minor injuries from windshield debris.
Nov. 29, 1971, Pease Air Force Base.	SN 67-7194, FB-111A.	SAC training-SAC	Aircraft departed runway during landing roll, night, heavy rain, crosswind, and hydroplaning, pilot error. Nose gear collapsed causing damage to nose section. Aircraft repairable. No injuries.
Jan. 18, 1972, Royal Air Force, Upper Heyford, United Kingdom.	SN 68-018, F-111E	USAFE training-USAFE.	Fatal crash in landing pattern. Accident investigation in progress. No aircraft malfunctions yet identified.
Feb. 2, 1972, General Dynamics, Fort Worth.	SN 70-2407, F-111F	Ground engine runs, aircraft not contractually accepted.	Aircraft severely damaged by fire resulting from engine failure. Possibility of repair not yet known.

F-111F COST DATA

Chairman ELLENDER. I wish you would update the cost data appearing on pages 511 and 512 of last year's hearings and submit the revision for inclusion in this record.

General GLASSER. I will provide that information, Mr. Chairman.

(The information follows:)

	Initial approval by Congress		Current Program [1]	
	F-111A/C/D/E/F	FB-111	F-111A/C/D/E/F	FB-111
R.D.T. & E.:				
1961	31.0		4.8	
1962	55.0		6.1	
1963	115.6		115.6	
1964	232.7		231.1	
1965	321.3		321.3	
1966	205.0		[2] 264.0	25.2
1967	[2] 113.0	80.6	[2] 168.0	22.7
1968	[2] 154.3	57.6	229.1	46.3
1969	117.3	49.0	99.6	62.7
1970	73.7	84.9	128.3	45.4
1971	48.2	16.3	49.4	16.3
1972	19.2		19.2	
1973			5.0	
Aircraft procurement:				
1965	(10)159.6		(10)167.8	
1966	(55)438.2		(48)440.9	
1967	(117)792.2	(10)135.2	(117)834.4	(10)137.4
1968	(143)972.3	(54)501.9	(87)768.0	(24)307.4
1969	(85)684.5	(70)534.0	(85)642.0	(42)514.8
1970	(66)699.3		(66)698.3	
1971	(24)483.5		(12)596.8	
1972	(12)461.2		(12)481.3	
1973			(12)160.3	

[1] Additional procurements overtarget cost/unfunded deficiencies are estimated to be applicable to program year as follows:

	Fiscal year 1968 and prior	Fiscal year 1969	Fiscal year 1970
F-111A/C/D/E	447.3	363	43.7
FB-111	79.5	42	

[2] Includes funds for Mark II Avionics that were appropriated in fiscal years 1967 and 1968 as separate elements. Actual funding for Mark II R. & D., fiscal years 1966 and 1967.

F–111F INITIAL SPARES

Chairman ELLENDER. Through fiscal year 1972, how much money has the Congress provided for the procurement of initial spares for the support of the F–111 aircraft?

General GLASSER. A total of $509.9 million has been provided by the Congress through fiscal year 1972 for the procurement of initial spares for the support of the F–111 aircraft.

Chairman ELLENDER. How much was provided for the procurement of initial spares for the FB–111 aircraft?

General GLASSER. A total of $101.1 million has been provided for the procurement of initial spares for the FB–111 aircraft.

Chairman ELLENDER. In a report of the General Accounting Office dated January 31, 1972, it is stated, and I quote:

> For the F–111, the initial provisioning systems lack of flexibility resulted in: buying about $116 million worth of spare parts before they were needed—spare parts worth $9.6 million have already been declared excess; buying substantial quantities of spare parts several times, even though data available to the Air Force show that there was no current need for these parts.

Do you agree with these statements?

Colonel STEELNACK. We concur with the recommendations within the General Accounting Office report, and compliance action has been initiated or is under study. However, we do not agree with the specific allegations contained within that report which may suggest wasteful practices on the part of the Air Force. The F–111 spares were provisioned and bought against planned system support dates. The original slippage adjustments that were made to these dates were short term and within the program period at the time provisioning orders were released. Therefore, they were not considered significant enough to impact on provisioning and, as a consequence, the provisioned requirement was not changed. Some opportunities did arise and were taken advantage of to delay delivery of spares when long slippages of aircraft were assured. All items are still considered to be required, and any connotation that these funds were inappropriately spent is erroneous.

Chairman ELLENDER. Let me say that I expect to discuss this GAO report in detail when we consider the request for $504.1 million for the procurement of spares and repair parts. Now with respect to the $8.9 million that is being requested for initial spares for these 12 F–111 aircraft, I want you to review this matter in light of this General Accounting Office report to be sure that these initial spares are required at this time.

Colonel STEELNACK. Yes, sir. I would add, Mr. Chairman, that we have taken corrective action on the matter discussed in the GAO report, and the initial spares requested with the F–111F aircraft procurement are calculated with that corrective action in mind. However, we will be glad to check that spares requirement again.

DELIVERY OF AIRCRAFT

Senator YOUNG. Through fiscal year 1972, we have funded 437 F–111 tactical aircraft. How many of these aircraft have been delivered, and when will the balance be delivered?

General GLASSER. Of the 437 tactical F–111's procured, 305 have been delivered. The remainder will be delivered between now and December 1973.

Senator YOUNG. When will the 12 aircraft requested in the fiscal year 1973 program be delivered?

General GLASSER. They will be delivered at a one-a-month rate from January through December 1974.

COST HISTORY

Chairman ELLENDER. On the aircraft data sheet under the heading of "Cost History Comparison," I note that the initial planning estimate for the F–111 airplane was based on 1,388 airplanes at a total program cost of $5,505.5 million for an aircraft program cost of $3,966,000. What was the date of this original planning estimate?

General GLASSER. The date of the original planning estimate was November 1963.

Chairman ELLENDER. Now I note that the current estimate for the F–111 program is based on 466 aircraft at a total program cost of $6,961.1 million for an aircraft program cost of $14,937,000. What is the date of this current estimate?

General GLASSER. The date of the current estimate is January 1972.

SUPPORT COSTS

Chairman ELLENDER. On the aircraft cost analysis sheet, I note that, of the $112 million provided for the 12 aircraft in the fiscal year 1972 program, $111.5 million is for flyaway cost and only $500,000 for support cost. Now, with respect to the 12 aircraft in the fiscal year 1971 program, the gross P–1 cost for these 12 aircraft was $224.3 million, of which $67.7 million was for support cost. What accounts for this very small amount for support cost with respect to the 12 aircraft in the 1972 program?

General GLASSER. All training and data requirements are funded in fiscal year 1971 and prior. Only $0.5 million was requested for peculiar aerospace ground equipment in fiscal year 1972 since it was then planned to use manufacturing AGE to equip the last F–111F squadron.

Chairman ELLENDER. With respect to the $180.4 million for the 12 aircraft requested for fiscal year 1973, how much of that is for flyaway cost, how much is for support cost, and what are the various items included in the support cost?

General GLASSER. Of the $180.4 million, $161.5 million is for flyaway, $10 million for peculiar aerospace ground equipment and $8.9 million for initial spares inadvertently included in budget activity 1 rather than budget activity 6. Peculiar aerospace ground equipment will have to be procured for the last F–111F squadron since the addition of 12 aircraft in fiscal year 1973 precludes the use of manufacturing aerospace ground equipment as originally planned.

ALLOCATIONS OF AIRCRAFT TO UNITED STATES AND OTHER COUNTRIES

Senator SYMINGTON. Going back to your chart on page 3, you are buying only 73 aircraft out of the 243 for the Air Force; correct?

General GLASSER. That is right.

Senator SYMINGTON. So 30 percent of all your end force purchases are for the United States and 70 percent, roughly, for other countries?

General GLASSER. That is correct.

Senator SYMINGTON. How long has it been since the Air Force of the United States has requested only 73 aircraft? Do you know?

General GLASSER. Prewar.

Senator SYMINGTON. I know it was prewar; was wondering what year. I think it was 1935.

General GLASSER. Even earlier than 1935.

Senator SYMINGTON. Will you supply that data for the record.

General GLASSER. Yes, sir; we will.

(The information follows:)

The last year in which less than 73 aircraft were procured was 1923. In that year the United States Army Air Service bought 28 aircraft, 3 airships and 4 balloons.

DISPROPORTIONATE FUNDING FOR SPARES AND REPAIRS AND AIRCRAFT

Senator SYMINGTON. One other point.

Your largest single item for anything in the budget is spares and repairs, $504 million. That is in addition to such charges as $207 million for problems with the C–5A. Doesn't that disturb you, General, that amount in the total budget? We will be asked about that on the floor.

General GLASSER. What makes that look like a disproportionate number is the very point you have made, that we are buying fewer planes so that the support of the fleet in being appears to be a very major fraction of the request.

What is wrong with the request is that it ought to have a heck of a lot more airplanes being bought so that that would be a smaller percentage but we didn't have the money.

Senator SYMINGTON. But you don't have the airplanes.

General GLASSER. But we do have a fleet in being that must be maintained.

Senator SYMINGTON. In other words, you have waited so long for a new airplane—I am not criticizing; I am trying to understand.

General GLASSER. Your point is exactly correct. We have waited so long that we have needs everywhere for new aircraft.

AIRCRAFT PURCHASES FOR UNITED STATES

Senator SYMINGTON. Of 73 new aircraft you are buying, only 73 out of the 243 are going to the U.S. Air Force.

General GLASSER. That is correct, sir. But, you see, this is a balance in buying to hold the line so that we will be able to procure the new F–15's, the A–X's, and B–1's and so forth that we are now developing.

Senator SYMINGTON. Thank you.

A–X AND CHEYENNE AIRCRAFT

Chairman ELLENDER. You say the A–X?

General GLASSER. Yes, sir.

Chairman ELLENDER. Have you made a decision between that and the Cheyenne?

General GLASSER. No, sir. That decision is in the future.

Chairman ELLENDER. You are requesting funds to continue R. & D. on the A–X?

General GLASSER. Yes, sir; in the R. & D. account, not in the procurement account.

Chairman ELLENDER. As well as the Army's Cheyenne.

Before Mr. Packard left, he said that, in his opinion, as I recall, it wasn't contemplated to build both the Cheyenne and the A–X, but the moneys would be necessary in order to develop them to the point that a determination can be made as to which is the best.

General GLASSER. That is correct.

Chairman ELLENDER. That has not been made yet?

General GLASSER. No, sir.

F–111 AIRCRAFT ADVANCED PROCUREMENT: REPROGRAMING REQUEST

Chairman ELLENDER. There is before us a reprograming request for $20,100,000 for advanced procurement of the F–111. Just what is this for?

General GLASSER. The reason for this reprograming request is that belatedly we determined to ask for 12 additional F–111's in the fiscal year 1973 program but we have not included funds for the long lead moneys in the fiscal year 1972 program, which moneys are required in order to maintain the schedules.

So, we are now asking for reprograming authority of this $20.1 million as partial payment for the aircraft to be purchased in fiscal year 1973.

Chairman ELLENDER. This does not involve an increase in the cost of these aircraft?

General GLASSER. No, sir. That is the normal way in which we procure aircraft. In 1 fiscal year we will have a very small fraction of the money for long lead items and then the full order is in the following fiscal year. But, because last year we were not contemplating this purchase at the time the 1972 program was put together it was left out. We are now seeking to reinstate it.

Chairman ELLENDER. Why was it omitted last year?

General GLASSER. Because we were not planning to buy these 12 aircraft in fiscal year 1973 at that time.

Chairman ELLENDER. What caused you to change your mind?

General GLASSER. It is a consequence of the review of the needs of aircraft and the opportunities to maintain a warm base of production which led us to the conclusion that it would be prudent to continue the procurement of the F–111 at a one-per-month rate through fiscal year 1973.

RESULT OF DENIAL OF REQUEST: PRODUCTION GAP AND COST INCREASE

Senator YOUNG. What will happen if the reprograming is not allowed?

General GLASSER. It will gap our production line at the Fort Worth plant and the engines for this aircraft.

Senator YOUNG. How much of a void would be created?

General GLASSER. It depends on when we are able to get the money. It would be a month-to-month sort of gap.

Senator YOUNG. If the funds were not provided, you would have to request them later?

General GLASSER. We would have to request it again because that money must be added to the amount we are requesting in fiscal year 1973 in order to buy the airplanes.

Senator YOUNG. Would that be at a higher cost?

General GLASSER. It would increase the cost if we did not do it now because it would gap the line; people would be laid off, get their separation rights and so forth, and then be required to back in. So there would be increasing cost.

Chairman ELLENDER. You mean there would be——

General GLASSER. There would be an increasing cost.

ADVANCE AIRBORNE COMMAND POST

Chairman ELLENDER. The next item is the request for $103.8 million for the procurement of two advance airborne command post aircraft. The pending fiscal year 1972 supplemental includes a request of $113.8 million for the procurement of four of these aircraft. The data sheet will be included in the record at this point.

(The information follows:)

FISCAL YEAR 1973 PRESIDENT'S BUDGET ESTIMATE AIRCRAFT DATA SHEET

Service: Air Force.
Nomenclature: AABNCP (Advance Airborne Command Post).
P–1 line item No. 23.
Popular name: Unknown.
Description/mission.—The AABNCP would provide the National Command Authorities (NCA) with an Airborne Command Post system with significantly greater physical size, endurance, flexibility, and Nuclear War Command and Control Capability than the current EC 135 aircraft. This Airborne Command and Control system would significantly improve our capability to control and direct our strategic forces during a nuclear conflict between the U.S. and other major powers. [Deleted.]

The 7 aircraft will provide 3 aircraft in support of the National Emergency Airborne Command Post (NEACP) mission, 3 for command and control of SAC forces and 1 not operationally ready (NOA) aircraft.

COST DATA

[In millions of dollars]

	Fiscal year 1970 and prior	Fiscal year— 1971	1972	1973	1974	1975	1976	1977	Cost to complete	Current estimate total program
Aircraft procurement:										
Quantity			4.0	2.0	1.0					7.0
Cost			113.8	103.8	58.6					276.2
Less: Advanced procurement										
Net calendar year program			113.8	103.8	58.6					276.2
Advanced procurement calendar year										
Weapon system cost			113.8	103.8	58.6					276.2
Initial spares				7.2	8.5	7.3				23.0
R.D.T. & E		2.8	6.0	26.0	35.0	15.0	5			89.8
Milcon				4.2	4.2					8.4
Program acquisition cost		2.8	119.8	141.2	106.3	22.3	5			397.4
Program unit cost										56.8
Total additional cost					84.3					84.3

Basis for fiscal year 1973 budget request.—The growing threat from Soviet ICBMs and the rapidly dwindling warning time make early improvements to our airborne command and control system imperative. Early deployment of a larger ABNCP will demonstrate US resolve to maintain an adequate capability to execute the surviving nuclear forces following an attack on the US and/or its allies. The FY 72 supplemental will provide for procurement of 4 aircraft. Three of these aircraft are scheduled to be operational by [deleted] to provide an interim NEACP. The fourth aircraft will be used as the aerial platform for the advanced electronic and data processing equipment development program. Approximately a nine month slip in operational capability will result from non-availability of FY 72 funding. In addition, the FY 72 procurement will provide early operational experience to assist in the advanced electronic development program.

ADVANCED AIRBORNE COMMAND POST (AABNCP)

[Test data: (a) 747 aircraft will be leased in fiscal year 1972 to undergo low level [deleted] electromagnetic pulse (EMP) tests for design inputs. (b) Improved communications equipments (SHF satellite terminals, high power LF/VLF transmitters, fleet satellite terminals) will be tested beginning in July 1973. (c) The improved command, control, and communications package will be tested beginning in July 1974. Contract data: No development contracts have been signed or negotiated]

Characteristics	Class	Operational requirement: Demonstrated
Gross weight	U	770,000 lbs.
Available primary floor space	U	3,500 sq. ft.
Endurance:		
60,000 lb. payload	U	16.8 hrs.
85,000 lb. payload	U	16.2 hrs.
Maximum payload	U	Greater than 135,000 lbs.

AABNCP

Cost history comparison	Quantity	Dollars (millions)
Initial planning estimate:		
Procurement	7	$292.2
R.D.T. & E.		89.8
Milcon		8.4
Total program costs	7	*397.4
Current estimate total program (fiscal year 1972 budget submission):		
Procurement	NA	NA
R.D.T. & E.	NA	NA
Milcon	NA	NA
Total program costs	NA	NA
Current estimate total program (fiscal year 1973 budget submission):		
Procurement	7	292.2
R.D.T. & E.		89.8
Milcon		8.4
Total program costs	7	*397.4

*C² packages in fiscal year 1974 for 3 NEACP funded as modification ($84,300,000) increasing total program acquisition cost to $481,700,000.
NA—Not applicable.

General Glasser. The advanced airborne command post program will replace the EC–135 airborne command posts of the national military command system and the Strategic Air Command to provide them with larger aircraft capable of improved emergency command and control of our strategic forces.

This new system is required because the current airborne command posts cannot accommodate the additional equipment and people needed to manage effectively the forces using information from improved communication, surveillance, and warning systems.

The growing threat from ICBM's and SLBM's together with reductions in warning time have made the early acquisition of an improved airborne command and control capability essential to obtain the maximum effectiveness from our strategic forces in the minimum time even though the ground based national command authority command control centers are destroyed.

The fiscal year 1972 supplemental request recently submitted to the Congress contains $113.8 million to buy the first four of seven planned Boeing 747 aircraft. The first three aircraft will be deployed in 1973 [deleted.] They will be configured with available equipment, most of which will be transferred from the current EC–135 airborne command posts. The fourth aircraft will incorporate advanced command and control equipment and will be used to test the new configuration. The first three aircraft will be retrofitted with this new equipment after the last three Advanced Airborne Command posts have been completed. The test aircraft will then be upgraded to the operational configuration for command support.

In fiscal year 1973, with the requested $103.8 million, we plan to initiate tests of the new equipment, and purchase two additional aircraft. The planned program will permit initial deployment of the Advanced Airborne Command post complete with the improved command and control equipment by the end of 1975.

Chairman ELLENDER. That is the one we discussed a while ago?

TOTAL COST AND BUY

General GLASSER. Yes, sir. This is the 747 aircraft we were discussing as command post for the national command authority.

You will recall that we have requested in the fiscal year 1972 supplemental that we purchase four of these aircraft. What we are referring to here is a fiscal year 1973 add-on to that program.

Senator SYMINGTON. Mr. Chairman, that is a $482 million program for seven airplanes.

General GLASSER. We have previously requested in the fiscal year 1972 supplemental to procure four. That is before the Congress at this time. This is the second increment of two more aircraft.

Senator SYMINGTON. Two more?

General GLASSER. Yes.

Senator SYMINGTON. Seven all told?

General GLASSER. There will be one additional in fiscal year 1974.

Senator SYMINGTON. The total program is $482 million?

General GLASSER. $477 million.

IMPROVED REPLACEMENT OF EXISTING AIRCRAFT

Chairman ELLENDER. What is the need for these?

General GLASSER. These aircraft are improved replacements for existing aircraft, three of which are out here at Andrews on alert constantly for use of the national command authorities in the event of emergency.

Chairman ELLENDER. What type of emergency?

General GLASSER. In the event of an anticipated attack, the [deleted] staff, various people, who proceed to these airplanes, remain airborne with all of the essential communications and computational facilities,

display facilities, et cetera, to be able to exercise control of the Nation from an airborne posture.

Chairman ELLENDER. From the air instead of from a ground position. You have already spent quite a lot of money to protect such an installation. Is this just an additional precaution?

General GLASSER. This is a replacement for the aircraft that we already have, the 707 or KC–135 aircraft that are out at Andrews right now.

TRAINING EXERCISES

Chairman ELLENDER. To what extent are those aircraft now used in flight?

General GLASSER. They are used quite extensively. I could give you a report for the record.

Chairman ELLENDER. To do what?

General GLASSER. At this time, of course, they are used only as an exercise to insure that the crews and the personnel on board are familiar with the operation and that they will be trained, qualified to proceed should the emergency arise.

Now, the other three aircraft go out to the Strategic Air Command where a very similar function is performed. Those aircraft are on 24-hour airborne alert. At all times there is in flight a crew capable of managing the strategic forces.

Chairman ELLENDER. Where are they located?

General GLASSER. Offutt Air Force Base in Omaha.

Chairman ELLENDER. To what extent do they stay in the air?

General GLASSER. Twenty-four hours a day.

Chairman ELLENDER. For what purpose?

General GLASSER. To be certain that they will survive this command authority capable of controlling the forces in the event that the ground organizations are destroyed in an attack.

DIRECTION OF JOINT CHIEFS OF STAFF

Chairman ELLENDER. Who determined this requirement?

General GLASSER. This is a requirement which has come to me through channels from the Joint Chiefs of Staff.

IMPROVEMENTS JUSTIFYING COST

Senator SYMINGTON. The 747 will be more convenient to use but what is it that the 747 can do that the KC–135 can't do that would force us to put another half billion dollars in it?

FLOOR SPACE, PAYLOAD, COMMUNICATIONS AND DATA PROCESSING

General GLASSER. There are three primary areas where this comes about.

The first is in the floor space and payload capability. There are a number of improvements, primarily in the communications area and in the data processing and display area which simply cannot be accommodated on the 135's as they exist today. They are too crowded. There are things that people want on board that they can't put on board.

PERSONNEL CAPACITY INCREASE

The second is the numbers of personnel. The [deleted] would be unable to bring on board the principal advisors [deleted] simply because of lack of space.

FLIGHT DURATION INCREASE

Thirdly is the flight duration of the aircraft. The KC–135 is good for at best around 10 hours whereas with the 747 we can extend it to 16-plus hours and we propose to put a refueling capability on it so that at any particular time you could keep it up so that [deleted] the full duration of the emergency.

These are the principal reasons why they wish to move up to the 747 class aircraft.

Senator SYMINGTON. Is the reason it is more convenient, can hold more, have more people? You could have two KC–135's and refuel them, could you not?

General GLASSER. If you had the space, and so forth, available.

Chairman ELLENDER. In the plane you are now utilizing you can accommodate [deleted] people. You wish to add [deleted].

General GLASSER. That is about correct, sir. Specifically for the NEACP mission we now have [deleted] and will add another [deleted] later on. That will grow by another [deleted].

Chairman ELLENDER. All of that is simply to give orders in case of an attack?

General GLASSER. That is correct, sir; to control the response in the event of an attack.

Chairman ELLENDER. An attack, I presume, from Russia?

General GLASSER. Presumably so, or China.

Chairman ELLENDER. China, also?

General GLASSER. It could be. They are acquiring capability.

AIRCRAFT AUTHORIZATION

Chairman ELLENDER. A member of this committee discussed with me recently the question of authorization. Are you familiar with it?

General GLASSER. Yes, sir; I am familiar with the type of discussion that surrounds it. When we appeared before Senator Stennis yesterday he questioned that. The Defense witnesses explained that within the total authorization that there existed authorization which had not been covered by appropriation and that, therefore, if the Congress chose, these aircraft could be covered in authorization by that remaining unused authorization and that through the appropriation route the Congress as a whole would have the opportunity to review the program.

Chairman ELLENDER. Has the President made a request for these?

General GLASSER. [Deleted.] Now, this could be, and I am not familiar with today's status of it, but this could be handled as a bill to specifically seek authorization. I don't know exactly how they propose to do this today.

CONTINUOUS AIRBORNE AIRCRAFT

Chairman ELLENDER. Should the committee comply with your request, how many planes will you have in the air more or less on a continuous basis?

General GLASSER. On a continuous basis, we would have the one at the Strategic Air Command and [deleted].

AIRCRAFT COST

Chairman ELLENDER. Can you tell us what is the cost of this procurement?

General GLASSER. $477 million. That provides the seven aircraft and all of the equipment that goes with them.

AIRCRAFT OPERATING COST

Chairman ELLENDER. What is the personnel cost?

General GLASSER. I do not have that. I will have to supply that for the record.

Chairman ELLENDER. The seven aircraft will cost $477 million.

General GLASSER. That is correct.

Chairman ELLENDER. What would be the annual operating costs?

General GLASSER. I don't have it with me, sir. It would be largely offset by the elimination of other aircraft currently being used for this same purpose. The personnel will be roughly the same.

(The information follows:)

AIRBORNE COMMAND POST/COST OF OPERATIONS

The annual operating cost for the Advanced Airborne Command Post is estimated to be approximately $35 Million per year. This includes $10 Million for military personnel.

AIRCRAFT PERSONNEL INCREASE REQUISITE

Chairman ELLENDER. Why do you think it is necessary to have [deleted] instead of [deleted]?

General GLASSER. That is the judgment of the Joint Chiefs of Staff, [deleted] and the Commander in Chief of SAC who determined, based on the requirements levied on them and the threat as they see it, that is what they require to accommodate that job.

Chairman ELLENDER. Has there ever been any actual threat, to your knowledge?

General GLASSER. There have been occasions when the country has gone on alert. I don't have the specifics with me at this time. They have been very few.

Chairman ELLENDER. When was that?

General GLASSER. Some years back. The Cuban crisis, for example.

Chairman ELLENDER. Proceed.

AIRCRAFT AND EQUIPMENT AND OTHER COSTS

Senator ALLOTT. Mr. Chairman, I would like to ask a question. How much of that $68 million per aircraft is the aircraft itself, and how much is special equipment?

General GLASSER. The aircraft, themselves, cost an average of about $24 million.

Senator ALLOTT. That means that $44 million worth of equipment is going into each one of these aircraft?

General GLASSER. Not exactly. There is some $90 million worth of development and test programs that is in there. So that adds another $12 million right there.

Senator ALLOTT. That would be $32 million, then.

General GLASSER. We end up with peculiar support, spares, things of that sort.

UTILIZATION OF EQUIPMENT IN EXISTING AIRCRAFT

Senator YOUNG. Will the equipment presently in the 707's be utilized in the 747's?

General GLASSER. We will use some of it, Senator Young. As a matter of fact, the first three aircraft to be purchased will have an outright transfer of the current 135 equipment over into the new 747's and then be augmented with additional capabilities beyond that.

ELECTRONIC EQUIPMENT: RESEARCH AND DEVELOPMENT STUDY REQUEST

Senator YOUNG. What items of equipment are so expensive?

General GLASSER. It is mostly electronics, computers, communications gear; things of that sort, all of which are quite expensive items.

RESEARCH AND DEVELOPMENT REQUIREMENT

Chairman ELLENDER. General, I am advised that there is a fiscal year 1972 supplemental request for $6 million for research and development associated with the new electronics and communications equipment that will be ultimately installed in these aircraft, and that the fiscal 1973 budget includes an additional $26 million for this R. & D. effort. The total estimated cost of this R. & D. effort is $89.9 million, and to date only $2.8 million has been made available, which indicates that you have a lot of R. & D. work to do. With so little of this R. & D. work done, it seems to me that you are premature in your request for the procurement of these aircraft.

General GLASSER. That is correct, sir, with an additional $6 million in the supplemental for 1972. The nature of the program is such, Mr. Chairman, that I don't think the hazard exists that you describe because the first aircraft that we are asking for will have the existing tested equipment transferred from the 135 into the 747's. The 747, as an airframe, is well tested. As you know, it has been in the hands of the airlines now for a substantial period and it is performing well. So that first increment is in good shape.

Most of that $89 million is associated with the development and test program to be conducted on the fourth aircraft in which we will be prototyping the experience that comes out of the first three aircraft together with the new equipment as it develops. When that prototype is completed, we will then put into the fifth, sixth, and seventh aircraft, exact duplicates of what was then tested in the fourth aircraft.

When those are available for the [deleted] we will pull out aircraft Nos. 1, 2, and 3 and put that now tested and approved equipment into aircrafts 1, 2, and 3 and thereby complete the force.

So, at no time have we progressed beyond the point where I think we have the development program completed. We won't be progressing beyond that until we have completed what is necessary.

Chairman ELLENDER. Proceed.

C5A HEAVY LOGISTICS TRANSPORT AIRCRAFT

Chairman ELLENDER. The next request is for $207.6 million for prior year unfunded deficiencies for the C–5A transport aircraft. We discussed some of the C–5A problems earlier today. The aircraft data sheet will be included in the record at this point.

(The information follows:)

FISCAL YEAR 1973 PRESIDENT'S BUDGET ESTIMATE—AIRCRAFT DATA SHEET

Service: Air Force. P–1 Line Item No. 17.
Nomenclature: Heavy Logistic Transport (C–5A). Popular Name: Galaxy.

Description/Mission.—The C–5A is powered by four TF–39 turbofan engines which develop 41,000 lbs of thrust each. The airplane has a unique nose opening which raises to permit full utilization of a 19.0′ wide, 13.5′ high, and 121′ long cargo compartment. By kneeling the landing gear, the cargo floor can be lowered to permit truck-bed height loading. The rear of the fuselage opens to permit drive-through loading or airdrop of cargo and troops. The airplane is 248′ long, has a wing span of 223′, and measures 65′ from the ground to the top of the tail. Its 28 wheels will permit operation on low strength runways. At a basic mission weight of 728,000 lbs, it can carry 100,000 lbs of cargo and 75 personnel 5,800 nautical miles at a cruise speed of 440 knots. This aircraft provides fast reaction capability through airlift of combat and support units and supplies and equipment of all Services, directly from the CONUS and overseas rear area logistics bases into airfields in the overseas forward area. The high flotation characteristics and short takeoff and landing ability enable it to operate into airstrips previously denied large jet transport aircraft, such as the C–141. The C–5A was purposely designed with large floor-to-ceiling height to accommodate large pieces of equipment and all equipment of an Army Combat Division. The C–5A was specifically designed to insure unit integrity by carrying on the upper deck those personnel required to operate the vehicles being airlifted in a combat role; this negates the time-consuming requirement to marry vehicles and personnel at the destination point.

COST DATA

[Dollar amounts in millions]

	1970 and prior	Fiscal year— 1971	1972	1973	1974	1975	1976	1977	Cost to complete	Current estimate total program
Aircraft procurement:										
Quantity	76									
Cost	$2,033.1	$544.4	$299.1	$207.6						$3,084.2
Less advanced procurement	−110.5									
Net calendar year program	1,922.6									
Advanced procurement, calendar year	110.5									
Weapon system cost	2,033.1	544.4	299.1	207.6						3,084.2
Initial spares	363.3	49.6								412.9
R.D.T. & E	991.6	11.6	22.4							1,025.6
Milcon	16.3	.9								17.2
Program acquisition cost	3,404.3	606.5	321.5	207.6						4,539.9
Program unit cost										(56.048)
Total additional cost										

Note: The above costs are based on LGC investment of $123,000,000.

Basis for FY 1973 Budget Request.—The total acquisition cost (less Military Construction) for the C–5A (based on the July 1970 SPO cost study, was $4537.6 million. Subsequent to this study, there has been an AVCO strike, a pylon failure and a requirement for a lift Distribution Control System for the wing. These funding increases totaling $11.7 million have been offset by Section 504 restrictions totaling $23.0 million and a $3.6 million RDT&E program reduction. Based on these increases and decreases, the current acquisition cost for the C–5A program is $4522.7 million. Through FY 72, $4315.1 million has been approved and funded. The remaining fund requirement of $207.6 is being requested in FY 73 to buy-out the program. These funds and all carryover from prior years will be used to cover Air Force payments through FY 75. Based on the latest delivery schedule 59 aircraft will have been delivered by the end of FY 72. Accordingly, the $207.6 plus prior years unexpended carryover will cover the costs to produce the last 21 aircraft, including refurbishment costs of the test aircraft, all retrofit changes required, final settlement of claims, and all other close-out costs necessary to complete the acquisition of C–5A program.

[Test data: (a) Engine military qualification tests completed in October 1969. (b) Category I/II testing is scheduled for completion in September 1972. (c) Structural static testing is scheduled for completion in April 1972. (d) Structural fatigue testing is scheduled for completion in September 1974]

CONTRACT DATA

Major subsystem	Contractor	Type of last contract
Airframe	Lockheed Georgia Co., Marietta, Ga	Cost reimbursement—fixed loss.
Engine	General Electric Co., Evendale, Ohio	FPIF.

Performance	Clas	Operational requirement	Demonstrated
Take-off dist. basic mission	U	8,000 ft	7,600 ft.
Cruise speed	U	440 knots	440 knots.
Range basic mission	U	5,800 nm	5,800 nm.
Landing dist. resupply mission	U	3,125 ft	2,700 ft.
Engines—thrust	U	41,100 lbs	41,100 lbs.
Weight empty (lbs)	U	319,809 lbs	323,000 lbs.

Characteristics		Item model, series, class, etc, (C–5A)
Length/w. span/height	U	248′/223′/65′.
Cargo compt l/w/h	U	121.1′/19.0′/13.5′.
Cargo cubic capacity	U	34,734 cubic ft.
Crew active/relief	U	8/6.
Passengers	U	81 (270 emergency).
Engines no/desig	U	4/TF–39.

C–5A

Cost history comparison	Quantity	Dollars (millions)
Initial planning estimate:		
Procurement	115	$2,327.8
R.D.T. & E	5	1,041.8
Milcon		43.6
Total, program costs	120	3,413.2
Current estimate total program:		
Fiscal year 1972 budget submission:		
Procurement	76	3,523.5
R.D.T. & E	5	1,029.2
Milcon		17.6
Total, program costs	81	4,570.3
Fiscal year 1973 budget submission:		
Procurement	76	3,497.1
R.D.T. & E	5	1,025.6
Milcon		17.2
Total, program costs	81	4,539.9

Difference between fiscal year 72 budget submission and fiscal year 73 budget submission.—A recomputation of C–5A program costs resulted in a decrease to Initial Spares ($–15.1M) and Military Construction ($–.4M). Congressional reductions to the FY 72 program were effected in R&D ($–3.6M) and the procurement account ($–58.1M). These reductions resulted in a rephasing of the FY 73 program with a required increase of $46.8M to the procurement account.

General GLASSER. The C–5A continues to provide the Military Airlift Command with the unique capability to move combat and combat support units, including "outsized" equipment and logistical supplies, rapidly and efficiently under wartime or emergency conditions. When used with other aircraft of the strategic airlift force, the C–5A assures the balanced and effective deployment of manpower and materiel.

ASSIGNMENTS OF PRESENT INVENTORY

Fifty-five C–5A's have been produced to date; six are engaged in the flight test program or are being refurbished, six are used for training at Altus Air Force Base, 16 are assigned to Charleston Air Force Base, 16 to Travis Air Force Base, nine to Dover Air Force Base and two have been destroyed in ground accidents. Military Airlift Command operational aircraft have accumulated over 30,000 flying hours.

In fiscal year 1972, Congress approved $299.1 million for prior year unfunded deficiencies; $207.6 million is requested for fiscal year 1973 to complete the funding for the total 81 aircraft buy.

I will briefly review the problems associated with this program that have arisen since we were here last year. As a result of a 10-week strike last fall at AVCO's Nashville Division where C–5A wing components are manufactured, delivery of the last C–5A is now scheduled for May 1973.

In September 1971, during the final major static test in a 3-year structural evaluation, the C–5A test article failed at 126 percent of design load. The test article was undergoing a wing upbending test which was the most severe test of the structure during the series of evaluations. We have determined that additional fixes beyond those already planned are not required. It should be noted that normal peacetime flight operations of the C–5A will not stress the aircraft beyond the static strength already validated. Moreover, the aircraft still possesses the capability to meet emergency wartime payload requirements.

Another structural problem was uncovered last fall when an engine separated from a C–5A aircraft during ground operations at Altus Air Force Base, Okla. As full thrust was applied to the aircraft engines prior to takeoff, an aft pylon truss failed, allowing the pylon and engine to separate from the wing. As a safety precaution, the C–5A's were grounded until all pylons could be inspected. To date over three-fourths have been inspected and released for flight. The balance of the fleet is expected to be released by the end of March 1972.

As a result of these recent occurrences, we have formed a team of specialists under the program director to conduct an independent in-depth review of the entire C–5A aircraft structure. We expect this study to be completed by the end of the year and to yield specific recommendations with regard to improving the aircraft structure to assure that the aircraft is fully capable of effective mission performance.

TOTAL PROGRAM

Chairman ELLENDER. There is no intention to increase the number of these planes in the future?

General GLASSER. No, sir. We are simply completing the program.

Chairman ELLENDER. Which is 81?

General GLASSER. That is correct.

PROGRAM COMPLETION

Chairman ELLENDER. As I understand the information on the aircraft data sheet, the $207.6 million that is requested for fiscal year 1973 will complete the funding for the 76 production aircraft. Am I correct about this?

General GLASSER. Yes sir, you are.

DESTROYED AIRCRAFT

Senator YOUNG. Had both of the planes that were destroyed been turned over to the Air Force and was one aircraft at Lockheed's plant?

General GLASSER. It has not been turned over to the Air Force.

Senator YOUNG. Whose loss was it, then?

General GLASSER. It becomes academic, Senator Young, under the terms of the restructured contract because the contract was renegotiated, a fixed loss was assessed against the Lockheed Corp. of $200 million, and the slate was clean at that point.

DESIGN FAILURE

Senator ALLOTT. Could I ask a question there? How in the world can you clear an aircraft for production in which the pylon and the engine separate from the aircraft while it is on the ground? What was the matter?

General GLASSER. Well, there was a design failure in that the component in the truss did not have sufficient strength to stand up in service, under repeated use and these conditions. It was a design switch. It had been a point of concern; people had looked into that area, and had examined the truss very shortly before the incident occurred. But where they were looking was a little distance away from where the failure occurred.

One of the things that often happens in the design of aircraft is that you are equally concerned about overdesign as you are about underdesign because overdesign results in lowered performance. So, it is a constant tradeoff of continually trying to design as closely to margin as you safely can do. In the case of the C–5, they got too close.

Senator ALLOTT. Would you say the design misjudgment was the fault of Lockheed or the military?

General GLASSER. It certainly is a design misjudgment on the part of Lockheed and its suppliers, its contractors, because the program was a fixed-price total package procurement in which the responsibility was laid on the contractor to produce.

PROGRAM COSTS

Chairman ELLENDER. The current total estimated cost of $4,539.9 million for the C–5A program includes funding increases totaling $11.7 million resulting from a strike at one of the major subcontractors, a pylon failure, and the requirement for a lift distribution control system for the wing. Please comment on each of these items resulting in these cost increases.

General GLASSER. In August 1971, workers at AVCO's Nashville Division, manufacturers of C–5A wing components, went on strike. The strike lasted approximately 10 weeks. As a result of this strike the Lockheed assembly line was stopped for a 3-week period. The inefficiencies resulting from stopping and restarting the C–5A assembly line, together with the additional effort required to recover production to an efficient rate, will cost an estimated $6.4 million. Delivery of the last C–5A is now expected in May instead of February 1973.

In September 1971, an engine and pylon separated from a C–5A which was preparing for takeoff from Altus AFB, Okla. As a result of this incident, the C–5A fleet was restricted from flying until the pylons on all aircraft could be inspected. This inspection activity, together with the repair of pylons found damaged, has resulted in an estimated cost of $2.3 million.

Also in September 1971, the C–5A static test article failed at 126 percent of design limit load. The investigations and analyses of this failure indicated that it would not be cost-effective to attempt modifications aimed at improving the wing's static strength. The installation of a lift distribution control system, together with operation at slighly reduced payloads and load factors, should enable the C–5A to meet most of its operational reguirements. The cost of installing a lift distribution control system is estimated at $3 million.

Chairman ELLENDER. I note that these cost increases have been offset by section 504 restrictions totaling $23 million. Please comment on these section 504 restrictions.

General GLASSER. Section 504 of the authorization act which provided $200 million of contingency funds for the C–5A program in fiscal year 1971 contained restrictions which prohibited the use of these funds to reimburse Lockheed for certain costs that are otherwise allowable under the ASPR. The costs included such items as independent research and development, bid and proposal, depreciation and profit on intercompany transactions. These restrictions were continued in the fiscal year 1972 authorization act and, we anticipate, will also be included in the fiscal year 1973 authorization act. The costs for which Lockheed will not be reimbursed as a result of the section 504 restrictions are estimated to total over $23 million at program completion. The effect of this is to increase the Lockheed loss on the C–5A program from $200 to over $223 million.

DELIVERY OF AIRCRAFT

Senator YOUNG. With respect to the 76 production aircraft, how many have been delivered to the Air Force, and when will the remainder be delivered?

General GLASSER. As of February 16, 1972, 51 C–5A production aircraft had been delivered. The remainder will be delivered at a rate

varying from one to two per month, with the last aircraft scheduled for delivery in May 1973.

Senator YOUNG. As I recall, there were five aircraft procured with R. & D. funds. Was the aircraft that was destroyed by fire one of the R. & D. aircraft?

General GLASSER. Yes; the aircraft destroyed by fire at the Lockheed plant in October 1970, was one of the five aircraft procured with R. & D. funds.

Senator YOUNG. What is the current status of the remaining four R. & D. aircraft?

General GLASSER. Of the remaining four aircraft, one has been refurbished and delivered to the operational command, two are in refurbishment preparatory to delivery to the operational command, and one continues in the test program. This remaining test aircraft is scheduled to enter refurbishment in July 1972.

COST HISTORY

Chairman ELLENDER. It is indicated on the aircraft data sheet that the initial planning estimate for the C–5A programs calls for 120 aircraft at a total program cost of $3,413.2 million for a total program aircraft cost of approximately $28.4 million. What was the date of this original planning estimate?

General GLASSER. The original planning estimate referred to on the aircraft data sheet was made in October 1965.

Chairman ELLENDER. As I read the data sheet, the current total estimated cost of the C–5A program is $4,539.9 million for 81 aircraft, which is approximately $56 million per aircraft. Is this correct?

General GLASSER. Yes, sir; that is correct.

Chairman ELLENDER. I call your attention to the tabulation on page 535 of last year's hearings entitled "C–5A Funding History." I wish you would update this tabulation and submit it for inclusion in this record.

General GLASSER. I will be happy to do so.

(The information follows:)

	1967 and prior	1967	1968	1969	1970	1971	1972	1973	Total
Aircraft buy	[1] 5	8	18	27	23				81
Research and development	210.9	278.6	341.9	126.0	34.0	11.6	22.4		1,025.6
Investment:									
Weapon system		388.4	440.0	498.7	705.0	544.4	299.1	207.6	3,084.2
Initial spares		6.8	69.4	127.2	159.8	49.7			412.9

[1] Procured with R. & D. funds.

FATIGUE TEST PROGRAM

Senator YOUNG. On October 30, 1971, the Air Force furnished the committee with a fact sheet on the C–5A fatigue test program. In this fact sheet, it is stated, and I quote:

> In the 16 months since the Bisplinghoff Report was submitted, we have run accelerated fatigue tests on a number of test articles including the main wing structure. Cracks have developed on some of these specimens that have led to changes in design and manufacturing procedures. The most critical area appears

to be the wing section near the fuselage where it appears that some type of strengthening will be required during the full life of the aircraft.

After a review of the wing fatigue test status which took place yesterday and was attended by the principal Air Force authorities concerned with the C–5, the Air Force emphasized that no immediate repair action is required. The Air Force believes that the aircraft can be expected to operate free of difficulty for at least 6,000 hours with normal modification and repair programs. At the present rate usage, this equates to more than 5 years for all cargo carrying aircraft.

Does this mean that, after 5 years, we are going to have an extensive C–5A modification program?

General GLASSER. No, sir. The fixes required to improve the fatigue life of the C–5A are being developed and programed into update and modification programs on a continuing basis. As these fixes materialize and are incorporated, our estimate of the potential useful life of this aircraft is expected to grow considerably. Based on our current estimates, we expect to have most of the fixes identified and incorporated within the next 3 years, through regularly scheduled update and depot level maintenance programs.

Senator YOUNG. On the same date, the committee was furnished with a fact sheet on the C–5A static test program. It is stated in this fact sheet, and I quote:

In mid-September, we announced that the nonflying C–5A test article suffered damage during the final major static test in a 3 year structural evaluation. The test article failed at about 126 percent (our first indications were 130 percent) of the maximum load condition ever anticipated in operational service.

We do not expect the final analysis from this test until late November or December. Our preliminary reports reconfirm the safety factor inherent in the current operating limitations imposed on the C–5A (174,000 pound payload, 2.0 Gs, 712,500 pounds gross weight) and indicate that major structural changes will not be necessary to achieve our essential operational requirements.

We are considering the addition of some type of lift distribution control system as a possible means to increase both static strength and fatigue life.

Please comment on the nature of the operating limitations currently imposed on the C–5A.

General GLASSER. The C–5A currently operates at 712,500 pounds gross weight, 174,000 pounds payload at 2.0 G. versus design requirements of 728,000 pounds gross weight, 220,000 pounds payload at 2.5 G. With fixes currently planned, we expect the aircraft eventually to operate 728,000 pounds gross weight, 185,000 to 190,000 pounds payload at 2.5 G. Emergency payloads of up to 265,000 pounds at 2.0 G. will also be possible. These operating limits will permit the aircraft to meet essentially all of its expected operational requirements.

LIFT DISTRIBUTION SYSTEM

Chairman ELLENDER. I assume a decision has been made to install a lift distribution control system on the C–5A's. Am I correct about this?

General GLASSER. Yes, sir; you are.

Chairman ELLENDER. Please comment on the function of this lift distribution control system and indicate what it will cost to install it on each aircraft.

General GLASSER. A lift distribution control system symmetrically uprigs the ailerons on the wing during flight. This reduces upbending loads on the outer wing by shifting the center of pressure inboard. Installation of a lift distribution control system, we feel, will enable

the C–5A to eventually achieve operation at gross weights, payloads, and G, factors needed to meet operational requirements. We anticipate that the development, test, and installation of this system on all C–5A's will cost approximately $3 million, or about $38,000 per aircraft.

C–5A MODIFICATIONS

Chairman ELLENDER. Yesterday, General, you were present when we discussed the various faults and deficiencies in the C–5A. Were the statements that you heard accurate and do you envision any further trouble with these planes?

General GLASSER. I understand you to be referring to the comment made by Secretary Seamans and General Ryan?

Chairman ELLENDER. Yes.

General GLASSER. I agree that they correctly described the situation. I would want to reiterate the comment that there has been organized an independent review group for the express purpose of going back through the design of the aircraft to see if by any chance there may remain any undetected design problems. We don't expect that there will be, but we are doing this as a precautionary measure just to be sure. With that reservation, I know of no other problems that may come up.

MODIFICATION COST

Chairman ELLENDER. Earlier this morning, I asked you about the cost to complete these modifications you have already contemplated. Do you want to comment on those further?

General GLASSER. Most of the modifications that have been identified as necessary are included within the funds presented here to the Congress. My reservation is that we will undoubtedly identify some additional modification that we will want to perform during the IRAN scheduled for the aircraft.

I do not, at this time, have a figure as to how extensive those will be but we will attempt to generate that for you because we are looking at it, ourselves. As soon as I have it available, we will submit it to the committee.

As I commented earlier in response to Senator Symington, I do not expect it to be as great as might be suggested by some of the remarks that have been made today. But it could be a reasonably large modification.

(The information follows:)

Examples of on-going update modifications are:

(1) Replacement of fittings and stiffeners in the mid and rear beams of the inner wing at an estimated cost of $7.0 million. These changes strengthen and provide an even distribution of the loads in the inner wing.

(2) Replacement of the landing gear proximity switch control system with a relay logic control system at an estimated cost of $1.0 million. This change will simplify and minimize maintenance actions and is essential for achievement of planned aircraft utilization rates.

(3) Addition of a lift distribution control system at an estimated cost of $3.0 million. This system achieves a spanwise redistribution of life stresses in the wing, benefitting both wing strength and fatigue life.

(4) Revision of the aft pressure door interlock system at an estimated cost of $30,000. This change will prevent inadvertent damage to the pressure seals and loss of pressurization capability.

Modifications similar to the above required changes are expected to be identified as testing and operational use continues. The majority should be identified by the end of 1973. Incorporation of fixes will occur, for the most part, through regularly scheduled depot level maintenance programs.

SUBCOMMITTEE RECESS

Chairman ELLENDER. You are now at the bottom of page 12.

General GLASSER. Yes, sir.

Chairman ELLENDER. This might be a good time to recess until 2 o'clock.

(Whereupon, at 12:30 p.m., the subcommittee was recessed, to reconvene at 2 p.m. on the same day.)

(Afternoon Session, 2 O'clock, Friday, February 18, 1972)

DEPARTMENT OF DEFENSE

Department of Air Force

Aircraft and Missile Procurement, Air Force

STATEMENT OF LT. GEN. OTTO J. GLASSER, DEPUTY CHIEF OF STAFF, RESEARCH AND DEVELOPMENT—Resumed

Procurement of Aircraft

T–43 NAVIGATOR TRAINER AIRCRAFT

Chairman Ellender. The subcommittee will come to order.

General, the next item is the request for $46.1 million for the procurement of eight T–43 navigator trainer aircraft. The aircraft data sheet will be included in the record.

(The information follows:)

Fiscal Year 1973 President's Budget Estimate—Aircraft Data Sheet

Service: Air Force. P–1 line item No.: 22.
Nomenclature: T–X/T–43A. Popular name: Unknown.

Description/Mission: The T–43A aircraft will be used to train navigators in a realistic, high-speed, multimission environment. The aircraft will be capable of providing navigation instruction for 12 undergraduate Navigator Training students and continuation navigation training for four navigators undergoing navigator-bombardier upgrading. In addition, the aircraft will have three instructor stations for a total of 19 navigator stations. The commercial version of this aircraft is the Boeing 737.

COST DATA

[In millions of dollars]

	Fiscal year 1970 and prior	Fiscal year— 1971	1972	1973	1974	1975	1976	1977	Cost to complete	Current estimate total program
Aircraft procurement:										
Quantity		4	7	8						19.0
Cost		34.7	43.9	46.1						124.7
Less: Advanced procurement										124.7
Net calendar year program		34.7	43.9	46.1						
Advanced procurement calendar year										124.7
Weapon system cost		34.7	43.9	46.1						124.7
Initial spares			3.1	2.2	.8					6.1
R.D.T. & E.										
Milcon										
Program acquisition cost		34.7	47.0	48.3	.8					130.8
Program unit cost										
Total additional cost										

Basis for FY 1973 Budget Request.—The Air Force has contracted with the Boeing Company to procure 19 T–43A aircraft configured as navigator trainers. The procurement of the last eight aircraft in FY 73 protects the original contracted price plus it protects an option to purchase 10 additional T–43A aircraft at the initial negotiated price. The eight T–43As requested in FY 73 Budget represents the minimum number to fulfill the updated navigational mission.

CONTRACT DATA

Test data: (a) Airborne computer development tests completed December 1972. (b) Avionics Integration tests completed in January 1973. (c) Combined CAT I/II tests airborne equipment completed in July 1973. (d) Combined CAT II/III tests completed November 1973. (e) This is an FAA off-the-shelf aircraft with the interior configured as a navigator trainer]

Major subsystem	Contractor	Type of last contract
Simulator	Honeywell, Inc., West Covina, Calif	FFP.
Aircraft	Boeing, Inc., Seattle, Wash	FFP.
Airborne computer	Nortronics, Palas Verdes, Calif	FFP.

Performance	Class	Operational requirement	Demonstrated
Max take-off weight (pounds)	U	109,000	115,000
Design mission gross weight (pounds)	U	106,167	
Speed, cruise (Mach)	U	.8	.8
Ceiling, service (feet)	U	35,000	42,000
Range, ferry (nm)	U	2,350	2,730

Characteristics	Class	Item model, series, class, etc. (T–43A)
Length/wing span (feet)	U	100/93
Engines, no/desig	U	2/JT8D–9
Students, undergraduate/upgrade	U	12/4
Instructors, navigator	U	3
Crew	U	2

T–43A

Cost history comparison	Quantity	Millions
Initial planning estimate:		
Procurement	16	$131.8
R.D.T. & E		
Milcon		
Total program costs	16	131.8
Current estimate total program (fiscal year 1972 budget submission):		
Procurement	16	135.1
R.D.T. & E		
Milcon		
Total program costs	16	135.1
Current estimate total program (fiscal year 1973 budget submission):		
Procurement	19	130.8
R.D.T. & E		
Milcon		
Total program costs	19	130.8

General Glasser. The T–43A navigator training system consists of 19 Boeing 737 airborne navigator trainers and 52 ground simulators. The aircraft and simulators will be used to train 1,500 navigators annually in a realistic, high speed, multimission environment.

Each aircraft will have three instructor stations and will be capable of simultaneously providing instruction for 12 undergraduate naviga-

tors and continuation training for four navigators undergoing navigator-bombardier upgrading.

The ground simulators will duplicate the actual T–43A aircraft equipment and simulate high performance combat aircraft such as the F–4 and F–111 in which the students will later fly as navigator-weapons systems officers.

The combination of aircraft and simulators as a training system will provide the Air Force with a cost-saving, modernized method to train navigators.

Although 85 percent of our navigators/bombardiers man cockpits in high-speed jet aircraft, all of the present training is accomplished in low-speed aircraft using obsolescent equipment. Due to these equipment limitations extensive upgrade training in expensive combat aircraft is required. This new training equipment will cover the spectrum of subsystems used in present and future combat aircraft and will reduce training costs $27 million annually through reduced training time.

Funds were provided in fiscal years 1970 and 1971 to procure four aircraft and 18 ground simulators. However, with these 1970 and 1971 funds, the Air Force was able to obtain the four aircraft and all 52 of the required ground simulators. The fiscal years 1972 and 1973 procurement will provide the balance of the training aircraft. The fiscal year 1973 budget request is $46.1 million for the final eight aircraft. The program is on schedule and, I am happy to report, is $63 million below the original estimates.

PRESENT AIRCRAFT INVENTORY

Chairman ELLENDER. What type of aircraft are you using now for this training activity?

General GLASSER. At the present time, we are using a collection of older aircraft. These are replacement aircraft that are being brought in for the express purpose of modernizing the program in a more efficient way. We have had 11 previously and this constitutes the remainder of eight.

AIRCRAFT UNIT COST

Chairman ELLENDER. What do those cost apiece?

General GLASSER. The overall program acquisition cost of these runs $6.9 million.

Chairman ELLENDER. Is that with all the equipment necessary?

General GLASSER. That is correct, sir.

1971, 1972, AND 1973 PURCHASES

Chairman ELLENDER. You say you procured how many last year?

General GLASSER. We procured four in fiscal year 1971 and seven in fiscal year 1972. The eight we are requesting now finish the total of 19.

FIRST PRODUCTION DELIVERY DATES

Chairman ELLENDER. Are any of the ones ordered in operation?

General GLASSER. No, sir.

Chairman ELLENDER. Even those you ordered in 1971?

General GLASSER. That is correct. The first production deliveries will occur in March of 1973 for the prototype and September 1973 for the first production.

ADAPTATION OF BOEING 737 AIRCRAFT

Chairman ELLENDER. Is that a special plane?

General GLASSER. No, sir. It is taking advantage of an existing aircraft.

Chairman ELLENDER. Manufactured by——

General GLASSER. Manufactured by Boeing—the 737, and then adapting it with airborne computers and equipment and so forth to make it a navigator training aircraft.

SPECIAL EQUIPMENT COST

Chairman ELLENDER. What does that special equipment cost?

General GLASSER. I can break it out and submit a table showing that.

Chairman ELLENDER. It might be well for you to do that.

General GLASSER. We will.

Senator ALLOTT. As I understood, that was the cost of it equipped.

General GLASSER. That is the cost of it equipped.

I will have to break out for the record how much of that is for the basic aircraft and how much is for the equipment on board.

(The table follows:)

The funding breakdown for the T–43A navigator training aircraft is as follows:

	Millions	*Millions*
The basic aircraft (Boeing 737)		$4.682
Additional equipment for navigator training:		
AN/APN–153 Radar	$.018	
AN/APQ–122 Radar	.782	
AN/APM–203 Altimeter	.176	
Navigation Computer	.382	
ADL–21M Loran	.108	
AN/ARN–21C	.039	
AN/AVN–1 Astro Nav Set	.006	
VOR/LOC Omni	.053	
AN/TPX–72 Transponder	.003	
Other	.005	
Multistation display	.035	
Total special navigator training equipment		1.607
Peculiar support and contract logistics support		.595
Total program unit acquisition		6.884

PROCUREMENT AT LOWER-THAN-ESTIMATED COST

General GLASSER. I should point out that this program has been one that has been gratifying to the extent that we have been able to procure this program at something substantially lower than we had estimated, something like $63 million savings on the overall program.

PRESENTLY UTILIZED AIRCRAFT: CONVAIR 29

Senator ALLOTT. What do these replace?

General GLASSER. Mostly the T–29.

Senator ALLOTT. Are those Convairs?

General GLASSER. Yes. Which are of slow speed, of course, and low altitude.

Chairman ELLENDER. You received good results from their usage?

General GLASSER. Yes, sir. They were used for a good many years to train our navigators. It is only with the transition now that all of our people are required to perform with high-speed aircraft that it becomes more efficient to do it this way. With these 19 aircraft we are able to replace 74 T–29 which had previously been used for this purpose.

Chairman ELLENDER. What will happen to those planes?

General GLASSER. Do you have a trace of where they go, General Hill?

General HILL. Most of them will go to storage. Some will be converted to indirect support use.

Chairman ELLENDER. Are you asking for any funds for this process?

General HILL. No, sir.

Chairman ELLENDER. They are simply going to storage?

General HILL. Yes, sir.

STORAGE INVESTMENT

Chairman ELLENDER. What magnitude of investment is going to storage?

General HILL. I don't have that figure, sir.

Chairman ELLENDER. Will you supply it for the record?

General HILL. Yes.

(The information follows:)

T–29/WHERE DO THEY GO/INVESTMENT TO STORAGE

Forty-two T–29A aircraft currently in the active and Air National Guard inventory, will go to storage or reclamation when replaced with T–29C/D aircraft becoming available as a result of the T–43A buy. The T–29As, which are unpressurized versions of the early model Convair 240, cost $640 thousand each when procured in the 1949–50 time period. Their residual value is considered insignificant because of their age, lack of pressurization and therefore, a relatively low, by today's standards, operational capability.

TRAINING DISADVANTAGES OF PRESENT AIRCRAFT

Chairman ELLENDER. I would like to know why they cannot still be utilized.

General GLASSER. The principal reason that we cannot use them for this purpose is that they do not afford the navigator realistic training with the modern avionics that he will be faced with when he is assigned to duty with one of the force aircraft.

Chairman ELLENDER. Could you not provide the proper avionics to these?

General GLASSER. You could put the avionics at some expense but then you would have it in an aircraft that does not perform typically as he will experience when he goes into the high speed, high performance aircraft.

Senator ALLOTT. Be specific on speed and altitude, General, so that the record is clear.

General GLASSER. The T–29 is a propeller-driven aircraft. As such, its speed is less than 200 knots. The altitude, I would have to examine exactly, but it is probably less than 20,000 whereas the 737 is, of course, a much higher performance, a mach 0.8 airplane which is capable of going to 40,000 feet.

Senator ALLOTT. I know the difference, but I wanted the record to so indicate.

(The information follows:)

The Boeing 737, T–29 performance characteristics are:

CHARACTERISTICS (BOEING 737)

Gross Wt. (lbs)	116,000
Payload (lbs)	29,470
Landing Wt. (lbs)	99,000
Range	2,730
Cruise Speed (mach)	.80
Cruise Alt (ft)	35,000
Length/Span (ft)	100/93
Engines/Des/Thrust	2/JTSD–9/14,500
Crew	3

CHARACTERISTICS (T–29A)

Gross Wt. (lbs)	43,575
Payload (lbs)	12,500
Landing Wt. (lbs)	41,500
Range (n.m.)	1,400
Cruise Speed (kts)	190
Cruise Alt (ft)	12,000
Length/Span (ft)	74.7/91.8
Eng/Des/HP	2/R–2800/2100
Crew	3

EFFECT ON TRAINING

Chairman ELLENDER. What does altitude have to do with the training? Does that affect the pilot?

General GLASSER. It is to put the navigator in a situation with the speed and the dynamics of a situation that will be similar to what he will experience when he goes out of this trainer and gets into a B–52 or F–4 or whatever he is assigned to.

If you are in an aircraft like the T–29 which is very slow moving and at low altitude, the representations that he sees in his instruments and his sensors are considerably different than when he is at a high altitude and in a much faster airplane. He needs the realism of that training.

PROGRAM GROUND SIMULATORS

One other thing we have done on this program which is unique is that we also have ground simulators, 52 of them, that accompany these aircraft. By using these ground simulators, we are able to avoid a great deal of training in aircraft. That is why we have been able to replace this large number of aircraft with only 19.

PROGRAM ANNUAL OPERATION SAVINGS

Chairman ELLENDER. How much saving, if any, will there be on the expense of operating simulators?

General GLASSER. The estimated annual saving is $27 million by doing this.

PROGRAM COMPLETION

Chairman ELLENDER. Will the 11 aircraft funded in fiscal years 1971 and 1972 and the eight you are requesting for fiscal year 1973 complete your procurement program for this trainer aircraft?

General GLASSER. Yes, sir.

Senator YOUNG. When will these aircraft be delivered?

General GLASSER. These aircraft will be delivered one per month September through November 1973, and two per month December 1973 through July 1974.

Chairman ELLENDER. Does your fiscal year 1973 request include funds for the procurement of navigational trainer simulators used in conjunction with these aircraft?

General GLASSER. No, sir, aircraft only.

GROUND SIMULATORS

Chairman ELLENDER. Can these simulators be used in connection with the aircraft you are now operating?

General GLASSER. No, sir; they are simulators which are identical in their configuration to the aircraft that the navigator will fly when he is airborne. What you are able to do is train them a lot on the ground and then only go in the aircraft for those portions of it that need to be airborne.

T–41 TRAINER AIRCRAFT

Chairman ELLENDER. General, there are requests for three aircraft that are not covered in your statement. The first is $35,000 for the procurement of one T–41 trainer aircraft. The aircraft data sheet will be included in the record.

(The information follows:)

FISCAL YEAR 1973 PRESIDENT'S BUDGET ESTIMATE—AIRCRAFT DATA SHEET

Service: Air Force. P–1 line item No. 21.
Nomenclature: Trainer T–41D. Popular name: Mescalero.

Description/Mission.—The T–41D is required to meet the needs of the Free World Forces in Southeast Asia for pilot training. It is an all metal high-wing single engine aircraft with fixed tricycle landing gear. The aircraft has dual controls with side-by-side seating for two pilots and provisions for two additional passenger seats.

COST DATA

[In millions of dollars]

	Fiscal year 1970 and prior	Fiscal year— 1971	1972	1973	1974	1975	1976	1977	Cost to complete	Current estimate total program
Aircraft procurement:										
Quantity	20	8	3	1	1					33
Cost	.4	.2	.1	(1)	(1)					.7
Less: Advanced procurement										
Net calendar year program	.4	.2	.1	(1)	(1)					.7
Advanced program calendar year										
Weapon system cost	.4	.2	.1	(1)	(1)					.7
Initial spares	.1	(1)	(1)	(1)	(1)					.2
R.D.T. & E.										
Milcon										
Program acquisition cost	.5	.2	.1	(1)	(1)					.9
Program unit cost										.028
Total additional cost										

[1] Less than $50,000.

Basis for fiscal year 1973 Budget Request.—This aircraft is for the Laos Air Force and is required for pilot training to fulfill modernization requirements. This is the 7th T–41D aircraft provided the LAF and completes their current requirement.

[Test data: There will be no testing involved in this procurement of an FAA certified, off-the-shelf aircraft]

CONTRACT DATA

Major subsystem	Contractor	Type of last contract
Airframe	Cessna Aircraft Co., Wichita, Kans	FFP.
Engine	Continental Motor Co., Muskegon, Mich	CFE.

Performance	Class	Operational requirement	Demonstrated
Max take-off wt. (lbs.)	U	2,500	2,500
Speed/max (knots)	U	130	130
Ceiling (service) (ft.)	U	17,500	17,500
Range, Ferry (nm.)	U	469	469

Characteristics	Class	Item model, series, class, etc. (T–41D)
Length/wing span (ft.)	U	26.0/35.8.
Engines, no/desig	U	1/IO–360D.
Crew	U	2.

T–41D

Cost history comparison	Quantity	Millions
Initial planning estimate:		
Procurement		
R.D.T. & E	NA	NA
Milcon		
Total program costs		
Current estimate total program (fiscal year 1972 budget submission):		
Procurement	33	$0.96
R.D.T. & E		
Milcon		
Total program costs	33	.96
Current estimate total program (fiscal year 1973 budget submission):		
Procurement	33	.96
R.D.T. & E		
Milcon		
Total program costs	33	.96

General GLASSER. The T–41 trainer that is in the program this year is one aircraft, a final procurement of that aircraft contemplated at this time to be provided as a trainer to Laos. It is in the program at an estimated cost of $35,000.

Chairman ELLENDER. You have only one of those?

General GLASSER. Yes, sir.

CX–X TRANSPORT AIRCRAFT

Chairman ELLENDER. The request includes $8.4 million for the procurement of 14 CX–X transport aircraft to serve the needs of the Defense Attaché Service. The aircraft data sheet will be included in the record.

(The information follows:)

FISCAL YEAR 1973 PRESIDENT'S BUDGET ESTIMATE AIRCRAFT DATA SHEET

Service: Air Force. P-1 line item No. 26.
Nomenclature: CX-X. Popular name: Unknown.

Description/Mission.—The proposed CX-X will be an FAA-certified off-the-shelf, medium-weight executive transport with a classified modification, to serve the needs of the Defense Attaché Service (DAS) and would be utilized by Defense Intelligence Agency, MAAG, and MILGP's. It will be turboprop or fan jet equipped with greater than a 2,000-lb. payload (eight to ten passengers and two crew), have a pressurized cabin, and portray a suitable image of the modern U.S. aircraft industry. The aircraft selected will be capable of operating from short, poorly maintained airfields which are not within the safety parameters associated with the DAS aircraft presently assigned Procurement will be accomplished through competition.

COST DATA

[In millions of dollars]

	Fiscal year 1970 and prior	Fiscal year— 1971	1972	1973	1974	1975	1976	1977	Cost to complete	Current estimate, total program
Aircraft procurement:										
Quantity				14.0	16.0					30
Cost[1]				8.4	9.6					18
Less: Advanced procurement										
Net calendar year program				8.4	9.6					18
Advanced procurement, calendar year										
Weapon system cost				8.4	9.6					18
Initial spares										
R.D.T. & E.										
Milcon										
Program acquisition cost				8.4	9.6					
Program unit cost										18
Total additional cost										.600

[1] Based on a Beechcraft King Air A-100 aircraft with MOD.

Basis for Fiscal Year 1973 Budget Request.—These aircraft are required for replacement of antiquated aircraft such as the C-47s and C-54s in DIA, MAAGS, and Mil Groups. These aircraft would be logistically supported in the field by the contractor. The aircraft to be replaced are expensive to operate and maintain. A savings in excess of $300 thousand would accrue annually if the CX-X were to fly the same flying hour program as the presently assigned aircraft.

Test data: There is no testing contemplated in that this procurement involves an FAA certified, off-the-shelf lightweight commercial transport aircraft.]

Major subsystem	Contractor	Type of last contract
Aircraft undetermined		FFP

Performance (hypothetical)	Class	Operational requirements	Demonstrated
Max take-off/wt. (lbs.)	U	11,000.	
Speed cruise/max (knots)	U	200/240 min.	
Ceiling, service (ft.)	U	27,000.	
Range, ferry (nm.)	U	1,250.	

Characteristics		Item model, series, class, etc. (CX-X)
Length/wing span (ft.)	U	35/45.
Engines, no/desig	U	2 turboprop or turbojet.
Crew	U	1 or 2.

CX-X

Cost history comparison	Quantity	Millions
Initial planning estimate:		
Procurement	30	$18.0
R.D.T. & E.		
Milcon		
Total program costs	30	18.0
Current estimate total program (fiscal year 1972 budget submission):		
Procurement	NA	NA
R.D.T. & E.		
Milcon		
Total program costs		
Current estimate total program (fiscal year 1973 budget submission):		
Procurement	30	18.0
R.D.T. & E.		
Milcon		
Total program costs	30	18.0

General GLASSER. We have a request for 14 so-called CX–X aircraft which are for the use of attachés on a worldwide basis primarily in countries where aircraft are not otherwise available. This is a purchase of off-the-shelf aircraft and would require some $8.4 million to purchase this increment of 14.

Chairman ELLENDER. What will be the entire cost of these 14?

General GLASSER. $8.4 million for 14 aircraft.

Chairman ELLENDER. These are not jets, are they?

General GLASSER. No, sir; these are small aircraft, turbo prop aircraft.

Chairman ELLENDER. They are to replace planes now in use?

General GLASSER. Yes, sir; it replaces things like the C–47, T–29's, things of that sort which are much more expensive aircraft to operate and are considerably older, of course.

Senator ALLOTT. I note that your cost data is based on the Beechcraft King Air A–100 aircraft. What other FAA-certified off-the-shelf aircraft are produced in the United States which meet your requirements for this mission?

General GLASSER. Some of the contender aircraft might be North American Rockwell's Turbo Commander 690, Cessna's Citation and Swearingen's (Fairchild) Merlin IV—all are comparable to the Beechcraft King Air. The Air Force will submit request for proposals to industry and through competition select the best candidate to fulfill this requirement.

QUESTIONS SUBMITTED BY SENATOR ALLOTT FOR ANSWER IN RECORD: ATTACHÉ AIRCRAFT PROCUREMENT

Senator ALLOTT. Mr. Chairman, I would like to submit two questions to the Air Force in connection with the procurement of the 14 aircraft for the Defense Attaché System and have the replies provided in the record.

Chairman ELLENDER. The questions and answers will appear at this point in the record.

(The questions and answers follow:)

PROCUREMENT OF FOURTEEN (14) AIRCRAFT FOR THE DEFENSE ATTACHÉ SYSTEM AT A COST OF $8.4 MILLION

Q. The purpose in requesting these replacement aircraft is justified by the Department of the Air Force on the basis that certain aircraft currently in the Defense Attaché System are expensive and difficult to maintain. Please provide further information on how modern pressurized turbo-prop aircraft which are being considered as replacements will provide increased safety, efficiency, and operational performance.

Is it true that continued utilization of current obsolete aircraft will require expensive rehabilitative modification to extend their useful life? Unless answered above, please elaborate on the maintenance cost savings which will accrue because of the replacement of obsolete aircraft. In touching upon this factor, as we approach an all-volunteer military force and inasmuch as presently 57% of the Defense budget is expended on personnel (salary and attendant benefits) costs, we must be ever vigilant to make improvements which will result in reducing the number of personnel required in a support capacity; therefore, please be certain to address the savings in terms of support personnel when considering maintenance cost savings.

A. The CX–X aircraft will replace C–47, C–54, and a few T–29 aircraft currently in use in Attaché, Military Assistance Advisory Groups (MAAG), and Military Groups (MilGps). The C–47 and C–54 aircraft are all WWII vintage aircraft, now 27 to 30 years out of production. Because of their age, their mechanical condition cannot be predicted with certainty. For example, all C–54s will be grounded 42 months after the last Inspection and Repair as Necessary (IRAN) for structural rework. This rework is estimated to cost about $100 thousand per aircraft, or one-sixth the cost of a new aircraft. Expenditure of this sum of money on a 30-year-old aircraft is not prudent. To avoid such costs, the Air Force intends to eliminate all C–47s and C–54s from the inventory as rapidly as possible. It is anticipated that all such aircraft will be eliminated by FY 74, which will also eliminate the requirement for spares, overhaul and other support. The CX–X, which will be contractor supported, will not require in-house Air Force support. Further cost savings of approximately $2.0 million per year are anticipated when the full 30 CX–X aircraft become operational because of reduced cost per flying hour. The CX–X can be operated at $53 per hour as compared to $192 for the C–47 and $380 for the C–54.

Safety considerations include weather radar (particularly useful in the less developed areas in the world where these aircraft will be operated), advanced flight instruments and communications equipment, assured airframe structural integrity, and the ability to operate out of high altitude and unimproved airfields. The CX–X, a small turboprop, can accomplish all tasks required—operate from small, unimproved fields, irrespective of the altitude, and assure safe flight over high air route structures.

From a performance standpoint, the CX–X will substantially outperform the present aircraft in takeoff and landing criteria, altitude operations on single or both engines, and in its ability to top much of the weather the other aircraft are forced to contend with. Its sole limitation is range; however, with an approximate range of 1000 miles, its performance is adequate to meet our needs.

AIRCRAFT UTILIZATION

Chairman ELLENDER. As I understand it, these aircraft are to be used by the military assistance group.

General GLASSER. They would be used by Defense attachés, the military assistance groups, and the MIL groups; that is correct.

Chairman ELLENDER. Who will have control over them?

General GLASSER. They will be assigned on an individual basis to their office wherever it may be.

Chairman ELLENDER. The attaché?

General GLASSER. Yes, sir.

Chairman ELLENDER. Who in turn will permit the military assistance groups to utilize them?

General GLASSER. Some are co-located but not generally.

Chairman ELLENDER. Who else would have use of those planes?

General GLASSER. Generally speaking, since these people are assigned as members of the Embassy staff, they would be used for whatever purpose was required in support of that Embassy. As I indicated earlier, these are, generally speaking, in the lesser developed countries. They don't appear in any of the countries where you already have an existing transportation network

PRESENT ATTACHÉ AIRCRAFT FORCE, OPERATION COST AND SAVING GENERATION BY PURCHASE OF NEW AIRCRAFT

Chairman ELLENDER. How many attaché planes do you have now in operation all over the world?

General GLASSER. I would like to submit that for the record, if I may. I don't have the numbers with me

Chairman ELLENDER. I wish you would submit that for the record and give us the cost of operation and what you expect to save, if any, by the purchase of these you contemplate buying.

General GLASSER. Yes, sir; we will submit that.

Chairman ELLENDER. Will you also provide the committee with the particular countries where these will be located.

General GLASSER. Right, sir. I have that list and we will supply it for the record.

(The information follows:)

The Defense Attache System has a total of 17 attache aircraft assigned to various countries in the world. Thirteen are furnished by the Air Force and two are on loan from the Army and two from the Navy.

In addition to replacing the 17 attache aircraft, the Air Force is proposing to replace seven aircraft in the Military Assistance Advisory Groups and two aircraft in the Military Groups. Four additional aircraft are required, two for training and two for command support. To satisfy this requirement of 30 aircraft the Air Force proposes to procure 14 aircraft in FY 73 and 16 aircraft in FY 74.

The annual cost to operate these new aircraft is estimated at approximately $772,000. The annual cost to operate the present fleet is approximately $2,591,000. Thus, an annual operating cost savings totaling $1,819,000 is realized. These costs reflect only direct operating expenses and do not include aircrew personnel costs. Since the CX–X requires only two crew members (pilot and co-pilot), a small additional savings will result from the elimination of the third crew member (flight engineer) normally assigned to each VC–54, VT–29 and VC–131 in the current force. The countries that have Defense Attache, MAAG, and MILGP Aircraft which will be replaced by CX–X aircraft are:

Country	Defense attache	MAAG (AF)	MILGP (AF)
Argentina	VT-29D		VT-29D
Brazil	do		
Chad	VC-47		
Honduras	VC-47D		
Congo	U-8D (Army)		
Laos	VC-47D		
Do	U-21A (Army)		
Malagasy	VC-47A		
Pakistan	VC-131A		
Philippines	VC-47D		
South Africa	do		
Thailand	do		
Venezuela	VT-29D		
Cambodia	VC-47/U-10B		
Indonesia	C-47L (Navy)		
Liberia	do		
Ethiopia		VC-54G	
Iran		C-54M/C-47	
Morocco		VC-47D	
Saudi Arabia		C-54G (2)	
China (GRC)		C-54	
Bolivia			C-54

Two C–47 training aircraft at Andrews AFB will be replaced by two CX–X aircraft. The two CX–X command support aircraft will also be based at Andrews AFB.

1974 PURCHASE

Chairman ELLENDER. Will the purchases that you are suggesting replace all that you desire to replace?

General GLASSER. We are proposing to request an additional 16 in fiscal year 1974 for a total of 30.

Chairman ELLENDER. You mean altogether?

General GLASSER. Altogether, 30 aircraft. That will replace all of the existing ones.

MODIFICATION

Chairman ELLENDER. I note that this is to be an FAA-certified off-the-shelf executive transport aircraft with a classified modification to serve the needs of the Defense Attaché Service. What is the nature of this modification?

General GLASSER. The classified modification consists of a [deleted].

Chairman ELLENDER. You said that these aircraft would also be used by the various military assistance advisory groups (MAAG's) and the military group (MILGP's). Just what need do these types of organizations have for an aircraft that cannot be met through the utilization of available commercial aircraft?

General GLASSER. The MAGG's and MILGP's need transportation in countries where civil aviation and ground transportation is either nonexistent or inadequate to fulfill their travel requirements.

TOTAL REQUIREMENT

Senator YOUNG. Your total program calls for the procurement of 30 of these aircraft. Just how was this total number computed?

General GLASSER. This total number was computed on the basis of a one-for-one replacement for the aging aircraft used by the attachés, MAAG's, and MILGP's. Two were added for command support.

Senator YOUNG. Will these 30 aircraft replace existing aircraft, and if so, how many will be replaced?

General GLASSER. Yes, sir; 26 will replace aircraft in the field; two will replace training aircraft located at Andrews Air Force Base, and two will be added for command support.

Chairman ELLENDER. Information was submitted to the committee last year that indicated that there were some 50 to 55 aircraft assigned to the various MAAG's, missions and military groups. Will any of these 30 new aircraft replace these existing aircraft assigned to these missions and military groups?

General GLASSER. Yes, sir; 26 of the 30 new aircraft will replace existing aircraft assigned to these organizations.

Chairman ELLENDER. I note that the unit cost of these aircraft is $600,000. Isn't that an excessive cost for an airplane to carry eight to 10 passengers?

General GLASSER. No, sir; the budget was established based on the actual price quote to the Air Force of an FAA certified, Beechcraft King Air A–100 properly configured for all weather flight with minimum additional funds to cover the cost of the classified modification. This price is reasonable, considering the classified modification which is mission essential to meet the operational requirements.

VC–X TRANSPORT AIRCRAFT

Chairman ELLENDER. You are requesting $19 million for the procurement of four transport aircraft designated VC–X. The aircraft data sheet will be included in the record.

(The information follows:)

FISCAL YEAR PRESIDENT'S BUDGET ESTIMATE
AIRCRAFT DATA SHEET

Service: Air Force. P–1 line item No. 20.
Nomenclature: VC–X. Popular Name: Unknown.

Description/Mission.—The VC–X will be a new or used, passenger configured, FAA-certified, off-the-shelf Boeing 727 type aircraft for modernization of the Special Air Mission (SAM) fleet replacing six propeller-driven aircraft (3 C–131H and 3 C–118). It will be fan jet powered with two or three engines capable of transporting approximately 100 passengers for a range of 2600 NM. With retirement of the propeller-driven aircraft, the goal of an all-jet SAM fleet will be accomplished.

COST DATA

[In millions of dollars]

	Fiscal year 1970 and prior	Fiscal year— 1971	1972	1973	1974	1975	1976	1977	Cost to complete	Current estimate total program
Aircraft procurement:										
Quantity			4							4
Cost			19							19
Less: Advance procurement										
Net calendar year program			19							19
Advance procurement calendar year										
Weapon system cost			19							19
Initial spares										
R.D.T. & E.										
Milcon										
Program acquisition cost			19							19
Program unit cost										4.750
Total additional cost										

Basis for fiscal year 1973 Budget Request.—These aircraft would be used to modernize the Special Air Mission (SAM) fleet by replacing the C–118s and C–131s). These propeller aircraft must be replaced for reasons of safety, support, and operational capability. These aircraft are used for transportation of the President, his staff, the Cabinet, Members of Congress, visiting dignitaries, and the DOD.

[Test Data: There is no testing contemplated in that this procurement involves only FAA certified, off-the-shelf commercial new or used transport aircraft]

CONTRACT DATA

Major subsystem	Contractor	Type of last contract
Aircraft (727/737 DC–9 type)	Undetermined	FFP

Performance (hypothetical)	Class	Operational requirement	Demonstrated
Max take-off wt. (lbs.)	U	109,000–160,000	
Speed cruise (MACH) max. (kts.)	U	.8/490	
Ceiling, service (ft.)	U	35,000	
Range, ferry (nm.)	U	2,600	

Characteristics	Class	Item model, series, class, etc. (VC–X)
Length/wing span (ft.)	U	153/108.
Engines, no/desig	U	2 or 3/JT8D–9.
Crew/PAX	U	3/40.

Cost history comparison	Quantity	Amount (millions)
Initial planning estimate:		
Procurement	4	$19.0
R.D.T. & E.		
Milcon		
Total program costs	4	19.0
Current estimate total program (fiscal year 1972 budget submission):		
Procurement	(1)	(1)
R.D.T. & E.	(1)	(1)
Milcon	(1)	(1)
Total program costs	(1)	(1)
Current estimate total program (fiscal year 1973 budget submission):		
Procurement	4	19.0
R.D.T. & E.		
Milcon		
Total program costs	4	19.0

[1] Not applicable.

VC–X MISSION

Chairman ELLENDER. Please describe this aircraft and comment on its mission.

General GLASSER. The proposed VC–X will be a 727/737/DC–9 type aircraft with a range capability for transoceanic and transcontinental travel. General characteristics are: gross weight 110,000–170,000 pounds, range 2,600–2,800 nautical miles, speed .75–.80 mach, cruise altitude 25,000–35,000 feet. The four jet-powered VC–X aircraft will replace six aging propeller-driven VC–118/VC–131 aircraft which presently provide domestic and overseas support for the President, Vice President, the Congress, foreign dignitaries, and other high-ranking Government officials.

Senator YOUNG. I note on the aircraft data sheet the following statement: "The VC–X will be a new or used, passenger configured, FAA-certified, off-the-shelf Boeing 727 type aircraft. . . ." Please comment on the possibility of your procuring a used aircraft.

General GLASSER. Because of the depressed aerospace market and the fact that several major airlines are transitioning to the new wide-bodied jets, a number of low-time 727 aircraft have been made available at extremely attractive prices. These aircraft, most with less than 10,000 accumulated flying hours, have at least 20 years of service life remaining under planned Air Force usage. Both new and used aircraft will be examined as candidates to satisfy the VC–X requirement. The final choice of aircraft will depend largely on cost and availability of aircraft.

SPECIAL AIR MISSION FLEET

Chairman ELLENDER. I note that these aircraft will replace six propeller driven aircraft assigned to the Special Air Mission Fleet. What is the purpose of the Special Air Mission Fleet, and where are these aircraft stationed?

General GLASSER. The Special Air Mission Fleet, organizationally designated the 89th Military Airlift Wing, is the Air Force unit which is charged with the responsibility for providing oncall executive transportation for the President, his staff, the Cabinet, Members of Con-

gress, visiting foreign dignitaries, and other Government officials. The 89th MAW is based at Andrews Air Force Base, Md.

Chairman ELLENDER. Just what is your requirement for four aircraft capable of transporting 100 passengers for a range of 2,600 nautical miles?

General GLASSER. Our requirement is not for an aircraft to carry 100 passengers 2,600 nautical miles. There is a need for an aircraft to carry up to 40 people 2,600 nautical miles. Available smaller aircraft either lack the range or passenger carrying capacity or both. The VC–X aircraft will replace C–118 and C–131 aircraft which have been in operation for over 18 years. These aircraft are slow and substandard as compared to today's jets. The C–118's, which are used for both domestic and overseas travel, lack speed and altitude capability and require circuitous routings and layovers to avoid weather. Not only will the more modern aircraft provide greater flexibility and capability, but four can perform the job presently being accomplished by six propeller driven aircraft.

Chairman ELLENDER. On those occasions when you have a need for an aircraft this large, why would it not be possible to utilize one of the C–141 aircraft assigned to the Military Airlift Command?

General GLASSER. We have and will continue to use C–141 aircraft to satisfy requirements which exceed the capability of the 89th Military Airlift Wing. The C–141, however, is basically a troop transport-type aircraft with austere accommodations unsuited for VIP travel.

Chairman ELLENDER. On the aircraft data sheet I note the following statement: "The aircraft are used for transportation of the President, his staff, the Cabinet, Members of Congress, visiting dignitaries, and the Department of Defense." If these aircraft are to be used for this purpose, just why do you need such a large aircraft?

General GLASSER. Analyses of 89th MAW traffic show that groups of 15–40 people are carried on 15 percent of the medium range missions. The smallest U.S. manufactured aircraft to do this job is the DC–9/B–737 type.

Senator YOUNG. Does your current plan call for only four of these aircraft?

General GLASSER. That is correct. Four jet aircraft to replace six aging propeller-driven aircraft.

UH–1 HELICOPTERS

Chairman ELLENDER. The last aircraft included in the request is the UH–1H helicopters for "payback" to the Army for helicopters furnished to the South Vietnamese Air Force. The request includes $35.9 million for 120 of the helicopters. We discussed this matter at length earlier today, but I will include the aircraft data sheet in the record at this point.

(The information follows:)

FISCAL YEAR 1973 PRESIDENT'S BUDGET ESTIMATE AIRCRAFT DATA SHEET

Service: Air Force. P–1 line item No. 24.
Nomenclature: Helicopter UH–1H. Popular name: Iroquois.

Description/Mission.—The UH–1H "Iroquois" is a low silhouette, high performance helicopter powered by a single T–53 gas turbine engine. It is the standard Army small troop transport carrying 11 personnel.

COST DATA

[In millions of dollars]

	Fiscal year 1970 and prior	Fiscal year— 1971	1972	1973	1974	1975	1976	1977	Cost to complete	Current estimate total program
Aircraft procurement:										
Quantity	392	300		120	86					898.0
Cost	96.3	71.8		35.9	24.8					228.8
Less: Advanced procurement										
Net calendar year program	96.3	71.8		35.9	24.8					228.8
Advance procurement, calendar year										
Weapon system cost	96.3	71.8		35.9	24.8					228.8
Initial spares	17.0									17.0
R.D.T. & E										
Milcon										
Program acquisition cost	113.3	71.8		35.9	24.8					245.8
Program unit cost										.274
Total additional cost										

Basis for fiscal year 1973 Budget Request.—The Air Force is procuring these aircraft as payback to the Army for in-country assets turned over to the VNAF as part of the Vietnamization program.

[Test Data: All flight tests complete (June 1965)]

CONTRACT DATA

Major subsystem	Contractor	Type of last contract
Airframe	Bell Helicopter Co	Fixed price incentive,
Engine	Army GFE	

Performance	Class	Operational requirement	Demonstrated [1]
Max. gross weight	U	8,000 lbs	9,500 lbs.
Speed; cruise/max	U	90/10 kts	105/120 kts.
Cruise range	U	225 nm	284 nm.
Service ceiling	U	12,500 ft	20,000 ft.

Characteristics		Item model, series, class, etc. (UH–1H)
Length/rotor	U	44.91/48 ft.
Engines; number—designation	U	One–T–53–L–13.
Passenger/crew/litters	U	13/2/6.

[1] Original specifications of the UH–1 series have improved via state-of-the-art and technology advancements.

Cost history comparison	Quantity	Amount (millions)
Initial planning estimate:		
Procurement	(1)	(1)
R.D.T. & E	(1)	(1)
Milcon	(1)	(1)
Total program costs	(1)	(1)
Current estimate total program (fiscal year 1972 budget submission):		
Procurement	692	$194.3
R.D.T. & E		
Milcon		
Total program costs	692	194.3
Current estimate total program (fiscal year 1973 budget submission):		
Procurement	898	245.8
R.D.T. & E		
Milcon		
Total program costs	898	245.8

[1] Army developed and procured.

Difference between FY 72 Budget Submission and FY 73 Budget Submission.—The additional aircraft requested in FY 73 reflects projection of anticipated VNAF attrition through fiscal year 1974.

Chairman ELLENDER. How many helicopters did the Army give to the Vietnamese Air Force?

General GLASSER. As of February 18, 1972, 646 UH–1H's have been transferred from the Army to the VNAF. An additional [deleted] will be transferred by the end of fiscal year 1972.

Senator YOUNG. Now I note that your planned program for fiscal year 1974 includes an additional 86 of these helicopters. Is this also a part of this payback program?

General GLASSER. Yes, sir; these aircraft are a part of the payback to the Army for the Vietnamization program.

Chairman ELLENDER. I will take this matter up with representatives of the Army to determine if they have a valid requirement for these 120 new helicopters.

General GLASSER. Yes, sir; the Army would be your best source for this information.

MODIFICATION OF AIRCRAFT

Chairman ELLENDER. The next item is the $465.6 million requested for modification of aircraft, that we discussed earlier. Pages 16, 17, and 18 of the justifications will be included in the record at this point.

(The information follows:)

	Thousands
Program requirement, fiscal year 1973	$465,600
Program requirement, fiscal year 1972	563,700
Program requirement, fiscal year 1971	538,000

Activity: Modification of In-Service Aircraft.

PART I PURPOSE AND SCOPE

This budget activity provides for modification and modernization of in-service aircraft necessary for safety-of-flight, extension of service life and to incorporate operational improvements after an aircraft has entered service life. The program is designed so that the Air Force's aircraft inventory is maintained at the most modern configuration level at minimum cost.

PART II JUSTIFICATION OF FUNDS REQUESTED

Technological advances necessitate modifications to enable the strike, defense, tactical and support forces to maintain superiority over hostile forces, to extend the active service life of aircraft, and to keep abreast of changing mission requirements. To insure maximum safety for the aircraft and crews and to enhance capabilities of aircraft in a combat environment, many priority modification requirements are necessary. Modifications to be accomplished are closely examined and priorities are established so that the most essential modifications are accomplished with the funds available.

Aircraft modifications are accomplished by several means. The more complex modifications are done in-house at Air Material Areas or at contractors facilities, depending upon relative costs and capability of the facility. Less complicated modifications are done in the field by squadron personnel or field teams from the Air Material Area or contractor facility.

The major modifications and their fiscal year 1973 cost by aircraft weapon system are:

B–52 ($210.7 million) Follow-on program for SRAM missile capability will require $94.5 million; $42.4 million is necessary for the Electro-Optical Viewing System; $56.7 million is programmed for improvements and updating of electronic countermeasures defensive systems; $10.3 million is programmed for a quick start capability and $6.8 million for various other programs.

C–5A ($10.4 million) Flight Data Recorders to record flight load stress will require $3.0 million and $7.4 million will provide fuel tank inerting to prevent destructive fuel cell fires.

C/RC/WC–135 ($18.4 million) Quick start for the KC–135 tanker force will require $11.6 million; Satellite Communication Terminals are programmed for $1.0 million and various other safety of flight modifications will require $5.8 million.

F/RF–4 ($74.3 million) Leading Edge Slats (LES) for the F–4E force requires $43.2 million; improved electrical system reliability $8.8 million; ejection seat improvements total $4.2 million; structural improvement will require $4.2 million and various other modifications require an additional $13.9 million.

F–111 ($29.9 million) $26.4 million is required to modify production aircraft to a standard configuration and $3.5 million will be used to correct safety of flight deficiencies.

Operational Necessity ($40.0 million) These funds will be used across the entire inventory of Air Force aircraft to correct unforeseen safety of flight modifications. Follow-on costs of modifications initiated with these funds will be programmed on the applicable weapon system line in subsequent years.

The table below depicts the total fund requirements for fiscal year 1973 by aircraft and category.

Aircraft/category:	*Fiscal year 1973 (millions)*
A–7	$5.2
B–52	210.7
FB–111	4.4
C–5	10.4
C/HC/RC/WC–130	5.9
C/RC/WC–135	18.4
F/RF–4	74.3
F–106	3.9
F–111	29.9
CH/HH–3	5.4
T/AT–37	7.1
Classified projects	31.4
Other aircraft	11.0
Support of allies	7.6
Operational necessity	40.0
Total modification on inservice aircraft	465.6

General GLASSER. Our fiscal year 1973 budget request includes $465.6 million for aircraft modifications which is a reduction of over $95 million from the fiscal year 1972 program. These funds will be used to modernize existing Air Force systems or to improve the equipment based on inservice experience in order to extend aircraft service life.

1972 MODIFICATIONS

General GLASSER. In fiscal year 1972, B–52's and FB–111's continued to be modified for the short range attack missile (SRAM). The procurement actions for the F–4E leading edge slat modification are proceeding on schedule.

1973 MODIFICATIONS

In fiscal year 1973, the major portion of our budget request is in support of four weapon systems.

B–52 FORCE

For modernization of the B–52 force, $210.7 million is requested. This amount includes $204.5 million for the fiscal year 1973 buy program to support new capability modifications begun in prior fiscal years and $6.2 million to improve structural strength.

These modernization efforts include the SRAM modification to the B–52 G/H aircraft which will also be updated with improved electronic countermeasures for detection and jamming of enemy interceptors and missiles.

In addition, the B–52 Gs/Hs will be provided with an improved capability to jam the Soviet airborne warning and control aircraft, their surface-to-air missile, and their fighter interceptor radars.

An electro-optical viewing subsystem will markedly improve the B–52 crew's ability to fly at low altitude in a closed curtain environment. This capability will enhance survivability by reducing radar detection and exposure to flash blindness.

Project Quick Start provides for installation of a cartridge starter on all B–52 G/H engines to reduce force reaction time and increase survivability against the submarine-launched ballistic missile threat.

C/KC/EC–135 Force

The second system requiring modification is the C/KC/EC–135 force for which $18.4 million is requested. This includes $12.6 million which is requested for continued funding of new capability modifications such as Project Quick Start; $5.8 million is included in the budget to improve safety of flight.

F/RF–4 Aircraft

The sum of $74.3 million is requested for the F/RF–4, which includes $56.1 million for modifications to improve the capabilities of the aircraft. For example, a leading edge slat modification will offer a significant increase in maneuvering capability and a smoke trial abatement modification will reduce visual detection range of the aircraft. Included is $18.2 million for necessary improvements revealed by inservice experience.

F–111 Aircraft

A $29.9 million request is included for continuation of the update and safety of flight requirements of the F–111 aircraft.

Operation Necessity

Forty million dollars is requested under a category entitled "Operation Necessity" to correct unexpected safety of flight requirements that would result in any aircraft grounding situation and/or mission degradation.

Aircraft Used in Collection of Technical and Communications Intelligence

Requested is $31.4 million to provide for the modification and support of various aircraft used in the worldwide collection of technical and communications intelligence which because of their sensitive nature, require the application of special management procedures and security safeguards during maintenance/modification.

Aircraft Update Projects and Deficiency Correction

The remaining $60.9 million is requested for various aircraft update projects and correction of deficiencies. These aircraft include the A–7, FB–111, C–5A, C–130, F–106, T–37, T–38, and support of allies aircraft.

FISCAL 1973 MODIFICATION PROGRAM

Chairman ELLENDER. General, in looking over the justifications I am having difficulty in determining just how much is requested for modifications for the different types of aircraft. I wish you would prepare for the record a tabulation listing each of the aircraft, the nature of the modification, the number of aircraft involved, and the cost of each modification included in the fiscal 1973 program.

General GLASSER. I will be glad to furnish that type of breakdown, Mr. Chairman.

(The information follows:)

MODIFICATION OF AIRCRAFT/LIST

TYPE OF AIRCRAFT	Description of modification	Number of aircraft	Fiscal year 1973 cost (millions)
A-7	Armament system changes	240	$5.0
	Improved egress	200	.2
Total A-7			5.2
B-52	SRAM capability	92	94.5
	Phase VI ECM	51	48.3
	AEW ECM	99	8.4
	Electro-optical viewing system	89	42.4
	Quick start	127	10.3
	Satellite communication terminals	1	.6
	Modify airframe structures B52F	24	1.4
	Mod primary/secondary struct-B52D	30	2.5
	Modify bomb support rack	144	2.3
Total B-52			210.7
FB-111	Update program		4.4
C-5	Flight data recorders	45	3.0
	Fuel tank inerting	60	7.4
Total C-5			10.4
C-130	Adverse weather aerial delivery	30	2.7
	Improved cargo handling	277	3.2
Total C-130			5.9
C-135	Quick start	590	11.6
	Satellite communication terminals	2	1.0
	Heat controlled mesaglass	745	1.6
	5th-stage update	7	3.1
	Spiral wrap chafe guard on hydraulic lines	53	1.1
Total C/EC/KC/RC/WC-135			18.4
F/RF-4	Leading edge slats	290	43.2
	Refaired lower nose	88	1.6
	Smoke abatement	686	7.3
	Identification friend or foe	1	4.0
	Electrical system reliability	372	8.8
	Structural improvement	474	4.2
	Leg restraint, egress seat	950	2.6
	Improved inertial reel, egress seat	1,250	1.6
	Weapon delivery system	110	1.0
Total F/RF-4			74.3
F-106	Power upgrade program	62	3.9
F-111	Update program		26.4
	Replace ECM coaxial cables	127	2.3
	Improved flap/slat	1	.5
	Correct M-61 gun, vibration	10	.7
Total F-111			29.9
A/T-37	Improve egress	704	7.1
T-38	do	520	5.4

MODIFICATION OF AIRCRAFT/LIST—Continued

	Description of modification	Number of aircraft	Fiscal year 1973 cost (millions)
OTHER AIRCRAFT			
VC-137	4-channel independent sideband	4	.5
F-100	Modify center wing	400	1.1
	Replace wing attachment fitting	450	.3
F-105	Extended strong-back fuselage	101	1.0
QU-22	Modify main wing fuel tanks and fuel feed system	25	.4
T-33	Improve egress system	2	.8
OV-10	do	105	3
UH-1	Torque measuring system for main drive shaft	80	1.3
C/HH-3	Improve heater and duct system	36	.4
Engines	J-57 modify No. 4 ½ bearing/seal	1,775	.9
	TF-39 5,000 TBO upgrade program	26	3.0
Various	Rivet King		1.0
Total, other aircraft			11.0
Various	Operational necessity		40.0
Do	Classified projects		31.4
SUPPORT OF ALLIES			
T-28	Convert A/B to D configuration	20	3.4
F/RF-5	AIM-9E capability	35	.1
C-47	Convert C to RC configuration	11	.5
UH-1H	Install AN/ASC-10	32	.6
	Provide XM-93 armament system	52	2.3
C/AC-119	Improved propeller reverse system	70	.4
A-1	Improved jettison egress	117	.1
A-37/F-5	Sensor dispenser capability	196	.2
Total support of allies			7.6
Total fiscal year 1973 aircraft modification			465.6

FISCAL 1972 REQUIREMENT

Chairman ELLENDER. How much was required for the aircraft modification program for fiscal years 1971 and 1972?

General GLASSER. $538 million in fiscal year 1971 and $563.7 million in fiscal year 1972, sir.

Chairman ELLENDER. Have there been any significant changes in the fiscal year 1972 aircraft modification program approved by Congress through reprogramings or transfer of funds and, if so, please comment on these changes?

General GLASSER. No, sir; funds have not been reprogrammed or transferred from this program in fiscal year 1972. We are requesting an adjustment between line items within the aircraft modification account to cover the fiscal year 1972 buy program for the electro-optical visual sensor modification on the B–52 aircraft. This is a realinement within the account required to adjust to current schedules and priorities.

B–52 AIRCRAFT MODIFICATIONS

Chairman ELLENDER. Of the total requested for aircraft modifications, $210.7 million is for modification of B–52 aircraft. I note that $94.5 million is requested for modification to give the B–52's the capability of carrying the SRAM missile. Just what is the nature of these modifications?

General GLASSER. This modification will provide all aircraft provisions required for installation, interconnection, monitor, control and launch of the SRAM missile. After integration of this system, the

B–52G and H will be capable of carrying and launching up to eight SRAM from the aft weapons bay and up to 12 from wing-mounted pylons.

Chairman ELLENDER. How many B–52's will be modified to carry the SRAM missile, what is the total estimated cost of these modifications, how many of these modifications have been funded through fiscal year 1972, and how much has been provided for these modifications through fiscal year 1972?

General GLASSER. There are 281 B–52G and H aircraft scheduled to receive the SRAM modification. One additional B–52H was used for the development testing and, therefore, has the capability to carry the SRAM missile. The total cost of the B–52 modification is estimated to be $347.3 million of which $195.9 million has been provided for fiscal years 1971 and 1972. The $195.9 million provides for procurement of equipment for 138 aircraft.

Chairman ELLENDER. $42.4 million is requested for modifications involving the electro-optical viewing system for the B–52 aircraft. Please comment on the nature of this modification.

General GLASSER. The B–52G/H force is expected to deliver most nuclear weapons using low level tactics. Increased Soviet low-altitude radar threat dictates need for penetration at altitudes below [deleted] feet. Pretarget damage assessment is necessary to allow withholding of weapons on targets previously destroyed. Installation of Low-Light Level Television (LLLTV) and Forward-Looking Infrared (FLIR) senors will provide: a closed curtain nuclear environment; day, night, limited weather correlation of the terrain avoidance system display with actual terrain; prerelease damage assessment evaluation; crew member flash protection, and the capability for avoiding severe weather or fire storms.

Senator YOUNG. How many B–52's will receive this modification, and what is the total estimated cost of this modification program?

General GLASSER. Sir, a total of 282 B–52G and H aircraft are programed to receive this modification at an estimated cost of $209.4 million.

Senator YOUNG. How many of these modifications have been funded through fiscal year 1972, and how much was provided for these modifications?

General GLASSER. There have been 98 aircraft funded at $126.5 million through fiscal year 1972.

Senator YOUNG. How many aircraft will you be able to modify with the $42.4 million you are requesting for fiscal year 1973?

General GLASSER. Eighty-nine aircraft.

Chairman ELLENDER. The total requested for B–52 modifications includes $10.3 million for a quick start capability modification. Please comment on this program.

General GLASSER. This modification will provide simultaneous cartridge start capability on all eight engines on the B–52G and H aircraft. This capability will reduce engine start time from [deleted] to [deleted] thereby enhancing aircraft and crew survivability. Survivability is measured by comparison of available warning time and the programed takeoff interval of [deleted] between aircraft.

C–5A MODIFICATIONS

Chairman ELLENDER. We discussed the $10.4 million requested for C–5A modifications earlier. I note that $3 million of this total is for the flight data recorder modification you told us about this morning. Tell us just how this system will work, and how many C–5A's will be modified with this $3 million.

General GLASSER. Sir, this program will modify the onboard Malfunction Detection, Analysis and Recording System (MADARS) and install wiring and sensors on the airframe to collect and record structural loads data. These data are used in the analyses of the fatigue spectra, service life expectancy, inspection schedules and operational limitations of the aircraft. The $3 million requested for fiscal year 1973 procures equipment for 45 aircraft which completes procurement of the modification program for all 79 aircraft.

Senator YOUNG. $7.4 million is requested for C–5A fuel tank modifications to prevent destructive fuel cell fires. Please comment on this modification and indicate the total number of aircraft involved in the total program.

General MCKEE. Sir, the purpose of this modification is to provide an effective, reliable means of suppression of fire and/or explosion occurring within the fuel tank and venting system. The high unit cost of the C–5 and recent loss of two aircraft emphasize the urgent need to equip all 79 aircraft as an effective means to protect the system investment.

C–135 AIRCRAFT MODIFICATIONS

Chairman ELLENDER. Please comment on the request for $18.4 million for the modification of the C–135 series of aircraft.

General GLASSER. These modifications include $11.6 million for Quick Start, a cartridge start capability to reduce reaction time; $1 million for satellite communications terminals, to prototype/test the EC and KC series with terminals to provide nuclear survivable communications for command and control requirement of nuclear strike forces, and $5.8 million for life extension and correction of service-revealed deficiencies.

F–4 AIRCRAFT MODIFICATIONS

Chairman ELLENDER. $74.3 million is requested for modification of the F–4 and RF–4 aircraft. Of this total, I note that $43.2 million is for the leading edge slats modification. Please comment on this modification and indicate what additional capabilities it will give these F–4 aircraft.

General GLASSER. The F–4E does not have a turn rate capability comparable to the primary threat aircraft. This modification will provide the F–4E with a two position (full in or full out), hydraulically operated leading edge slat on the center and outer wing panels. The modification will significantly enhance combat performance and maneuvering capability, as well as certain high angle of attack handling characteristics. This will allow the F–4E to successfully counter the primary threat aircraft in the maneuvering capability,

as well as improve certain high angle of attack handling characteristics.

Senator YOUNG. How many aircraft are included in your total planned program, and what is the total estimated cost of this total program?

General GLASSER. The leading edge slat modification is programed for 561 of the E series aircraft at a total modification cost of $98.3 million.

Senator YOUNG. How many aircraft will receive this leading edge slat modification with the $43.2 million you are requesting for fiscal year 1973?

General GLASSER. The $43.2 million in fiscal year 1973 provides the equipment-buy program for 290 aircraft.

Chairman ELLENDER. Please comment on the $8.8 million that is requested for improved electrical system reliability modifications for the F–4 aircraft.

General GLASSER. There are basically two types of potting compound used in the F–4 aircraft to provide dielectric and structural integrity of potted electrical components by forming an insulating shield around electrical/electronic parts and their accessories. These two types of potting compound have reversion characteristics which reduce them to a semiliquid state eliminating the mechanical support of the wiring and allowing moisture to enter the connector and resulting in loss of critical flight functions because of open or short circuits. This creates a safety of flight condition. There is now an advanced flourosilicone environmental connector available that has many desirable features including, indefinite service life; greatly improved insulating qualities, and more positive contact features. It is removable and reusable and is easily and quickly installed, thus saving many maintenance man-hours during installation and throughout the service life of the aircraft. This connector is manufactured under a military specification and can be procured under competitive procurement. The modification provides for replacement of potted connectors with environmental connectors on a phased orderly program for the F/RF–4 force to prevent a major degradation of operational readiness. The $8.8 million in fiscal year 1973 provides procurement of 372 sets of environmental connectors. The total program phased over 4 years provides for a total of 1,148 aircraft at a total cost of $25.1 million.

Senator YOUNG. Just what is involved in the request of $4.2 million for modifications for F–4 ejection seat improvements?

General GLASSER. Sir, the reference to $4.2 million for the ejection seat improvements on page 16 of the justification book is in error and should reflect $2.6 million. This modification is required to correct a service-revealed deficiency in the present leg restraint part of the ejection system. The leg restraint is composed of garters and cords which cause a delay in donning, entanglement during egress, and resulting flailing injuries. This modification provides replacement of all webbing with an electromagnet system to pull the legs in when the ejection set is activated and holds temporarily until seat separation, thus enhancing crew safety during ejection.

F–111 MODIFICATIONS

Chairman ELLENDER. Please comment on the nature of the modifications involved in the request of $29.9 million for the F–111 aircraft.

General GLASSER. The F–111 program provides for planned modifications necessary to assure acceptable operational capability. The required modifications include structural improvements to eliminate fatigue concentrations in the fuselage, vertical fin, and wing pivot areas; replacement of engine bearing supports and compressor stator vanes to reduce vibration and extend service life; update of avionics equipment and autopilot to improve performance and extend the mean time between failure.

OPERATIONAL NECESSITY MODIFICATIONS

Chairman ELLENDER. I note that the request includes $40 million for operational necessity modifications. Please provide a statement for the record giving several examples of the types of modifications that will be accomplished with these funds.

General GLASSER. The various types of unforeseen safety-of-flight-type modifications which will be accomplished can be compared to previous modifications, including the standby attitude indicator on the F/RF–4 on which numerous critical failures had been experienced; the aft terminal fitting on the KC–135 accelerated as a result of a structural failure; and the center wing beefup on the F–100 which was a result of fatigue failures encountered due to the environment-mission profile in Southeast Asia.

CLASSIFIED AIRCRAFT MODIFICATIONS

Chairman ELLENDER. Comment generally on the request of $31.4 million for classified modification projects.

General GLASSER. These funds are required to provide for the modification, routine maintenance, and support of various aircraft and airborne systems used in the worldwide collection of technical and communications intelligence. Included in this effort are projects designated within the Department of Defense consolidated cryptological and general defense intelligence programs which are assigned to the U.S. Air Force, and other selected Air Force projects which, because of their sensitive nature, require the application of special management procedures and security safeguards.

AIRCRAFT SPARES AND REPAIR PARTS

Chairman ELLENDER. $504.1 million is requested for aircraft spares and repair parts. Pages 19 and 20 of the justifications will be included in the record.

(The information follows:)

	Thousands
Program requirement—fiscal year 1973	$504,100
Program requirement—fiscal year 1972	$397,900
Program requirement—fiscal year 1971	$494,400

PART I.—PURPOSE AND SCOPE

Activity: Aircraft spares and repair parts

This activity provides funds for centrally procured and managed, investment type spare components and repair parts to support the aircraft being procured, the aircraft in the inventory, the modification and modernization program, and related aircraft support equipment. Investment type items are defined as reparable assemblies, spares and repair parts which are centrally managed, and most items which have a unit cost of $1,000 or more.

PART II.—JUSTIFICATION OF FUNDS REQUESTED

Provision is made for the procurement of investment initial spares, for which the funds must be committed in fiscal year 1973 in order to provide support for new production aircraft, the common Aerospace Ground Equipment and the aircraft modification program. Replenishment or follow-on spares and repair parts funds must also be committed and obligated for those items required to support the flying hour program for FY 74 (procurement lead time away).

Following is a table which shows the fiscal year comparison in the various spare and repair parts categories which make up the total funds requirement:

[In millions of dollars]

	Fiscal year 1971	Fiscal year 1972	Fiscal year 1973
Initial weapon system spares	104.9	32.8	55.1
Initial modification spares	52.7	46.6	49.0
Initial common AGE spares	3.6	3.1	2.2
Total initial spares	161.2	82.5	106.3
Replenishment spares	333.2	315.4	397.8
Total spares and repair parts	494.4	397.9	504.1

Included in this combined initial/replenishment spares program are spares engines and those recoverable/replacement type items which are normally repaired and returned to stock. The basic determinant to computation of spares levels requirements is how long the item will operate before it must be removed and repaired. In the Air Force, this capability is addressed as Mean Time Between Failure (MTBF) and is expressed in operating hours. The MTBF of an item is then applied to the operating program of the weapon system which results in the determination of how many reparables will be generated during the period concerned. From this, required pipeline quantities, base stock, depot stocks, and attrition replacements are determined. Maximum consideration is given to improved management actions, faster repair, air transportation, and selective management of high cost items. Twice annually, the buy requirements are intensively reviewed by an Air Force management review team which result in minimum essential commitments and obligations.

Initial spares funds requirements for fiscal year 1973 cover the buy of spare engines and those new type recoverable/replacement items which are required to initially support the quantities, types, and planned operations of aircraft being procured. Replenishment requirements are based on past historical data and the operating programs to be supported. The fiscal year 1973 increase over FY 1972 is primarily in the replenishment spares area and is due to the cost of items being procured for our newer systems and the build-up of war readiness material which has been deferred pending finalization of the operational need date. The increase in initial spares is the result of the start of the F–15A program, the buy out of the F–5E, the initial support for the Airborne Command Post and continuing spares support for the aircraft modification program.

General GLASSER. This program provides for replenishment spares of our inservice aircraft and initial spares for new aircraft. Spares support is also provided for aircraft modification and for maintenance of aeospace ground equipment.

FUNDING REQUEST: INITIAL AND REPLENISHMENT SPARES

Our budget request for fiscal year 1973 is $504.1 million. This includes $106.3 million for initial spares and $397.8 million for replenishment spares. More than three-fourths of our initial spares requirement is to support two programs—the F–115 weapon system, funded here for the first time, and the aircraft modification program.

The $397.8 million in replenishment spares funds will be used to procure replacement items for those lost to the inventory because they are worn out and can no longer be made serviceable through repair or overhaul. These funds will also be used to build up our war readiness stocks of aircraft spares to acceptable levels.

The entire program shows an increase of approximately $100 million between fiscal years 1972 and 1973. The majority of this increase is in the replenishment spares area and reflects the cost of items needed to support an increased flying hour program for our newer and more expensive weapon systems.

FISCAL YEAR 1972 PROGRAM

Chairman ELLENDER. I note that the fiscal year 1972 program is stated at $397.9 million in the justification. However, the Congress approved a program of $407.9 million. Would you please comment on this difference of $10 million?

General BLANK. During the fiscal year 1972 program/fiscal year 1973 budget request review, the initial spares account was reduced by $15.9 million and the replenishment spares account was increased by approximately $5.9 million, a net decrease to the $407.9 million congressional appropriation of $10 million. The replenishment spares were increased because the projection of our requirements fell shy of the actual needs of today.

INITIAL WEAPONS SYSTEMS SPARES

Chairman ELLENDER. The total requested includes $55.1 million for initial weapons systems spares, which represents an increase of $22.3 million over the $32.8 million provided for fiscal year 1972. What systems are involved in this major increase?

General BLANK. Since there are both pluses and minuses which net out to the $22.3 million differential between the 2 years, the best way to answer is to show both fiscal years' requirements by weapon system. I will supply that information.

(The information follows:)

Weapons system identification	Fiscal year 1972		Fiscal year 1973	
	End item, quantity	Initial spares (millions)	End item, quantity	Initial spares (millions)
F-111 F	12	$5.289	12	[1] ($8.858)
RF-4C	12	.261	0	.199
F-4E	36	.939	0	.690
F-15	0	0	30	34.366
F-5E	21	8.577	57	[2] 7.906
A-7D	97	14.451	0	2.284
C-130E	12	.221	0	.221
Boeing 727			4	0
AABNCP	(1)	(3)	2	7.180
NEACP	(3)	(4)	(4)	(4)
Boeing 707	1	0		
CX-X	0	0	14	(5)
T-43	7	3.039	8	2.228
T-41	3	.030	1	.002
UH-1H	0	0	120	(6)
E-3A (AWACS)			3	(7)
Total	201	32.807	251	55.076

[1] The $8.858 was inadvertently programed within the F-111F weapon system line rather than in the aircraft spares and repair parts line.
[2] Spares for 29 a/c only. The balance of $2,630,000,000 has been deferred to fiscal year 1974.
[3] R. & D.
[4] Initially use existing equipment.
[5] Contractor support.
[6] Payback to Army.
[7] R. & D. support.

INITIAL MODIFICATION SPARES

Senator YOUNG. Comment on the request of $49 million for the procurement of initial modification spares.

General BLANK. The aircraft modification end item program for fiscal year 1973, covers many different types of aircraft and different kinds of badly needed modifications. Actual past experience has proven that approximately 13.6 percent of the modification costs is required to provide initial spares support. The classified modifications are not supported by initial spares funds. Unless unprogramed requirements appear, the $49 million requested should support the end item modification program.

The largest initial spares requirements in the modification program are for the SRAM and electro-optical viewing system modifications on the B-52 aircraft. Spares will cost $12 million for these two modification programs.

REPLENISHMENT SPARES

Chairman ELLENDER. The total requested for spares and repair parts includes $397.8 million for replenishment spares, which is an increase of $82.4 million over the $315.4 million provided for fiscal year 1972. Just what accounts for this increase?

General BLANK. The increase of $82.4 million in fiscal year 1973 is due to: The higher cost of items needed to support an increase flying hour program for our newer and more expensive weapon systems; procurement of those items which were deferred in fiscal year 1972 because of their unqualified/unstable design but are now scheduled to become qualified during the fiscal year 1973 time period and are considered in the fiscal year 1973 budget request; procurement of war readiness material which is a one-time buy for those weapon systems which become operationally ready in the fiscal year 1974 time period.

Chairman ELLENDER. How do you compute the requirement for replenishment spares?

General BLANK. Replenishment spares requirements are determined by a computerized system referred to as the DO41 Recoverable Consumption Item Requirements Systems. Replenishment spares are known as recoverable investment items and represent those spare parts subject to both field level and depot level repair. These are in excess of 100,000 items in these categories and computations are made quarterly on each individual item.

Three basic types of data are used in developing our requirements: past actual, current, and projected data. The past actual data consists of actual programs accomplished and actual usage occurring during the same past period of time. These data are collected for all applicable models, designs, and series. The current data consists of total worldwide inventory (on hand, serviceable and unserviceable, and on order assets). The projected data consists of programs based on the latest programing documents. These programs in our system may be reflected as aircraft flying hours or engine hours dependent on the item for which the computation is being made. The fiscal year 1974 flying hour program provides the base for our fiscal year 1973 request. Factors utilized are based on actual program data versus actual usage data. However, these factors may be adjusted for the forecast period by considering both increases and decreases applicable as a result of phased in/phased out of aircraft. The computerized computation requirements system determines requirements for all levels of support. As a result, several factors are developed, such as a base repair rate, depot demand rate, wearout rate, leadtimes (both production and administrative) and order and shipping times. These factors are then multiplied by the projected program resulting in a computed requirement.

To the computed requirement we then, by manual input, add such requirements as war readiness materiel and foreign military sales, which are manually determined outside of the computation system. War reserve materiel requirements are determined by the using command and logistics command by considering those items required to support a particular aircraft for a given time period, flying at wartime rates. These items are determined on a selective basis.

Applying the additive requirement to the computerized system results in a gross requirement. The net requirement is then developed by applying the total worldwide inventory and also projected reparable generations that can be repaired and returned to service. Again, all of the above is accomplished on an item-by-item basis. Approximately 10 percent of the items computed result in a buy position.

Upon completion of the final mechanized requirement computation, high-level management reviews are conducted reviewing all items in a high "buy" position. Approximately 50 to 60 percent of the total dollar request are reviewed. The initial criteria is any item in a buy position exceeding $1 million. This review may result in deferment of certain computed requirements since these items may be in an unqualified status and a complete buy could result in an eventual overstocked position. Such deferments are calculated risk actions by management. Since requirements are computed on a gross basis and then

netted by applying all assets, these deferments will be "picked-up" during subsequent computations as the items become more stable and the designed life expectancy is attained.

REPORT OF COMPTROLLER GENERAL

Chairman ELLENDER. I presume you are familiar with the criticism made of your Department by the General Accounting Office?

General GLASSER. We are, sir.

Chairman ELLENDER. I will ask that excerpts from the findings and conclusions of the Comptroller General be placed in the record at this point. I would like to have your views as to this report as to whether it is accurate or not.

(The excerpts follow:)

COMPTROLLER GENERAL'S REPORT TO THE CONGRESS—SYSTEM FOR BUYING SPARE PARTS FOR INITIAL SUPPORT OF NEW MILITARY AIRCRAFT NEEDS SUBSTANTIAL IMPROVEMENTS

DIGEST—DEPARTMENT OF THE AIR FORCE

Why the review was made

The Air Force spends hundred of millions of dollars annually to obtain spare parts needed to support new aircraft during an initial period of operation. This initial support, known as initial provisioning, includes spares and repair parts ranging from bolts and resistors costing pennies to wing assemblies or electronic modules costing thousands of dollars.

The Congress provided the Air Force with over $1 billion to buy initial spares in fiscal years 1968 through 1970. A significant part of this money was used to support C–5A and F–111 aircraft.

Initial provisioning is one of the most important activities of military supply. If not enough parts are purchased, operational capabilities of new aircraft can be reduced. If too many parts are purchased too soon, or if wrong parts are purchased, money is wasted or prematurely spent.

In view of the hundreds of millions of dollars involved and the importance of maintaining effective support of new aircraft, the General Accounting Office (GAO) evaluated the Air Force's policies and procedures under which initial provisioning was carried out. The F–111 aircraft was selected because the spares acquisition for this program was well under way at the time GAO began its review.

Findings and conclusions

The Air Force spent too much too soon to buy many F–111 spare parts which were not needed during the initial support period or which may never be needed and subsequently may be scrapped. This was the result of a rigid management system that assumes that deliveries of aircraft will be made on schedule, and the system is not flexible enough to permit timely changes in the program for initial provisioning.

The system commits the Air Force to buy large quantities of spare parts to support aircraft which may or may not be delivered or which may be delivered long after originally scheduled. Because of numerous changes in design that invariably occur in the development and production of military aircraft, many of these parts rapidly become obsolete.

By the time the current extent of program delays had become known in the F–111 program, millions of dollars already had been spent for initial spare parts. For the F–111, the initial-provisioning system's lack of flexibility resulted in:

Buying about $116 million worth of spare parts before they were needed. (See p. 8) Spare parts worth $9.6 million have already been declared excess.

Buying substantial quantities of spare parts several times, even though data available to the Air Force showed that there was no current need for these parts.

The impact of these problems was compounded by the fact that the Air Force committed itself early in the program to buy all the spares at a markup from the prime contractor rather than buy them directly from the manufacturers. GAO estimates that markup totaled about $56 million on $291 million worth of spares manufactured by subcontractors.

Moreover many of the spares were shipped by subcontractors directly to Air Force activities. The Air Force did not make an evaluation of the trade-off between the markup and the value of the service provided by the prime contractor. The opportunity for the Air Force to obtain spares directly from manufacturers and to effect savings through minimizing the incurrence of markup was lost.

GAO also inquired into the examinations of provisioning by the Air Force Auditor General. Although the examinations performed by the Air Force were adequate for those areas of provisioning covered and resulted in corrective action's being taken, GAO believes that future reviews should be expanded to consider evaluation of the basic provisioning concepts, practices, and policies.

Recommendations or suggestions

GAO recommends that, to minimize the impact of such problems as those encountered on the F–111 aircraft in the provisioning of future weapons systems, the Secretary of the Air Force develop policies to limit initial-provisioning activities to support of only those aircraft which reasonably can be expected to be delivered in the short run, such as the first 12 months of deliveries. These policies should permit the decelerating of initial-provisioning activities if and when potential significant program slippages become known. (See pp. 21 and 22.)

GAO recommends also that the Secretary direct those responsible for managing provisioning activities to:

1. Provide realistic aircraft delivery documentation to those responsible for provisioning actions. (See p. 22.)
2. Require the use of available flying experience and spare-parts usage data in evaluating whether further procurements are necessary. (See p. 22.)
3. Require, in future provisioning actions, that an evaluation be made to determine whether parts should be obtained directly from the manufacturer or through the prime contractor. (See p. 22.)

In addition, GAO recommends that the Air Force Auditor General be directed by the Secretary to broaden its coverage in future reviews of provisioning. (See p. 22.)

Agency actions and unresolved issues

The Department of the Air Force generally concurred in these recommendations and stated that it was continuing to study the problem with the objective of further reducing initial spares purchases.

Concerning each of the recommendations listed above, the Air Force said:

That its policies and guidelines for determining materiel requirements would be revised to emphasize that initial provisioning was to apply to short-term deliveries.

That a schedule showing realistic projected aircraft deliveries to the user would be provided when slippages were forecast.

That Air Force activities which computed requirements had been instructed on the importance of making appropriate adustments to estimated demand rates for new items and that the Department of Defense had included this matter in a current study.

That currently actions were being evaluated, which should permit an expansion of competitive procurements from other than the prime contractor, and that a new system would be developed and tested. (See p. 30.)

That current weapons systems audits, as well as those planned by the Auditor General, would include evaluations of basic provisioning concepts, policies, and practices.

Matters for consideration by the Congress

The Appropriations Committees of the Congress and other committees may wish to consider the matters discussed in this report in connection with future Air Force requests for spare parts to initially support new weapons systems.

IMPLEMENTATION OF REPORT RECOMMENDATIONS

General GLASSER. May I ask General Buckingham to respond, please?

General BUCKINGHAM. Mr. Chairman, we did not find fault with any of the GAO recommendations. We have instituted action to implement the recommendations in the report.

EXCESS SPARE PARTS

Chairman ELLENDER. Why should it be necessary for something of this sort to continue so that it must receive the attention of GAO? For instance, they say that you now have an oversupply of spare parts worth $9.6 million, which have already been declared surplus.

General GLASSER. Colonel Steelnack is here from the Directorate of Supply and Services. I would like him to respond to that, please.

Colonel STEELNACK. Sir, if we all had the wisdom to properly provide and determine at the time we buy an airplane what those spare parts consumptions would be over time, we could obviously program our funds to meet consumption. This is in essence the thrust of the five general recommendations of the GAO.

INITIAL SPARE PARTS PROPORTIONATE TO DELIVERY SCHEDULE

Basically, our problem is the determination in terms of, first, when you buy the spares. For example, we have agreed to buy the initial spares for these airplanes not all at one time but in association with the production schedule of the aircraft, but we are still buying spares 1 to 2 years in advance of that production line delivery of that series of aircraft because of production lead time requirements.

That would give us then initial spares on the ground to support the aircraft at the time it comes off production and goes into operation. In the past, we had procured larger quantities in terms of a percent of the total initial spares dollars at the time of the buy of the aircraft. Now we are spreading it out over time so that our buy program will give us initial spares in direct proportion to the delivery schedule of the production aircraft which extend over 2 or 3 years in most cases.

It is in this area of when do you buy and get delivery of the initial spares that we have worked with GAO. That, in essence, is the substance of their report.

Chairman ELLENDER. They refer to "buying about 116 million spare parts before they were needed. Spare parts worth $9.6 million have already been declared excess."

REDUCTION OF REPLENISHMENT SPARES WITH EXCESS INITIAL SPARES

What do you do with those spare parts? Is that a loss?

Colonel STEELNACK. No, sir. The spares identified are not excess. They have been categorized as a temporary overage to the immediate requirement in support of that aircraft. But over its life, additional initial spares will result in a reduction of replenishment spares. It is simply a matter of when do you consume the item that you bought out of initial spares, the relationship is then between the buy of an initial spare and the buy of a replenishment spare.

Chairman ELLENDER. Are you ever in possession of more than you need?

Colonel STEELNACK. Temporarily, we can be in excess of what we need. Our best equipment specialists determine a failure rate. We buy against that failure rate. If the failure rate doesn't come as programed, then we will be in excess for that item.

Unfortunately, it usually works the other way. The failure rates exceed our projection rates and we are always in a shorter position for those critical items.

DIFFERENTIATION OF EXCESS AND SURPLUS PARTS

Chairman ELLENDER. Has there been any period recently when you have had surpluses you could not use?

Colonel STEELNACK. No, sir; not as a result of initial provisioning. We are talking now of the difference between an excess and a surplus. An excess is excess to the immediate program but not excess to the life of that program. Surplus is not required for the entire program.

SALE OF SURPLUS PARTS AS SCRAP

Chairman ELLENDER. Have you ever had any excess that you could not use in any program?

Colonel STEELNACK. Yes, sir.

Chairman ELLENDER. What do you do with them?

Colonel STEELNACK. That surplus is usually turned in to the redistribution marketing facility and sold as scrap.

Senator YOUNG. Mr. Chairman.

Chairman ELLENDER. Yes, Senator.

F–111 AIRCRAFT SPARE PARTS STOCKPILE

Senator YOUNG. About how many different spare parts do you have to stockpile, for example, for the F–111?

Colonel STEELNACK. For the F–111, sir, we have in the Air Force depot system about 26,000 items. This includes both investment and expense-type spare parts associated with the F–111 program.

Senator YOUNG. 26,000 different items?

Colonel STEELNACK. Yes, sir, different type items.

In addition, we would have expense and recoverable items that are common to many types of aircraft and are also used on the F–111's. Expense items are the consumable items that you normally replace: bolts, nuts, and so forth.

AIRCRAFT SPARE PARTS INVENTORY INVESTMENT

Senator YOUNG. In order to maintain all Air Force aircraft in operating condition, I can see where you need sufficient spare parts so that an aircraft will not be idle for lack of parts. Have you any idea how much money we have invested in spare parts for all aircraft at this time?

Colonel STEELNACK. We can provide a specific dollar figure on the inventory of spare parts as of any date you would like.

Senator YOUNG. I wish you would select a date and provide it for the record.

Colonel STEELNACK. Fine.

(The information follows:)

The current value of the Air Force spare parts inventory is $6.4 billion to support a capital investment in aircraft valued at $27 billion. (As of 30 June 1971.)

PROCUREMENT OF SPARE PARTS FROM PRIME CONTRACTOR

Chairman ELLENDER. There is another complaint made by the GAO on the desirability of purchasing these spare parts direct from the manufacturer rather than from the prime contractor. They cite an instance where the office estimates that if you had purchased $291 million worth of spares from the manufacturer under the contract, you would have saved $61 million on an order of that kind. What have you to say about that?

Colonel STEELNACK. Sir, the subject here is configuration management and in some of the procurement programs, configuration management, because it is a new aircraft system, has been part of the prime contractor's responsibility.

What we are doing in answer to that specific question is bringing configuration management in-house, that is, within the engineering capability of the depots and the Air Force and this enables us by bringing it in-house to go out competitively to get those items which are required by that configuration management contract.

COMPLIANCE RESPONSE

Chairman ELLENDER. In other words, you are going to try to comply with this recommendation?

Colonel STEELNACK. I will include in the record our exact compliance with that paragraph.

Chairman ELLENDER. Very well.

(The response follows:)

GAO/INITIAL SPARES/AIR FORCE RESPONSE

Performing configuration management in-house should enhance the ability to determine those parts susceptible for purchase directly from the actual manufacturer. The Air Force must be in a position to know the configuration design of an item at the time the part is needed to assure that the correct part is ordered. When the contractor performs configuration management, he assures that the part ordered is of the correct configuration or that the part is not obsolete as a result of design changes. The Air Force Logistics Command and the Air Force Systems Command have a study underway to determine the pros and cons of contracting with major vendors for some of the initial spare parts requirements. This study should indicate whether the Air Force can in fact purchase such requirements directly from the manufacturer. Reducing the provisioning to apply to short-term delivery of aircraft should reduce or postpone the scope of expenditures for provisioned parts. As procurement method codes are developed during the provisioning period, the Air Force may be able to buy the parts as indicated by the codes; i.e., competitively or directly from the actual manufacturer.

With respect to the $56 million, it was associated with buying vendor parts through the prime contractor.

The unnecessary costs alleged by the General Accounting Office to be paid as markup was that part of the price paid to the prime contractor for management and engineering services, such as configuration control, reliability, and providing procurement data. It can be expected there was also a nominal profit involved. Had the Air Force contracted for spares separately, these services would still be required and would have had to be funded either in-house or by separate contract. As a result of the dynamics of the F-111 program, substantial configuration changes already have been made, thus proving the wisdom of staying with the prime contractor.

GAO RECOMMENDATIONS

Chairman ELLENDER. In this report, the General Accounting Office recommended that in order to minimize the impact of such problems as those encountered on the F–111 aircraft and the provisioning of future weapons systems, the Secretary of the Air Force develop policies to limit initial provisioning activities to support of only those aircraft which reasonably can be expected to be delivered in the short run, such as the first 12 months of deliveries. The recommendation goes further to provide that these policies should permit the decelerating of initial provisioning activities if and when potential significant program slippages become known. Just what has the Air Force done to implement this recommendation?

Colonel STEELNACK. Air Force policy provides that initial spares procurement is limited generally to new items. These items will migrate to replenishment spares methodology upon reaching repetitive procurement status. Appropriate Air Force logistics activities have been instructed to apply initial spares procurement to support of short-term deliveries, such as for 12 months. To retain required flexibility for low production runs in the first 12 months, and in cases such as needs for unqualified items, procurement in initial provisioning is permitted for support of a maximum of 2 years of end article (e.g., aircraft) deliveries. Any exceptions must be approved by Air Force Headquarters.

Reactions in our logistics channels to significant program slippages will decelerate provisioning activities. These reactions are being triggered by updated program documentation and by reports from representatives in contractors' plants.

Chairman ELLENDER. The report also recommended that the Secretary of the Air Force direct those responsible for managing provisioning activities to provide realistic aircraft delivery documentation to those responsible for provisioning actions. What has been done to implement this recommendation?

Colonel STEELNACK. We concur generally with this recommendation. The programing schedules currently display production/acceptance schedules, i.e., they reflect when the Air Force accepts the aircraft (signs the DD 250) rather than the delivery to the using command. Delivery normally occurs within 30 days after acceptance. An additional schedule, showing realistic projected deliveries to user, will be provided by the System Program Office when slippages are forecast.

Chairman ELLENDER. It also recommended that the Secretary direct those responsible for managing provisioning activities to require the use of available flying experience and spare parts usage data in evaluating whether further procurements are necessary. What is the Air Force's view on this recommendation and has anything been done to implement it?

Colonel STEELNACK. Current Air Force procedures require use of available spares usage data related to actual flying experience in evaluating the need for additional procurement. These policies and procedures are programed into replenishment spares computation systems to eliminate use of estimated rates as soon as possible.

In respect to spare parts usage data, those Air Force activities which compute requirements were instructed several months ago on the

importance of making appropriate adjustments to estimated demand rates for new items. Adjustment of estimated rates has been included in a current study of the DOD advisory group for secondary item requirements, consisting of representatives from the Office of the Secretary of Defense and all concerned military services and agencies.

Chairman ELLENDER. The last recommendation in this report was that the Air Force Auditor General be directed by the Secretary to broaden its coverage in future reviews of provisioning. Has anything been done to implement this recommendation?

General GLASSER. Yes, sir. We concur with this recommendation. The Air Force Audit Agency acknowledged that the two audits referenced by GAO were compliance oriented rather than being directed to an evaluation of overall provisioning process. The Air Force Audit Agency has pointed out that more recent audits did review basic provisioning concepts, policies, and practices. Specifically, two audits were completed and the results of these two audits were presented in audit reports titled, "Selected Aspects of Logistic Support Relating to Line Replaceable Units, Subassemblies and J–79 Engines for F–4 Aircraft" (February 26, 1971) and "Selected Aspects of Logistic Support Provided to the C–141A Aircraft Weapon System" (December 30, 1971). The Air Force Audit Agency has two other audits in final stages, one audit in progress and one planned for fiscal year 1973, all of which will include reviews of various aspects of basic provisioning concepts, policies, and practices. In addition, future weapon system audits will include provisioning concepts, policies, and practices.

F–15 AIRCRAFT SPARES

Chairman ELLENDER. Earlier, we discussed the estimated requirement of $559.7 million for initial spares for the F–15 aircraft. I note that this is approximately 10 percent of the weapon system cost. Just how was this estimated requirement of $559.7 million for initial spares for the F–15 computed?

General BLANK. The aircraft procurement program was used as the basic data. The procurement program was converted to a production/delivery schedule and recosted. For example, of the first 30 production aircraft to be bought in fiscal year 1973, only 21 are currently scheduled to be produced and delivered in the last three quarters of fiscal year 1975. The nine remaining aircraft are currently scheduled to be produced and delivered in the first quarter of fiscal year 1976. The total fiscal year 1974 procurement quantity of 77 is also scheduled to be produced and delivered in this same fiscal year—fiscal year 1976. All subsequent years' procurement quantities are now programed with a 24-month procurement leadtime. Using the appropriate fiscal year recurring unit flyaway costs, the production quantities were costed. Then on a pro rata basis, the procurement costs of the peculiar AGE and the training devices were converted to a production/delivery basis to match the aircraft production costs.

We apply factors to the flyaway cost of the aircraft being delivered in each fiscal year and the peculiar AGE required in each fiscal year.

Using this technique, we currently estimate that $313.3 million is required for initial spares for the F–15 through fiscal year 1981. We also factor spare engines on a ratio basis to the installed engines. We are currently projecting through fiscal year 1981, a total buy of 251 spare engines at a gross cost of $246.4 million. These two costs equate to the total estimated requirement of $559.7 million for initial spares for the F–15.

AIRCRAFT SUPPORT EQUIPMENT AND FACILITIES

Chairman ELLENDER. $237.7 million is requested for aircraft support equipment and facilities. Pages 21 through 25 of the justification will be included in the record.

(The information follows:)

PART I.—PURPOSE AND SCOPE

	Thousands
Program requirement—fiscal year 1973	$237,700
Program requirement—fiscal year 1972	789,600
Program requirement—fiscal year 1971	842,900

Activity: Aircraft support equipment and facilities

This activity provides for many items of aerospace ground support equipment which are required to service and test aircraft and their components; for costs incurred incident to production component improvement; for industrial machinery equipment and facilities required in the manufacture of items covered by this appropriation; for those war consumable items required to be on hand over and above the peacetime inventory for immediate use in the event of war; and for other charges associated with this program, such as aircraft fuel and oil furnished to contractors and electronic countermeasure equipment.

PART II.—JUSTIFICATION OF FUNDS REQUESTED

The estimate for this activity is composed of the following segments: common aerospace ground equipment amounting to $50.9 million; component improvement programs totaling $35.0 million; industrial facilities amounting to $22.7 million; war consumable items for a total of $15.5 million and other charges associated with this program totaling $113.6 million.

Common aerospace ground equipment (AGE)—$50.9 million

This program provides for the procurement of organizational, base and depot level AGE used in direct support of aircraft requirements for out-of-production aircraft, common support for new aircraft entering the inventory, and for aircraft being modified. It is used on the flight line, in maintenance shops, in hangars, and in the depots.

The fiscal year 1973 budget of $50.9 million represents an approximate level of effort with the fiscal year 1972 budget of $46.2 million. Of the FY 1973 $50.9 million, $6.5 million is for AGE to support the Class V Modification program, $2.1 million is for the Vietnamization program, about $23.5 million is required to provide initial equipage for newer type weapon systems entering the inventory; for example, F–111, C–5A, A–7D as well as AGE support for the ANG/AFRes conversion programs. The remaining $18.8 is to replace items which are worn out and on which the annual repair costs exceed the amortized annual cost of new equipment.

This program contains such items as generators, de-icers, hydraulic test stands, engine test stands, radio and radar test stands, air conditioners, munitions handling equipment, and non-destructive inspection equipment.

The following table shows a three-year comparison of the broad categories of the Common AGE program:

[In millions of dollars]

	Fiscal year—		
	1971	1972	1973
Common ground servicing equipment	$25.7	$15.0	$16.5
Common maintenance and repair shop equipment	23.9	13.5	14.1
Common instruments and laboratory test equipment	14.4	8.2	8.9
Common training equipment	22.4		
Other miscellaneous equipment	9.1	4.4	4.9
AGE to support aircraft modifications	3.6	5.1	6.5
Total common AGE	99.1	46.2	50.9

Component improvement—$35.0 million

The Component Improvement program provides for up-grading and improving government furnished aeronautical equipment, primarily aircraft engines.

RDT&E funds are used to qualify an item if equipment for service use. In the case of aircraft engines, R&D funds are used to provide for the MQT (Military Qualification Test) (150 hours). After qualification, CIP (Component Improvement Program) funds are used to provide for required engineering to correct service revealed problems while the engine is in production, as well as to increase reliability, maintainability, durability, and to improve repair techniques. The program includes testing for a solution in the reduction of visible smoke emission.

The fiscal year 1973 budget of $35.0 million represents a decrease of $10.6 million from the fiscal year 1972 program of $45.6 million. The most significant decrease, $23.0 million, occurred in the TF–39 engine which is used in the C–5A aircraft. This decrease was offset by the introduction of the F–100 engine that is used in the F–15A in the amount of $18.5 million.

The following table shows a three-year comparison of the items in the Component Improvement program:

[In millions of dollars]

	Fiscal year—		
	1970	1972	1973
T–56 engine (C/HC–130)	1.4	0	0
J–69 engine (T–37)	1.0	0	0
J–79 engine (F/RF–4/F–104)	1.5	1.0	.9
J–85 engine (T–38/F–5/A–37)	2.4	2.4	4.2
TF–30 engine (F/FB–111)	13.0	14.4	7.7
TF–39 engine (C–5A)	4.0	23.0	0
T–64 engine (HH–53)	2.2	0	0
TF–41 engine (A–7D)	6.3	4.8	3.7
F–100 engine (F–15A)	0	0	18.5
Electronics and other equipment	1.2	0	0
Total component improvement	33.0	45.6	35.0

Industrial facilities—$22.7 million

The Industrial Facilities program provides for capital type rehabilitation to real property at Air Force owned industrial facilities; preparation for shipment of Government production equipment to the Defense Industrial Plant Equipment Center or to other priority Air Force users; provides funds for the Air Force Industrial Readiness and Mobilization Planning Program. This latter program provides for investigation of deficiencies in our industrial base and assists the Air Force in determining the corrective action to be taken to resolve these deficiencies. Funds are also requested for the manufacturing methods program, a program which assures the timely establishment and improvement of manufacturing processes, techniques, or equipment required to support current and projected Air Force programs. A new category has been established in the Industrial Facilities program for environmental protection which includes the installation of air and water pollution abatement devises in the various AF owned plants. In prior years, environmental protection funds were included in the capital type rehabilitation category.

The fiscal year 1973 budget for Industrial Facilities is $22.7 million, which is $6.7 million more than the fiscal year 1972 program of $16.0 million.

The following table shows a three-year comparison of the broad categories of the Industrial Facilities program:

[In millions of dollars]

	Fiscal year 1971	Fiscal year 1972	Fiscal year 1973
Expansions	0.1	0	0
Packing, crating and handing	2.1	1.8	1.4
Capital-type rehabilitation	7.6	4.6	5.3
Manufacturing methods	12.7	9.0	11.0
Industrial readiness	.2	.6	1.3
Environmental protection	4.8	0	3.7
Total industrial facilities	27.5	16.0	22.7

War consumables—$15.5 million

The funds requested in the fiscal year 1973, along with prior funded assets, will afford initial wartime support and will provide for a production base which could be expanded in the event of hostilities. Included in this program are auxiliary fuel tanks, pylons, and ejector racks required to support war plans. Due consideration has been afforded to supporting normal operational requirements.

The following table shows a three-year comparison of the War Consumables program:

[In millions of dollars]

	Fiscal year 1971	Fiscal year 1972	Fiscal year 1973
F/RF-4 aircraft: Multiple ejector racks	0.6		
F-111 aircraft:			
Auxiliary fuel tanks	7.1		8.0
Pylons fixed			4.5
Bomb rack unit	2.5		
FB-111 aircraft:			
Fixed pylon/tank assembly		2.1	
Pivot pylon/tank assembly		2.3	
Pivot weapons pylon		3.5	
A-7D aircraft:			
Auxiliary fuel tanks	.9		
Multiple ejector racks	1.8		
A-37 aircraft: 100-gallon tank			3.0
Total war consumables	12.9	7.9	15.5

Other production charges and classified projects—$113.6 million

The other production charges program procures Electronic Countermeasures (ECM) pods for tactical fighter aircraft, initiates Quick Reaction Capability (QRC) projects to respond to electronics warfare and intelligence requirements, and funds Air Force classified projects. Also, funds in the amount of $2.9 million are required in this program to reimburse the AF Stock Fund for fuel required by contractors to test aircraft; and for related fuel consuming equipment scheduled for the operational inventory; and for the initial fill of aircraft prior to flyaway. This budget project also provides for First Destination Transportation charges in the amount of $5.1 million for the initial delivery to an Air Force facility.

[In millions of dollars]

	Fiscal year 1971	Fiscal year 1972	Fiscal year 1973
Total other charges	670.4	673.9	113.6
Total, aircraft support equipment and facilities	842.9	789.6	237.7

General GLASSER. This category of procurement supports our aircraft program in a broad manner and also includes programs which are highly classified. In fiscal year 1972, Congress approved $793.3 million for this procurement category. We are requesting $237.7 million for fiscal year 1973.

Common Ground Equipment

Our request for common ground equipment of $50.9 million is to provide equipment support for aircraft on the flight line, and for base and depot maintenance shops. This equipment, applicable to several aircraft including out-of-production weapon systems, includes such items as generators, de-icers, jet engine test stands, non-destructive inspection equipment, air conditioners, hydraulic test stands, air compressors, and radio/radar test sets.

National Guard and Reserves Conversions

The slight increase in this request over fiscal year 1972 is primarily associated with increased support of our Air National Guard/Air Force Reserves conversion programs and for replacement items deferred from prior years in order to support higher priority projects.

The component improvement program serves to improve our Government-furnished aeronautical equipment, primarily aircraft turbine engines. The fiscal year 1972 program is now $45.6 million and this year our request is reduced to $35 million. A major effort of the program is to improve engine reliability, maintainability, and durability of the F–100 engine for the F–15 aircraft. TF–30 engine improvements for the F/FB–111 are also funded under this program. Another effort that we are working jointly with the Navy is improvement to the TF–41 engine for A–7 aircraft.

Industrial Facilities

The industrial facilities effort is essential in order to maintain and improve our aircraft production capability. We are constantly seeking to improve our manufacturing methods and to maintain Air Force-owned plants to preserve their industrial capacities and insure compliance with environmental protection standards; $16 million is available for these facilities in fiscal year 1972.

Construction and Equipment

The fiscal year 1973 request does not include funds for new construction, new plant equipment, or industry-financed construction on Government-owned land. The $22.7 million requested is for the following efforts:

Government-owned industrial production equipment no longer required because of reduced production requirements will be prepared for storage or disposition at a cost of $1.4 million.

Rehabilitation of electrical distribution systems, major roof repairs, replacement of obsolete lighting systems, and updating of fire protection systems in Government-owned plants will require $5.3 million.

Eleven million dollars is needed for new or improved manufacturing processes for new alloys and composite materials, as well as new processes for reliable production of electronic components.

Industrial readiness efforts and environmental protection projects will require $4.99 million.

WAR CONSUMABLES PROGRAM

The war consumables program provides for the procurement of war readiness materiel. The items are primarily auxiliary fuel tanks, pylons, and ejector racks which are jettisoned under certain conditions in wartime, or during inflight emergencies during peacetime.

In fiscal year 1972, $7.9 million was allocated for tanks and pylons for the FB–111 aircraft. In fiscal year 1973, we are requesting $15.5 million for similar types of equipment.

The war consumables program affords limited wartime support for our projected force levels through the buy period and provides for a production base that could be expanded in the event of continued hostilities.

Aircraft to be supported by this request are the A–37 and F–111; $3 million is for A–37 tanks and $12.5 million for tanks and pylons for the F–111 aircraft.

OTHER PRODUCTION CHARGES

The Other Production Charges account request for fiscal year 1973 is $69.3 million. The bulk of this fund request will be used for improvement in electronic countermeasures and logistical support of the SR–71.

COMPONENT IMPROVEMENT: F–100 ENGINE FOR F–15A AIRCRAFT

Chairman ELLENDER. Of the total requested for component improvement, attention is called to the fact that $18.5 million is associated with the effort for the improvement in the F–100 engine for the F–15A aircraft. Inasmuch as this is a new engine and no production of 15 aircraft will be delivered to the Air Force until fiscal year 1975, this request is subject to question. Will you comment on that?

General GLASSER. This is the consequence of our standard funding principles wherein the work done prior to the qualification testing of the engine is financed under the line item supporting.

Beyond that, once the engine is a military qualified engine, then the further improvement in that engine to raise the meantime between failure is then carried on under the component improvement program.

The F–15 engine will complete its military qualification test February 1973 so that from there on the work continues under the CIP program.

COMMON AEROSPACE GROUND EQUIPMENT

Chairman ELLENDER. Of that total requested, $50.9 million is for the procurement of common aerospace ground equipment. Comment generally on the nature of this equipment.

General BLANK. This is equipment common to more than one type weapon system. It is required to launch, land, and maintain the aircraft. It includes such items as generators, air conditioners, hydraulic test stands, radio/radar test equipment, engine test stands, air compressors, sound suppressors and ammunition handling equipment.

Senator YOUNG. Of the $50.9 million requested for this ground equipment, I note that $23.5 million is required to provide initial equipage for newer type weapon systems entering the inventory. Give us some examples of these new systems.

General BLANK. This program will provide initial equipage for newer type weapon systems such as the A–7D, F–4E, F–111D/F, CX–X, T–43A, UH–1, and manufacturer's support for the F–15. It also provides for initial equipage for Air Force Reserve and Air National Guard units converting to older inventory aircraft such as C/HC–130, A–37B, C–7, F–105B, C–123, F–106, F–100, 0–2, and F/RF–4 aircraft.

COMPONENT IMPROVEMENT

Chairman ELLENDER. Within the total requested for aircraft support equipment and facilities, $35 million is for component improvement. Please comment generally on the objective of this program.

General GLASSER. The Component Improvement Program (CIP) has been employed in the aircraft engine area for many years and has been proven to be a highly successful, efficient technique for engine improvements. The program is to make improvements based on experience after the engine has been qualified for production. It also includes engine improvements for maintainability and producibility. While engines are qualified to a certain specification and are tested in simulated aircraft flight conditions, we have always found that actual flight tests revealed areas for improvement. The early phases of aircraft engine operations are where the real pay-off through component improvements is realized. This early detection of improvement opportunities and incorporation into the engine on the production line, saves many dollars by avoiding a costly retrofit program.

INDUSTRIAL FACILITIES

Chairman ELLENDER. The total requested for aircraft support equipment and facilities includes $22.7 million for industrial facilities. Please comment on the nature of this program.

General GLASSER. The $22.7 million requested for fiscal year 1973 provides $5.3 million for capital-type rehabilitation (maintenance beyond the scope of normal upkeep) at Government-owned contractor-operated industrial production facilities; $1.3 million for preservation of critical industrial production capacities of those facilities required to support current and mobilization requirements; $1.4 million to prepare for shipment idle government-owned equipment for reutilization or storage; $11.0 million for providing new manufacturing processes and techniques to support the production of near-term and future Air Force systems; and $3.7 million for correction of environmental deficiencies of currently owned industrial assets.

Senator YOUNG. The request for $22.7 million includes $11 million for manufacturing methods. Just what is involved in this effort?

General GLASSER. The objective of the manufacturing methods program is to provide new manufacturing processes and techniques needed to support the production of current and forecasted Air Force systems. The fiscal year 1973 program will place emphasis on new manufacturing processes that will permit the economical and reliable manufacture of airframe and engine components made from the newer titanium alloys and the superalloys (nickel-based alloys). In addition, considerable effort will be devoted to new manufacturing techniques applicable to the composite materials, that is, the boron

and graphite composites. Finally, in the area of electronics, new processes and techniques are needed to produce electronic circuitry that is radiation hardened, and for the surface inspection of integrated circuitry.

Senator YOUNG. Of the total, $3.7 million is for environmental protection. Please comment on this item.

General GLASSER. The $3.7 million requested for environmental protection is for correction of deficiencies at five Air Force industrial production facilities. These projects are required to meet established air and water standards to comply with the National Environmental Protection Act. The work consists of such things as the installation of air scrubbing equipment to reduce emissions to the atmosphere and providing oil separating and industrial waste treatment facilities to reduce or eliminate water pollution. I will supply a breakout of this type of work by plant location.

(The information follows:)

Air Force plant and location:	*Millions*
No. 4—Fort Worth, Tex	$2.000
No. 13—Wichita, Kans	.400
No. 50—Halethorpe, Md	1.170
No. 27—Toledo, Ohio	.020
No. 65—Neosho, Mo	.110
Total	3.700

Chairman ELLENDER. What is the nature of the capital-type rehabilitations for which $5.3 million is requested?

General GLASSER. The $5.3 million requested for capital-type rehabilitation under the appropriation for fiscal year 1973 provides for things like resealing of exterior walls, repair of spalled and deteriorated plaster walls, roof repairs, rehabilitation of restrooms, replacement of deteriorated open plant wiring and piping, repair of concrete ramps and expansion joints, replacement of cooling coils, condensers, evaporators, boiler exhaust stacks, protection relay and alarm systems, rehabilitation of hangar doors and repair of low- and high-voltage electrical distribution systems. I will supply a list of the locations and planned dollar expenditures at each location.

(The information follows:)

Air Force plant and location:	*Millions*
No. 36—Evendale, Ohio	$0.455
No. 43—Stratford, Conn	.490
No. 42—Palmdale, Calif., site 5	.025
No. 4—Fort Worth, Tex	1.200
No. 83—Albuquerque, N. Mex	.140
No. 29—West Lynn, Mass	.815
No. 6—Marietta, Ga	.600
No. 59—Johnson City, N.Y	.105
No. 28—Everett, Mass	.095
No. 19—San Diego, Calif	.025
No. 3—Tulsa, Okla	.730
No. 27—Toledo, Ohio	.170
No. 65—Neosho, Mo	.020
AF Installation 6810—Van Nuys, Calif	.140
Total	5.010
Rehabilitation of industrial production equipment	.300
Total	5.310

WAR CONSUMABLES

Chairman ELLENDER. Of the total requested for aircraft support equipment and facilities, $15.5 million is for war consumables. Comment generally on the nature of the items procured with these funds.

General GLASSER. Included in this program are auxiliary fuel tanks, adapters, pylons, and ejector racks required to support the war plans. Such items are required for extending the range or loiter time of our aircraft and the carrying of ordnance. These items, under wartime conditions, are normally dropped—jettisoned—from the aircraft and thereby lost to the inventory.

REIMBURSABLE PROGRAM

Chairman ELLENDER. I note that you anticipate reimbursement totaling $425 million during fiscal year 1973. I would assume that the major portion of these reimbursements is associated with the military assistance program and the foreign military sales program. Am I correct about this?

General DELUCA. Yes; that is correct. Orders from the military assistance program are estimated at $85 million. The remaining $340 million is our estimate of foreign military sales that will be consumated during fiscal year 1973.

Chairman ELLENDER. What are the principal aircraft involved in the anticipated reimbursement program for fiscal year 1973?

General DELUCA. We anticipate receiving orders from the foreign military sales and military assistance programs to procure F/RF–4, F–5E and T–41 aircraft during fiscal year 1973.

Missile Procurement

STATEMENT OF LT. GEN. OTTO J. GLASSER, DEPUTY CHIEF OF STAFF, RESEARCH AND DEVELOPMENT

ACCOMPANIED BY:

MAJ. GEN. GEORGE H. McKEE, DIRECTOR OF MAINTENANCE ENGINEERING, DEPUTY CHIEF OF STAFF, SYSTEMS AND LOGISTICS

MAJ. GEN. JAMES A. HILL, DIRECTOR OF AEROSPACE PROGRAMS, DEPUTY CHIEF OF STAFF, PROGRAMS RESOURCES

BRIG. GEN. CHARLES E. BUCKINGHAM, ASSISTANT FOR R.D. & A. PROGRAMING, DEPUTY CHIEF OF STAFF, RESEARCH AND DEVELOPMENT

PROGRAM AND FINANCING

Chairman Ellender. The next appropriation to be considered is "Missile Procurement, Air Force", for which $1,772,300,000 is requested. At this point in the record there will appear certain program and financing information from the justifications.

(The information follows:)

DEPARTMENT OF DEFENSE—MILITARY MISSILE PROCUREMENT, AIR FORCE

PROGRAM AND FINANCING

[In thousands of dollars]

	Budget plan [1]			Obligations		
	1971 actual	1972 estimate	1973 actual	1971 actual	1972 estimate	1973 estimate
Program by activities:						
Direct:						
1. Ballistic missiles	582,600	741,100	692,900	502,330	640,596	702,700
2. Other missiles [1]	136,700	319,500	316,000	132,457	253,400	283,900
3. Modification of inservice missiles	100,700	53,800	43,900	117,203	67,300	44,100
4. Spares and repair parts	47,700	43,600	46,700	31,998	51,800	51,400
5. Other support	624,400	525,700	672,800	599,670	584,000	664,100
Total, direct	1,492,100	1,683,700	1,772,300	1,383,658	1,597,096	1,746,200
Reimbursable, total	4,288	1,170	5,500	5,799	8,130	3,800
Total	1,496,388	1,684,870	1,777,800	1,389,457	1,605,226	1,750,000
Financing:						
Receipts and reimbursements from—						
Federal funds	−728	−1,170	−3,500	−780	−1,170	−3,500
Trust funds	−6,814		−2,000	−6,672		−2,000
Non-Federal sources	−46			−48		
Unobligated balance available, start of year—						
For completion of prior year budget plans				−407,083	−451,226	−505,870
Available to finance new budget plans	−48,900			−48,900		
Reprograming from (−) or to prior year budget plans	−62,700	−25,000				
Unobligated balance transferred from other accounts		−50,000			−50,000	
Unobligated balance transferred to other accounts		25,000			25,000	
Unobligated balance available, end of year—for completion of prior year budget plans				451,226	505,870	533,670
Budget authority, appropriation	1,377,200	1,633,700	1,772,300	1,377,200	1,633,700	1,722,300

[1] Amounts for procurement actions programed.
[2] Reimbursements are derived principally from cash sales to foreign governments (22 U.S.C. 2315).

NOTE: The amounts shown above are estimates, pending final determination of the amounts to be requested when supplemental and amended estimates are formally transmitted.

MISSILE PROCUREMENT

Chairman ELLENDER. Proceed.

General GLASSER. Our missile procurement request for fiscal year 1973 is $1,772.3 million. The program includes funds for continued deployment of Minuteman III and further efforts in the Minuteman force modernization program.

SRAM AND MAVERICK MISSILES

We have included a request for air-to-ground and air-to-air missiles to be used with our strategic and tactical aircraft. We plan to continue production of the SRAM for our strategic aircraft and the Maverick for our tactical forces.

AIM–7F SPARROW AND AIM–9L SIDEWINDER MISSILES

Initial procurement quantities of the AIM–7F Sparrow and AIM–9L Sidewinder missiles are also being requested in fiscal year 1973.

AGM–45A SHRIKE MISSILE

The AGM–45A Shrike is designed to provide the Air Force added capability in meeting surface-to-air missile (SAM) threats and is being purchased for war-readiness materiel stock.

FIREBEE II TARGET DRONES

We are also requesting funds for 25 Firebee II target drones to continue operational test and evaluation of our aircraft and missile weapon systems.

MODIFICATIONS

In support of the missile procurement program, we are requesting funds for modification of inservice missiles, missile spares and repair parts, and support equipment and facilities.

PROGRAM SUMMARY

The missile procurement program is summarized in table II. (Table II follows:)

TABLE II

DEPARTMENT OF THE AIR FORCE FISCAL YEAR 1973 MISSILE PROCUREMENT ESTIMATES

[In millions of dollars]

Type	Quantity	Estimates
Ballistic missiles:		
Minuteman III (LGM–30G), strategic ICBM	[Deleted]	$408.0
Minuteman III (advance procurement)		11.3
Minuteman force modernization		273.6
Total		692.9
Other missiles:		
Shrike (AGM–45A), antiradar	[Deleted]	10.8
Maverick (AGM–65A), air-to-ground	[Deleted]	61.2
SRAM (AGM–69A), air-to-ground	480	202.5
Sparrow (AIM–7F), air-to-air	[Deleted]	19.5
Sidewinder (AIM–9L), air-to-air	[Deleted]	14.3
Target drones		7.7
Total		316.0
Modification of inservice missiles		43.9
Missile spares and repair parts		45.7
Other support equipment and facilities		672.8
Total direct program		1,772.3
Financing: New obligational authority		1,772.3

SHRIKE MISSILE CAPACITY

Senator CASE. How is the Shrike working?

General GLASSER. That is a very moot question, Senator Case. Insofar as its direct lethality, it is not very high. The numbers vary because it is difficult to get good BDA back from the theater. Reports range from [deleted] percent to [deleted] percent as normal kills. On the

other hand, it does have a deterrent effect in that its use very frequently drives a radar off the air and it will not return for some time. Even though it has not destroyed that radar, it has rendered it operationally ineffective and allows our planes to operate in the area. So, to that degree, it is partially effective but it is not by any means what we would like to see in this sort of weapon.

Senator CASE. Do you have any hopes that it will be made more effective or is the principle just not good enough?

General GLASSER. The problem we have with any missile of this type is that they rely on the continued radiation from the antenna to get on the target.

Senator CASE. For the whole trip?

General GLASSER. For the whole trip.

INCORPORATION IN LATER MODELS OF MEMORY FEATURE

We have in later models of antiradiation missiles to incorporate features to cause the missile to remember where it last thought the target was so that if the target shuts down it will attempt to get to that point.

Obviously the accuracy is degraded in that event but it is more effective than it was.

DEVELOPMENT OF LOCATION LOCKUP PROGRAM

For the future, we are working with the development phase on programs which will lock up in the memory of the guidance system the precise location of where that radar was at the time it was emitting and then by using a beacon on the ingoing missiles bring the two in precise coincidence. That should work very well but we do not have it in the force today.

Senator CASE. How much has it been tested?

General GLASSER. Some preliminary testing not using the missile but simulated in aircraft, has been conducted. We are only in this year's R. & D. program requesting funds to proceed further with that. We will be discussing that during the R. & D. hearings.

1973 PURCHASE

Senator CASE. How much are you asking in this budget for Shrike?

General GLASSER. We are asking in this budget for [deleted] of those for some $10.8 million.

Senator CASE. Thank you, Mr. Chairman.

MINUTEMAN II/III BALLISTIC MISSILES

Chairman ELLENDER. $408 million is requested for the procurement of Minuteman III ballistic missiles. The sum requested and $22.6 million in advance procurement provided in fiscal year 1972 will provide a total of $430.6 million for the procurement of [deleted] Minuteman III missiles. The missile data sheet will be included in the record at this point.

FISCAL 1973 PRESIDENT'S BUDGET ESTIMATE MISSILE DATA SHEET

Service: Air Force.
Nomenclature: LGM–30F/G.
P–1 Line Item Nos: 1, 2, & 3.
Popular name: Minuteman II/III.
Description/Mission: The Minuteman Missile is a three stage solid propellant ICBM which is hardened and dispersed and has the mission of destroying those strategic targets designated by the Joint Strategic Target Planning Staff. Minuteman II carries one re-entry vehicle and has the capability to carry penetration aids to penetrate enemy defenses. The Minuteman III has a vastly improved capability provided by a Post Boost Propulsion System for the deployment of [deleted] MARK–12 re-entry vehicles with improved flexibility and effectiveness as well as penetration aids.

COST DATA

[In millions of dollars]

	Fiscal year 1970 and prior	Fiscal year— 1971	1972	1973	1974	1975	1976	1977	Cost to complete	Current estimate, total program
Missile procurement:										
Quantity	[1] 870	120	120	[Deleted]	[Deleted]					[Deleted]
Cost	2,798.0	479.2	448.5	408.0	427.4					4,561.1
Advance procurement-plus		18.6	22.6	11.3						52.5
Force modernization	550.1	84.8	270.0	273.6	390.3	352.7	227.2	85.1		2,233.8
Weapon system cost	3,348.1	582.1	741.1	692.9	817.7	352.7	227.2	85.1		6,847.4
Missile program unit cost (Minuteman III)		4.093	3.789	[Deleted]	[Deleted]					
Initial spares	236.2	17.6	13.1	10.2	8.0	12.0	11.1	9.3		317.5
R.D.T. & E	2,655.8	270.2	181.6	154.7	112.5	73.1	29.8	22.0		3,499.7
Milcon	357.2	.2	.4							357.8
Program acquisition cost	6,597.3	870.6	936.2	857.8	938.2	437.8	268.1	116.4		11,022.4
Program unit cost—Minuteman II										7.345
Program unit cost—Minuteman III										[Deleted]
Total additional cost	400.1	83.7	52.4	41.9	119.4	36.9	28.6	13.6		775.6

[1] Includes 82 R. & D. test missiles.

Basis for FY 1973 Budget Request: Provides for the procurement of Minuteman III Missiles for operational testing to determine system reliability and for the replacement of Minuteman I operational missiles. These funds also provide for the procurement of hardware and necessary effort required to modernize Minuteman Launch and Launch Control Facilities. This includes the conversion of Minuteman I Sites and Launch Control Facilities to a configuration that will have the capability to receive a Minuteman III Missile; Upgrade Silo Hardness to enhance pre-launch survivability; the modernization of Minuteman III Facilities to incorporate the Command Data Buffer System which will provide a capability to more effectively posture and maintain the Single Integrated Operational Plan (SIOP). These programs are planned and scheduled so as to be in line with the basic Force Modernization Program and are considered the most economical method of programming the requirements. The FY 1973 Budget Request also provides for necessary initial spares required to support both Minuteman II and Minuteman III.

Test Data.—The Minuteman II and III R&D Flight Test Programs were completed in May 1967 and July 1970 respectively. The Demonstration and Shake-down Operation (DASO) launches for both Minuteman II and III are also completed. The Minuteman II Operational Test (OT–I) Program, which is performed by SAC to determine weapon system reliability and accuracy will be completed in March 1972. Minuteman II OT–I Flight Test Program which started in March 1971 will be completed in September 1973. The follow-on Operational Test (OT–II) Program for Minuteman II started in February 1971. A box score of the Flight Test Programs as of 31 December 1971 follows:

	Launches	Successes	Percent successes
Minuteman II:			
R. & D. (completed)	51		
DASO (completed)	10		
OT–I	49		
OT–II	5		
Special (Olympic trials ERCS)	10		
Total	125	[Deleted]	
Minuteman III:			
R. & D. (completed)	25		
DASO (completed)	6		
OT–I	10		
Special test missiles	8		
Total	49		

[1] Includes 1 launch where the 1st of [deleted] reentry vehicles successfully completed the mission.
[2] Includes 2 launches where the 1st of [deleted] reentry vehicles successfully completed the mission.

CONTRACT DATA, MAJOR SUBSYSTEM, CONTRACTOR AND TYPE OF LAST CONTRACT

Assembly: Checkout & Interstages, The Boeing Co., FPIF. Guidance and Control, Autonetics, FPIF. Stage I Motor, Thiokol Chemical Corp., FPIF. Stage II & III Motors, Aerojet Solid Prop Corp., FPIF. Post Boost Propulsion, Bell Aerospace Corp., FPIF. MARK–12 RV and Re-entry System, General Electric Co., FPIF. Improved Digital Computer (IDCU), Honeywell Inc., FPIF.

Characteristics	Item model, series, class, etc.	
	Minuteman II	Minuteman III
Diameter	5.45 ft.	5.45 ft.
Guidance	Inertial	Inertial.
Length	57.6 ft.	59.8 ft.
Propulsion	3-stage solid	3-stage solid.
Weight with warhead	72,810 lbs.	77,310 lbs.
Warhead type	Mark 11C R/V	Mark 12 R/V.

COST HISTORY COMPARISON—MINUTEMAN II/III

[Dollars in millions]

	Quantity	Amount
Initial planning estimate:		
Procurement	1,318	$5,230.9
R.D.T. & E	108	3,272.3
Milcon		425.5
Total program costs	1,426	8,928.7
Current estimate total program:		
Fiscal year 1972 budget submission—Amended:		
Procurement	[Deleted]	7,201.7
R.D.T. & E	82	3,413.5
Milcon		352.9
Total program costs	[Deleted]	10,968.1
Fiscal year 1973 budget submission;		
Procurement	[Deleted]	7,164.9
R.D.T. & E	82	3,499.7
Milcon		357.8
Total program costs	[Deleted]	11,022.4

Explanation of Difference Between FY 1972 and FY 1973: The net increase of $54.3 million represents (1) an increase of $86.2 million in RDT&E to support the Minuteman Missile Performance Measurement System and the Minuteman II Dust program; (2) increased Military Construction costs in the amount $4.9 million for missiles and re-entry vehicle storage facilities; and (3) a decrease of $36.8 million in Procurement which includes a reduction in Initial Spares support, and program cost refinements in various Minuteman III sub-systems based upon current contractor cost data.

General GLASSER. The Minuteman force remains an integral part of our nuclear deterrent. We are continuing our force modernization program to replace Minuteman I missiles with Minuteman II's and III's by converting the silos and associated equipment to accept the newer missiles.

MINUTEMAN III

The Minuteman III provides the United States with a weapon system with greater range, accuracy, and defense penetration capability than its predecessors.

Deployment of the first wing of 150 Minuteman III missiles at Minot Air Force Base, N. Dak., has been completed and, I might add, ahead of schedule.

The second wing at Grand Forks Air Force Base in North Dakota will be converted to the Minuteman III by [deleted]. When the force modernization is completed in fiscal year 1975, we will have a 1,000-Minuteman missile force consisting of 550 Minuteman III's and 450 Minuteman II's.

Within the force modernization program, we are upgrading the Minuteman silos to improve missile postattack survivability against nuclear blast, shock, and electromagnetic pulse effects.

Also, the command data buffer remote retargeting capability is being added to Minuteman III within this program. The command data buffer will provide the capability to retarget a squadron of 50 missiles in [deleted] instead of the present [deleted].

FUNDING ALLOCATION

The $471.1 million appropriated for the Minuteman program in fiscal year 1972 is being used to buy 120 missiles and associated equipment as well as advanced buy for long lead items for the fiscal year 1973 procurement.

Also during the current fiscal year, $111 million is being used for the basic force modernization of Minuteman wings.

The $34.9 million for command data buffer is buying weapon system computers, bulk storage memory units, secure data units, aerospace ground equipment, and training equipment for two wings.

The $124.1 million is being used for the upgrade silo program to increase blast shock hardness and to enhance electromagnetic pulse protection at Wing II, Ellsworth AFB, S. Dak., and Wing V, F. E. Warren AFB, Wyo.

Our request in fiscal year 1973 is $419.3 million for procurement of [deleted] Minuteman III missiles and advanced buy funds.

MODERNIZATION PROGRAM

For the Minuteman force modernization program, we are requesting $273.6 million; $70 million of this is for silo and associated equipment conversion to accept the new missiles.

The $161.1 million in fiscal year 1973 will continue the upgrade silo program at Wing V, F. E. Warren Air Force Base, Wyo., and will initiate upgrade work at Minot and Grand Forks Air Force Bases in North Dakota.

Additional command data buffer equipment will be procured with the remaining $42.5 million.

UNIT COST

Chairman ELLENDER. I note that the planned program for fiscal year 1973 is based on a unit cost of [deleted] per missile. How does this compare to the unit cost of this missile in fiscal years 1971 and 1972?

General GLASSER. Sir, the unit flyaway cost of the Minuteman III missile being procured in fiscal years 1971, 1972, and 1973 is 3.766, 3.463, and [deleted] million dollars.

Chairman ELLENDER. The request includes $11.3 million for advance procurement to support the planned buy of this missile in fiscal year 1974. As I read the data sheet, the fiscal year 1974 buy will complete this missile production program. Am I correct about this?

General GLASSER. Yes, sir; that is correct.

Chairman ELLENDER. As I recall, the current program calls for an ultimate force of 450 Minuteman II's and 550 Minuteman III's. Am I correct about this?

General GLASSER. Yes sir; that is correct.

Chairman ELLENDER. When do you expect to achieve this ultimate force?

General GLASSER. We expect to complete the deployment of 550 Minuteman III's in [deleted] 1975.

UTILIZATION OF MINUTEMAN I MISSILES

Chairman ELLENDER. In those instances where you are replacing the original Minuteman I's with the Minuteman II's or III's, what use is being made of the old missiles?

General GLASSER. The Minuteman I's that are replaced are not being used except some few of them that are being used for test programs, for ABM, things of that sort.

At the moment, we are using some of the components from them but the bulk of them are going into storage pending our determination of just what use should be made of the Minuteman I missiles. Some of the Minuteman II's are being used in Minuteman I holes, and Minuteman III's being installed in Minuteman II holes.

MINUTEMAN TEST PROGRAM

Senator YOUNG. Please comment on the Minuteman III test firing program, and give us some idea of the number of firings and the number of successes.

General GLASSER. We have launched 52 Minuteman III missiles so far. [Deleted] of these were successful for an [deleted] success rate which compares favorably with the Minuteman I and II success rates of [deleted] and [deleted] respectively. Of the 52 Minuteman III launches, 13 were operational test missiles removed from operational silos and launched by SAC at Vandenberg AFB.

Senator YOUNG. I note on the missile data sheet that the initial planning estimate for Minuteman II and III based on the production of 1,426 missiles was $8,928.7 million. What was the date of this initial planning estimate?

General GLASSER. The Minuteman II portion of the initial planning estimate was developed in 1967 and the Minuteman III portion was developed in 1968. The Minuteman II estimate was based upon contemplated requirements through fiscal year 1972 and the Minuteman III portion was based upon requirements through fiscal year 1973.

Senator YOUNG. I note that the current estimated total program for Minuteman II and III is now stated at $11,022.4 million based on the production of [deleted] missiles. Generally, what accounts for this increase of approximately $2.1 billion?

General GLASSER. The major portion of the $2.1 billion increase is attributed to new requirements generated subsequent to the initial planning estimate. These new requirements totaling approximately $1.9 billion include dust and debris hardening, $250 million; Upgrade Silo program, $1,336.6 million; command data buffer, $233.5 million; and missile performance measurement system, $65.9 million. The remaining $0.2 billion is attributed to engineering changes, economic factors, unpredictable changes, and schedule changes.

MINUTEMAN FORCE MODERNIZATION

Chairman ELLENDER. $273.6 million is requested for the Minuteman force modernization program. Of this total, $70 million is for the silo conversion program. Comment generally on the silo conversion program.

General GLASSER. The silo conversion program which refers to basic force modernization, converts the weapon system ground equipment from the WS–133A, Minuteman I configuration to the WS–133A–M, Minuteman II/III configuration. It includes the hardware and necessary assembly and checkout effort required to accomplish the change.

Senator YOUNG. How many silos are involved in this program, and how many of these conversions have been funded through fiscal year 1972?

General GLASSER. The silo conversion program involves the modernization of the 800 silos in which the Minuteman I missile was initially deployed. The 200 silos in which the Minuteman II was deployed can accept, with minor equipment modifications, the Minuteman III missile. Through fiscal year 1972, [deleted] silo conversions have been funded.

Senator YOUNG. What is the total estimated cost of the silo conversion program?

General GLASSER. Sir, the total cost of this program, through completion, is estimated to be $934.6 million.

UPGRADING SILO HARDNESS PROGRAM

Chairman ELLENDER. $161.1 million is requested for the upgrade silo hardness program. Please comment on the objectives of this program.

General GLASSER. The overall objective of the upgrade silo program is to maintain adequate prelaunch survivability of the Minuteman force against the increased threat anticipated for the late 1970's. This is being achieved by upgrading the current silo hardness against nuclear blast and shock and electromagnetic pulse effects. Wing II at Ellsworth AFB is currently being upgraded concurrent with the ongoing basic force modernization. The $161.1 million includes $130.3 million for the blast and shock portion and $30.8 million for the electromagnetic pulse, or EMP, portion. Most of these funds will be used to procure hardware for wings V, III, and VI; additionally two squadrons worth of site activation costs for wing V are also included.

Chairman ELLENDER. How many silos are involved in this effort, and what is the total estimated cost of the program?

General GLASSER. We plan to upgrade the hardness of the total Minuteman force, 1,000 silos. The total cost for this program is $1,336.6 million, $188.5 million in R.D.T. & E. and $1,148.1 in production.

Senator YOUNG. What has been the funding for the upgrade silo hardness program up through fiscal year 1972?

General GLASSER. Through fiscal year 1972, $143.3 million in procurement funds and $91.7 million in R.D.T. & E. funds have been made available for the upgrade silo program.

COMMAND DATA BUFFER PROGRAM

Chairman ELLENDER. The total requested for force modernization includes $42.5 million for the command data buffer program. Please comment generally on the nature of this program.

General GLASSER. The command data buffer program will provide a remote retargeting capability for our Minuteman III missiles. In order

to change the targets in the missiles today, a targeting tape must be produced at SAC headquarters and it must be taken to a silo by a targeting crew. This crew has to enter the silo and insert the new information in the missile computer. To retarget a single missile, this operation takes up to [deleted] under normal conditions; it can be done in [deleted] in an emergency. With command data buffer SAC headquarters will be able to designate targets to the wing headquarters or to the launch crew in the launch control facility. The launch crew computes the new target trajectory with a computer in the launch control facility, and transmits the new data to the missile computer over the interconnecting communications lines. This eliminates the need to physically travel to the launch facility, enter the silo, and insert the data in the missile. This operation for a single missile will take about [deleted].

Chairman ELLENDER. What is the total estimated cost of this program, and how much has been funded through fiscal year 1972?

General GLASSER. The total estimated cost of the command data buffer program is $151.1 million in procurement funds and $82.5 million in R.D.T. & E. funds. Through fiscal year 1972 $34.9 million in procurement funds and $57.5 million in R.D.T. & E. funds have been made available.

MINUTEMAN MODIFICATIONS

Chairman ELLENDER. $36.9 million is requested for the Minuteman modification program. Just what is involved in this effort, and how does it differ from the programs carried out under the force modernization program that we just discussed?

General GLASSER. Efforts included in this category of costs provide for the incorporation of retrofit changes to previously delivered systems/equipment for the operational inventory which are approved to correct deficiencies, whereas the force modernization programs involve that effort associated with three items; first, the conversion of Minuteman I Launch and Launch Control facilities to a Minuteman II/III configuration. This is called basic force modernization. Next, incorporation of improvements to counter blast/shock and nuclear radiation effects to assure prelaunch survivability, called the upgrade silo program. And finally, the command data buffer program which provides improvements to rapidly accommodate changes to the missile operational targeting programs.

SILO UPGRADE PROGRAM AT MINOT AIR FORCE BASE

Senator YOUNG. What additional upgrading are you planning at Minot?

General GLASSER. What we describe here as upgrade work is increased hardening of the basic structure as it already exists, to bring the entire silo up to a constant level of hardness.

Senator YOUNG. I thought you upgraded the silos when you replaced the missiles.

General GLASSER. We are doing it in the new silos, in the new program, as we get to them now, starting with the wing two and wing five and we will do each of the succeeding ones now as we enter the silos.

Senator YOUNG. That is a new and separate program from putting in the Minuteman III?

General GLASSER. Yes, sir; all the future ones we will be doing it as we are upgrading with the new missiles. We are doing both at the same time in the future.

HARDENING COST PER SILO

Senator YOUNG. Approximately how much will it cost per silo to harden them under the new program?

General GLASSER. It is roughly $1 million per silo, average across the entire force.

Senator YOUNG. Is that the top or the whole silo?

General GLASSER. We don't actually do anything to the basic structure of the silo at all. What we are working on is a bunch of connections, the suspension, the so-called debris management system; things of that sort that allow us to exploit the inherent hardness that is in the silo, itself.

Senator YOUNG. That will cost approximately a million dollars?

General GLASSER. About a million dollars per silo.

Senator YOUNG. How long will each silo be out of operation?

General GLASSER. We are doing it in conjunction with the silo being down for the force modernization, anyway.

Senator YOUNG. You are through putting in the Minuteman III at Minot?

General GLASSER. That is correct. We are going ahead with the other programs, the other Minuteman squadrons. We will pick those up as they are going through the force modernization.

Senator YOUNG. I am trying to determine the cost of further modernization. You put the Minuteman III's in at Minot. You are through with that?

General GLASSER. Those are finished.

Senator YOUNG. How much per silo is it going to cost for the hardening of them? You are listing the Minot Air Force Base for modernization. You just got through putting in Minuteman III's there. What more are you going to do?

General GLASSER. The upgrade silo has not yet been incorporated in those. Let me see when the date is. Those will be done in fiscal year 1975.

Senator YOUNG. What are you going to do in fiscal [deleted] at Minot?

General GLASSER. Put in the Command Data Buffer system and upgrade silo improvements.

Senator YOUNG. How is that different from what you just completed?

General GLASSER. It will increase the hardness of these silos by about a factor of [deleted].

Senator YOUNG. That will cost a million dollars per silo?

General GLASSER. That is correct.

Senator YOUNG. How long will these silos be out of operation?

General GLASSER. I don't have those numbers in mind at the moment. I will have to supply that.

Senator YOUNG. From the information provided, the picture is not clear. It is costing about $150 million for that one wing, in addition to putting in the Minuteman III's, which you just finished installing.

Mr. CURL. It will cost about the same as the other silos.

Senator YOUNG. This will be accomplished in 1974 or 1975?

Mr. CURL. In the [deleted] time frame.

Senator YOUNG. You have funds for this program?

General GLASSER. Senator Young, that is a program which has only been initiated in the past year in the development phase and what we are attempting to do is to get it into the new programs as rapidly as we are able to do so on all of the future wings we are doing it in conjunction with the force modernization, so when they are down once we will pick them up and do them then and clean up the remainder at the end of the program.

Senator YOUNG. I don't understand. You have money for further modernization at Minot Base. You are not going to do that until [deleted]?

General GLASSER. That money is not in there at this time to upgrade the silo at Minot. That will come in a future program.

PRELIMINARY ENGINEERING

Senator YOUNG. You state: "$161.1 million in fiscal year 1973 will continue the upgrade silo program at wing V, F. E. Warren Air Force Base, Wyo., and will initiate upgrade work at Minot and Grand Forks Air Bases in North Dakota."

What are you requesting in this budget for Minot?

General GLASSER. The actual hardware work will begin in [deleted]. This is preliminary engineering effort needed to get into that.

PROGRAM SCHEDULE

I think what I had better do, if I may, Senator, is submit you a detailed schedule showing how this unfolds.

Senator YOUNG. I wish you would.

(Additional material referred to is classified and has been furnished separately to the committee.)

ABM SUPPORT

Chairman ELLENDER. Notwithstanding all these funds you are spending for modernization and hardening the silo, the Army is still pushing for the ABM?

General GLASSER. That is correct.

Chairman ELLENDER. You are in accord with that?

General GLASSER. Yes, sir.

Chairman ELLENDER. I did not expect you to say no.

SHRIKE MISSILES

$10.8 million is requested for the procurement of [deleted] AGM-45A Shrike antiradar missiles. The missile data sheet will be included in the record.

FISCAL YEAR 1973 PRESIDENT'S BUDGET ESTIMATE—MISSILE DATA SHEET

Service: *Air Force.* P–1 Line item: *4*
Nomenclature: *AGM–45A.* Popular name: *Shrike.*

Description/Mission.—The AGM–45A Anti-Radiation Missile is operationally employed with the F–105G and F–4C WILD WEASEL Aircraft. It is designed for detection, suppression and destruction of enemy radars The missile will home on the main beam of an emitting radar signal; antenna destruction is accomplished with a fragment type warhead. High explosive (HE), White Phosphorous Marker, and Dual HE Marker Warheads are interchangeable. Interchangeable guidance heads provide multi-band frequency coverage. The missile is currently programed for USAF operations in TAC, PACAF, and USAFE.

COST DATA

[In millions of dollars]

	Fiscal year 1970 and prior	Fiscal year— 1971	1972	1973	1974	1975	1976	1977	Cost to complete	Current estimate, total program
Missile procurement:										
Quantity	8,538	300	300	[Deleted]	[Deleted]	[Deleted]	[Deleted]	[Deleted]	[Deleted]	[Deleted]
Cost										
Advance procurement-plus	126.5	9.7	12.1	10.8	10.9	11.1	16.3	16.9		214.3
Missile program unit cost	.014	.032	.040	[Deleted]	[Deleted]	[Deleted]	[Deleted]	[Deleted]	[Deleted]	[Deleted]
Weapon system cost	126.5	9.7	12.1	10.8	10.9	11.1	16.3	16.9		214.3
Initial spares	2.6	.5	0	0	.1	.1	.2	.2		3.7
R.D.T. & E										
Milcon										
Program acquisition cost	129.1	10.2	12.1	10.8	11.0	11.2	16.5	17.1		218.0
Program unit cost										[Deleted]
Total additional cost	.1	.1	0	1.0	1.6	1.4	1.4	1.7		7.3

Basis for fiscal year 1973 Budget Request.—The fiscal year 1973 Shrike procurement program of [deleted] AGM–45A–4s and [deleted] AGM–45A–6s is directed at countering the increasing surface-to-air missile and acquisition radar threats.

CONTRACT DATA

[Test data: The AGM–45A is an operational missile. All testing has been completed]

Major subsystem	Contractor	Type of last contract
Guidance and control	Texas instruments	Firm fixed price
Do	Univac	Do.
Do	Aerojet	Do.
Do	Rocketdyne	Do

	Class	Demonstrated
Performance:		
Accuracy	S	[Deleted] feet.
Max launch range	S	[Deleted] nautical miles.
Max launch altitude	S	[Deleted] feet.
Characteristics:		
Diameter	U	8 inches.
Length	U	10 feet.
Weight	C	390 pounds (with warhead).
Warhead weight	C	147 pounds.
Seeker	C	3 interchangeable, radar homing.
AGM–45A–3B	S	[Deleted] mhz frequency.
AGM–45A–4	S	[Deleted] mhz frequency.
AGM–45A–6	S	[Deleted mhz frequency.
Propulsion	U	Solid.

Cost history comparison	Quantity	Amount (in millions)
Initial planning estimate:		
Procurement	[Deleted]	$107.2
R.D.T. & E. (Navy developed)		
Milcon		
Total program costs		107.2
Current estimate total program (fiscal year 1972 budget submission):		
Procurement		207.3
R.D.T. & E. (Navy developed)		
Milcon		
Total program costs		207.3
Current estimate total program (fiscal year 1973 budget submission):		
Procurement		218.0
R.D.T. & E.		
Milcon		
Total program costs		218.0

Note: Explanation of difference between fiscal year 1972 and fiscal year 1973: The increase $10,700,000 million from the fiscal year 1972 budget submission to the fiscal year 1973 budget submission basically represents the extension of the AGM–45A for an additional fiscal year (fiscal year 1977).

General GLASSER. The Shrike is an antiradiation missile designed to destroy or suppress enemy ground radars by homing on the source of radiation. This weapon is carried by the F–105 and F–4 and has been operational in Southeast Asia since 1966. The Shrike was added to our Air Forces in Europe in December 1969. Congress approved funds for procurement of 300 missiles and related equipment in fiscal year 1972.

We are requesting approval to buy additional missiles this year at a cost of $10.8 million to support war readiness materiel requirements.

SHRIKE-EQUIPPED AIRCRAFT

Chairman ELLENDER. What Air Force aircraft carry the Shrike missile?

General GLASSER. The Shrike is carried by the F–105G and F–4C Wild Weasel aircraft and can be carried by the F–4D/E aircraft.

Senator YOUNG. Comment briefly on the recent performance of this missile in Southeast Asia.

General GLASSER. From January 1, 1970 through December 31, 1971, the Air Force launched [deleted] Shrike missiles in Southeast Asia. Of these, [deleted] have been evaluated as confirmed or possible hits on the target, while [deleted] have resulted in radar suppression.

SHRIKE COST

Chairman ELLENDER. I note the fiscal year 1973 plan is based on a unit cost of [deleted] per missile. How does this compare to the unit cost for fiscal years 1971 and 1972?

General GLASSER. The weapon system unit costs for fiscal years 1971 and 1972 are $32,000 and $40,000, respectively.

STANDARD ARM MISSILE

Senator YOUNG. Three or 4 years ago, I recall that we were procuring a different type of antiradar missile. If I recall correctly, we referred to it as the Standard ARM missile. What is the current status of that missile?

General GLASSER. The AGM–78 Standard ARM missile is no longer in production. We are, however, updating our AGM–78A missiles to the AGM–78C configuration. This update involves replacing the guidance head which covers a small frequency range in the [deleted] band with a guidance head that covers frequencies in the [deleted] and [deleted] bands.

MAVERICK MISSILES

Chairman ELLENDER. $61.2 million is requested for the procurement of [deleted] AGM–65A Maverick air-to-ground missiles. The missile data sheet will be included in the record at this point.

FISCAL YEAR 1973 PRESIDENT'S BUDGET ESTIMATE MISSILE DATA SHEET

Service: Air Force.
Nomenclature: AGM–65A.

P–1 line item: 5.
Popular name: Maverick.

Description/Mission.—The Maverick is a rocket-propelled, air-to-surface missile equipped with a centroid tracking, electro-optical guidance system. The missile is designed to destroy stationary or moving small, hard tactical targets in close support operations of Tactical Air Forces. It is carried externally throughout the mission profiles of the F–4D/E and the A–7D. The missile will also be employed with the A–X aircraft.

COST DATA

[In millions of dollars]

	Fiscal year 1970 and prior	Fiscal year— 1971	1972	1973	1974	1975	1976	1977	Cost to complete	Current estimate, total program
Missile procurement:										
Quantity		0	2,000	[Deleted]	[Deleted]					[Deleted]
Cost			77.9	61.2	55.1					194.2
Advance procurement-plus		3.1								3.1
Missile program unit cost			.039	[Deleted]	[Deleted]					[Deleted]
Weapon system cost		3.1	77.9	61.2	55.1					197.3
Initial spares			5.2	4.9	2.8					12.9
R.D.T. & E	96.0	27.9	7.5	8.3						139.7
Milcon										0
Program acquisition cost	96.0	31.0	90.6	74.4	57.9					349.9
Program acquisition unit cost										[Deleted]
Total additional cost		1.6		.1	2.7	2.9	2.9	2.9		13.1

[1] Unit price includes 186 development missiles (total missiles [deleted]).

Basis for Fiscal Year 1973 Budget Requests.—Approval of the fiscal year 1973 request will provide resources to exercise contractual options for a buy program of [deleted] missiles. Fiscal year 1973 is the second year of production providing a total of [deleted] missiles toward the present [deleted] missile total requirement.

After provision of 75 missiles for category III testing, missiles will be allocated to TAC, USAFE and PACAF to meet WRM requirements.

Test Data

Guided missile test launches started in December 1969. Category II demonstration launches were terminated in September 1971. Of the 27 launches [deleted] were direct hits on the target with an average mean radial error miss distance of less than [deleted] feet from the centroid of the target. Termination was exercised based on the excellent test results. The remaining Category II assets will be utilized for follow-on testing through March 1972. Before 30 June 1973, Ground Environmental Qualification Testing, European Adverse Weather Testing and R. & D. exploration launches will be completed. Operational Test and Evaluation Joint Tests (Army/Air Force) and Category III Tests will begin in fiscal year 1972 to be completed in fiscal year 1973.

Contract Data

	Contractor	Type of last contract
Prime contractor	Hughes Aircraft Co	FPIF.
Propulsion	Thiokol, Inc	Subcontract.
Warhead	Chamberlain, Inc	Do.
Safe, arm and fuse	Bulova	Do.

Characteristics

Diameter	12 inches
Length	97.7 inches
Warhead: Type	Conical shaped charge with high explosive
Weight	130 pounds
Msl weight with warhead	Less than 500 pounds
Propulsion	Solid
Guidance	Electro-optical/centroid tracker

Cost history comparison	Quantity	Amount (millions)
Initial planning estimate:		
Procurement	[Deleted]	$259.0
R.D.T. & E.		123.1
Milcon		1.3
Total program costs		383.4
Current estimate total program (fiscal year 1972 budget submission, as amended):		
Procurement		234.5
R.D.T. & E.		135.7
Milcon		0
Total program costs		370.2
Current estimate total program (fiscal year 1973 budget submission):		
Procurement		210.2
R.D.T. & E.		139.7
Milcon		0
Total program costs		349.9

Explanation of Difference Between FY 1972 and FY 1973: Decrease of $20.3 million in procurement is because of the reduction in quantity of missiles in the program from [deleted] missiles to [deleted] missiles. The RDT&E requirement increased $4.0 million resulting from an increase in the estimate for abnormal escalation ($1.1) and for additional contractor engineering manloading ($2.9, Government's share of overtarget) over that originally budgeted.

General GLASSER. The Maverick is a small air-to-surface missile equipped with automatic television homing guidance for use by the F–4D/E, A–7D, and A–9 or A–10 tactical aircraft worldwide against fixed or moving small hard targets, such as tanks, armored vehicles and field fortifications. The missile carries a conical shaped charge warhead capable of penetrating [deleted] inches of armor or [deleted] feet of triple reinforced concrete.

The Maverick, with its exceptional accuracy, high degree of destructive potential against hard targets, and its standoff, launch and leave feature, will increase the survivability of our aircraft and lower the cost per kill of its intended targets.

Approval to initiate production of the Maverick was requested from the Defense Systems Acquisition Review Council on June 3, 1971, and granted on June 8. The production option contract for the first 2,000 missiles was executed on July 23, 1971. Delivery of the first production missile is scheduled for September 1972. Our fiscal year 1973 request for $61.2 million will be used to procure [deleted] missiles. Data to support this decision buy will be available from the Joint Air Force/Army Operational Test and the adverse weather captive flight tests of the Maverick conducted in Europe on F–4 aircraft. The results of these tests will also assist Air Force close air support studies and the development of tactics for worldwide employment of the Maverick.

Operational Tests and Evaluation using production missiles will begin in October of this year and extend through June of 1973. Initial operational capability of the Maverick is scheduled for [deleted].

FISCAL YEAR 1972 PROGRAM

Chairman ELLENDER. As I recall, funds for the initial procurement of this missile were provided in the fiscal year 1972 Appropriation Act. Am I correct about this?

General GLASSER. Yes sir, you are correct.

Chairman ELLENDER. When will this missile become operational in the combat forces?

General GLASSER. In [deleted], sir.

TEST PROGRAM

Senator YOUNG. Please comment on the test firing program for this missile.

General GLASSER. There were 15 category I launches resulting in 11 target hits. The Air Force category II tests started in January 1971 with 10 training launches of which eight were hits. The planned 40 performance demonstration launches commenced in April 1971. This testing was terminated early by the Air Force based on success, [deleted] direct hits out of 27 launches. The demonstrated performance was a probability of hit of [deleted], a reliability of [deleted] and an accuracy of [deleted] ft. against primary targets and [deleted] ft. for all targets. The total test experience through category II was [deleted] hits out of 52 launches including [deleted] hits with live warheads. The early termination has released the remaining R. & D. assets for follow-on Maverick exploration and operational testing now in progress.

Basis for Fiscal Year 1973 Budget Requests.—Approval of the fiscal year 1973 request will provide resources to exercise contractual options for a buy program of [deleted] missiles. Fiscal year 1973 is the second year of production providing a total of [deleted] missiles toward the present [deleted] missile total requirement.

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Weight	130 pounds
Msl weight with warhead	Less than 500 pounds
Propulsion	Solid
Guidance	Electro-optical/centroid tracker

Cost history comparison	Quantity	Amount (millions)
Initial planning estimate:		
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General GLASSER. Yes sir, you are correct.

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successful and was led to believe that we needed to continue R. & D. for a year in order to determine which of the two should be produced. Now we have the Army insisting on the production of the Cheyenne, and the Air Force insisting on the production of the A–X. I think we should make a decision to produce only one of these aircraft now, which would permit us to save the funds that are being requested to continue R. & D. on the system that is not going to be produced.

SRAM MISSILES

$202.5 million is requested for the procurement of [deleted] AGM–69A SRAM missiles. The missile data sheet will be included in the record.

FISCAL YEAR 1973 PRESIDENT'S BUDGET ESTIMATE—MISSILE DATA SHEET

Service: Air Force. P–1 line item: 7.
Nomenclature: AGM–69A. Popular name: SRAM.

Description/Mission.—This air-to-ground missile is designed to attack enemy defenses as well as primary targets without requiring the bomber to penetrate lethal defense areas. The SRAM's high speed, small radar cross section and low trajectory make it very difficult to defend against. This factor as well as its nuclear warhead and accurate navigation system make the SRAM a formidable weapon system. The SRAM will be carried on the B–52G/H and on the FB–111.

COST DATA

[In millions of dollars]

	Fiscal year 1970 and prior	Fiscal year— 1971	1972	1973	1974	1975	1976	1977	Cost to complete	Current estimate, total program
Missile procurement:										
Quantity		101	465	[deleted]	[deleted]	[deleted]				[deleted]
Cost	10.0	112.9	222.0	202.5	142.6	107.4				797.4
Advance procurement-plus										
Missile program unit cost		1.117	.447	.422	[deleted]	[deleted]				[deleted]
Weapon system cost	10.0	112.9	222.0	202.5	142.6	107.4				797.4
Initial spares	2.2	10.8	12.0	12.3	9.0	3.0				49.3
R.D.T. & E	402.1	56.5	12.0							470.6
Milcon	.7	1.6	6.0	5.3	1.0					14.6
Program acquisition cost	415.0	181.8	252.0	220.1	152.6	110.4				1331.9
Program unit cost										[deleted]
Total additional cost		116.7	159.4	109.0	81.3	4.4	4.8	4.8		480.4

Basis for fiscal year 1973 Budget Request.—(U) The FY 1973 request provides funds for the follow-on procurement of the weapon system which was initiated during FY 1971. Funds will procure 480 missiles and the necessary peculiar support equipment leading toward the attainment of an effective bomber penetration capability. FY 1973 is the third production buy of a 5 year planned production program and complements a B–52 modification program of [deleted] modifications providing aircraft for carriage and delivery of the SRAM.

Test Data

The last launch in the SRAM development flight test begun with a B–52/SRAM launch in July 1969 was accomplished by a FB–111/SRAM launch in July 1971. Final test reports are being written. All primary contract specifications for SRAM were met or exceeded. The test launch summary follows:

	Launches	Successes	Partial success	Failure
B–52/SRAM	19	14	3	2
FB–111/SRAM	19	14	3	2
Total	38	28	6	4

CONTRACT DATA (U)

	Contractor	Type of last contract
Prime contractor	Boeing Co	FPIF.
Propulsion subsystem	Lockheed Propulsion Co	(Subcontractor.)
Guidance and control	Singer–GPI	(Subcontractor.)

Characteristics

Guidance	Inertial
Propulsion	Two Pulse Solid Rocket Motor
Diameter	17.5 Inches
Length	168 Inches
Weight (with Warhead)	2240 (Demonstrated 2230)
Warhead Type	Nuclear

Cost history comparison	Quantity	Amount (millions)
Initial planning estimate:		
Procurement	[Deleted.]	$69.0
R.D.T. & E		167.6
Milcon		
Total program costs		236.6
Current estimate total program (fiscal year 1972 budget submission, as amended):		
Procurement		818.9
R.D.T. & E		470.6
Milcon		14.6
Total program costs		1,304.1
Current estimate total program (fiscal yeart 1973 budget submission):		
Procurement		846.7
R.D.T. & E		470.6
Milcon		14.6
Total program costs		1,331.9

Explanation of Difference Between FY 1972 and FY 1973: The increase of $27.8 million in Procurement Program Costs includes funds to provide a second source contractor for the SRAM propulsion subsystem and increased production engineering support.

General GLASSER. The short-range attack missile (SRAM) is an air-to-surface missile designed to attack enemy defenses as well as primary targets without the launch vehicle having to penetrate enemy surface-to-air defense envelopes.

The SRAM is programed for the B–52 G's and H's and the FB–111. The successful flight test program was completed in July 1971.

In fiscal year 1972, Congress approved $204.4 million for the SRAM program for procurement of 465 SRAM missiles. Our fiscal year 1973 request of $202.5 million is for 480 missiles. The initial operational capability date for the B–52/SRAM and for the FB–111 is [deleted].

SRAM Reprograming

Chairman ELLENDER. General, at this point I wonder if you could give your views as to the necessity for the reprograming request that is now before us. The program request involves an increase of $30.4 million in the fiscal year 1971 program and an increase of $17.6 million for the fiscal year 1972 program. Will you comment on that?

General BUCKINGHAM. Yes, sir, Mr. Chairman.

I have personally looked into this in great detail. The increase attributed in fiscal 1971 of $30.4 million is attributed to two things: One is a management engineering effort which had previously been funded an an incremental basis as opposed to following the full-funding-ground-rule concept as applies to the procurement account. That makes up the largest portion of the $13.4 million. That is $8.5 million. The remaining $4.9 million is a rephasing of the aerospace ground equipment for depot maintenance. This was previously phased downstream.

However, it was determined as a result of the detailed examination that they had to bring this back into fiscal 1971 in order to fund it in time to support the operational activation of the SRAM missile.

The fiscal 1972 portion of $17.6 million is an outgrowth and the result of the detailed negotiations for the fiscal 1972 program; $11.6 million of it is related to the management engineering effort to carry out both the effort required during the production of the missiles as well as the activation of the B–52 and FB–111 squadrons in the field.

An additional $6 million to bring us up to a total of $17.6 million is required to establish a second source for the motor—propulsion motor.

Reprograming Transfer From Minuteman

Chairman ELLENDER. From what source will that money be transferred?

General BUCKINGHAM. From the Minuteman update program, fiscal year 1971. The main reason we are able to do that, sir, is the fact that the Minuteman program has achieved recently some phenomenal success. The meantime between failure has increased substantially. The difficulties that we have previously anticipated did not materialize.

Chairman ELLENDER. So this will not be new money?

General BUCKINGHAM. No, sir.

OPERATIONAL DATE

Senator YOUNG. What was the original scheduled date for the SRAM to be operational on the B–52's, and what is the current schedule?

General GLASSER. The B–52 was approved for inclusion in the SRAM program by OSD in December 1967. An IOC date of March 1970 was projected by Air Force directive in January 1968. The initial B–52/SRAM squadron IOC date is now planned for [deleted].

Senator YOUNG. What was the original scheduled date for the SRAM to be operational on the FB–111's, and what is the current schedule?

General GLASSER. The FB–111/SRAM development estimate projected an IOC date of February 1970. The initial FB–111/SRAM squadron IOC date is now planned for [deleted].

Senator YOUNG. Please comment on the flight test program of the SRAM missile, and indicate whether the required performance characteristics have actually been demonstrated.

General GLASSER. The last development launch was performed in July 1971. All contract specifications have been met or exceeded.

COST OF DEVELOPMENT

Chairman ELLENDER. The original estimated cost of the development of the SRAM was $167.6 million. What is the current estimated cost of development?

General GLASSER. The current development estimate is $470.6 million.

Chairman ELLENDER. I note that the initial planning estimate for the SRAM called for a total program cost of only $236.6 million, based on [deleted] missiles, and that the current total estimated cost of the program is $1,331.9 million based on the production of [deleted] missiles. It is apparent that about $300 million of this tremendous increase was in the R. & D. effort, and of course, a major portion of the increase is attributable to the fact that the current plan calls for the production of over twice the number of missiles. Please comment on the other reasons for the increase in the cost to produce this missile.

General GLASSER. The total program cost increase attributable to procurement is $777.7 million. The increase includes $133.1 million for increase in production quantities and a motor surveillance program, $74.7 million for increased support required, $39.8 million for economic change, and $530.1 million for changes to estimated cost due to changes approved in the development program and the delay in production go-ahead.

Chairman ELLENDER. What is the current status of the effort to establish a second source for the propulsion system for the SRAM missile?

General GLASSER. Contractual arrangements were effected in November 1971 initiating the qualifications of a second source for production of the SRAM motor. Thiokol has 19 to 24 months to qualify for a portion of the SRAM motor production.

INITIAL SPARES

Chairman ELLENDER. How much is requested in the fiscal year 1973 program for the procurement of initial spares?

General GLASSER. The fiscal year 1973 missile procurement program includes $12.3 million for SRAM initial spares.

[Deleted.]

The AIM–7F is a radar guided air-to-air missile being developed by the Navy. It has an all-angle attack capability under all weather conditions against high performance aircraft. It is planned for use in an enemy electronic countermeasure (ECM) environment and will be carried on the F–4E and the F–15.

Some earlier difficulties with the Sparrows guidance system which we discussed with you last year have been overcome.

Congressional approval of $19.5 million is requested for purchase of [deleted] pilot-production missiles to support the F–4 and F–15 initial operational test program. The Navy has begun an operational evaluation of the missile on the F–4J and expects to complete these tests in December 1972. This will allow a decision on the pilot-production contract award in January 1973.

SPARROW 7–F MISSILES

Chairman ELLENDER. $19.5 million is requested for the procurement of [deleted] AIM–7F Sparrow air-to-air missiles. The missile data sheet will be included in the record at this point.

FISCAL YEAR 1973 PRESIDENT'S BUDGET ESTIMATE MISSILE DATA SHEET

Service: Air Force — P–1 line item: 8

Nomenclature: AIM–7F — Popular name: Sparrow

Description/Mission: The AIM–7F is an all weather air-to-air missile for defense and air superiority. It is a new production model of the SPARROW with solid state component and a larger motor and warhead.

[In millions of dollars]

	Fiscal year 1970 and prior	Fiscal year— 1971	1972	1973	1974	1975	1976	1977	Cost to complete	Current estimate, total program
Missile procurement:										
Quality			[1] 50	[Deleted.]						
Cost										
Missile program unit cost				0.195	[Deleted]	[Deleted]	[Deleted]	[Deleten]		[Deleted]
Weapon system cost				19.5	65.4	68.2	65.0	63.7		281.8
Initial spares				2.5	.7	.7	.5	.3		4.7
R.D.T. & E		1.0	7.8	2.7						11.5
Milcon										
Program acquisition cost		1.0	7.8	24.7	66.1	68.9	65.5	64.0		298.0
Program unit cost										[Deleted.]
Total additional costs					.5	.6	.7	.7		2.5

[1] Includes 50 R. & D. test missiles.

Basis for fiscal year 1973 budget request: The AIM–7F, a solid state missile, is planned to replace the AIM–7E in the Air Force inventory. The AIM–7F will reduce the logistical cost for maintaining an all-weather missile in the inventory. The fiscal year 1973 procurement program will provide the initial [deleted] production missile for compatibility testing with the F–15 and the F–4E.

Test Data

The AIM–7F, Sparrow, is being developed and tested by the Navy. The Naval Technical Evaluation began in August 1969 and will be completed in January 1972. During the period there has been 37 tests of which [deleted] were successes [deleted] were failures and [deleted] were recorded as "No Test". Of the [deleted] failures, [deleted] were attributed to component failures and [deleted] were associated with design. [Deleted] of the design failures were related to [deleted]. Testing was interrupted for design improvement and was started again in March 1971. Since that time 15 tests have produced [deleted] successes, [deleted] failures, and [deleted] "No Test." Problem areas have been isolated and appear to be resolved.

Operational Evaluation begins in February 1972 and will be completed in December 1972.

Contract Data

Major subsystem:	*Contractor*
Guidance and control	Raytheon Co.
Propulsion	Hercules Powder Co.
Propulsion	Aerojet General Corp.
Warhead	The Midway Co.

Characteristics

Weight:	
Launch	507 pounds
Warhead	90 pounds
Size:	
Length	144 inches
Diameter	8 inches
Span	40 inches
Guidance	Semi-active pulse droppler or CW Radar

COST HISTORY COMPARISON

[Dollars in millions]

	Quantity	Amount
Initial planning estimate:		
Procurement, R.D.T. & E., Milcon	[Deleted]	$21.8
Total program costs	[Deleted]	21.8
Current estimate, total program:		
Fiscal year 1972 budget submission—amended:		
Procurement, R.D.T. & E., Milcon	[Deleted]	307.5
Total program costs	[Deleted]	307.5
Fiscal year 1973 budget submission:		
Procurement	[Deleted]	286.5
R.D.T. & E.	[Deleted]	11.5
Milcon	[Deleted]	
Total program costs	[Deleted]	297.0

Explanation of Difference Between FY 1972 and 1973: The net decrease of $10.5 million basically represents a reduction of [deleted] missiles from the total quantity buy program. This reduction is based upon a realignment of the WRM Requirements.

FISCAL 1972 PROGRAM

Chairman ELLENDER. As I recall, the original budget for fiscal year 1972 included funds for the initial production of this missile, but this request was withdrawn when it was determined that the missile was not ready for production. Am I correct about this?

General GLASSER. Yes, sir. That is correct.

Chairman ELLENDER. Just what has transpired during fiscal year 1972 that leads you to believe that this missile is now ready for production?

General GLASSER. As you may remember, last year at this time the Navy Technical Evaluation (NTE) flight test program was in a standdown for evaluation of less than satisfactory results during the initial testing. After completing a circuit design simplification program, NTE flight testing was resumed in April 1971. Twenty launches have been accomplished with [deleted] being classified as valid tests and the remaining [deleted] as no tests. The valid test sample of 15 launches resulted in [deleted] missiles successfully guiding to within the lethal radius of the warhead. This is a [deleted] success rate as compared to the earlier rate of [deleted] for a sample size of 19 valid launches. This improvement trend is expected to continue. The Navy initiated Operational Evaluation (OPEVAL) in January 1972 with a captive-carry reliability program. Early results are very encouraging, with some missiles already accruing over 100 hours of captive flight time without any noted deficiencies. The OPEVAL program is scheduled to run the rest of current year 1972 with 26 planned missile launches in various tactical scenarios. This is our Initial Operational Test and Evaluation (I.O.T. & E.) for the system, and the results will weigh heavily at the Defense System Acquisition Review Council (DSARC) in January 1973, which will make the final release for this pilot production.

Senator YOUNG. What Air Force aircraft will carry this advanced version of the Sparrow missile?

General GLASSER. The missile will be carried on the F–15 and the F–4E.

SPARROW AIM–7F PERFORMANCE

Chairman ELLENDER. Please provide a tabulation for the record setting out the performance characteristics of the 7F missile compared to those of the 7E Sparrow missile.

General GLASSER. Yes, sir; I will.

(The information follows:)

Characteristic	AIM–7E	AIM–7F
Maximum "G"	[Deleted.]	
Minimum launch range		
Maximum range at 10,000 ft. altitude, co-speed (0.9) tail aspect.		
Seeker type	Semi-active radar	Semi-active radar.
Maximum seeker look angle	[Deleted.]	
Warhead type	Continuous rod	Continuous rod.
Lethal radius	[Deleted.]	
Snap start	No	Yes.
Length	144 ins	145 ins.
Diameter	8 ins	8 ins.
Weight	435 lbs	507 lbs

Chairman ELLENDER. Last year, the original request was for $10.5 million for the procurement of 100 Sparrow 7F missiles; and as I stated earlier, your request this year is for $19.5 million for the procurement of 100 missiles. What accounts for this very substantial increase?

General GLASSER. The increase is attributable to three major cost elements. The revised cost estimates for fiscal year 1973, received from the Navy, included for the first time the Air Force 50-percent sharing of production startup cost of $4.2 million for the prime contractor, initiation of second source contractor cost of $3.5 million, and an increase in guidance and control unit cost of $1.2 million. This accounts for $8.9 million; the balance was caused by minor readjustments in other program areas.

Senator YOUNG. I note on the missile data sheet that the current total program calls for the procurement of [deleted] Sparrow 7F missiles. How was this total number computed?

General GLASSER. The total missile requirement is determined by a rather complex methodology which addresses the air threat, aircraft sortie allocations, aircraft load factors, missile probability of kill, and alternate weapons. The war readiness materiel (WRM) requirement plus planned expenditures for the AIM–7F by the fiscal year 1976 time period will actually exceed the programed amount by approximately 500 missiles. The procurement of only [deleted] missiles is partly constrained by a desire to establish an ongoing mobility base for possible contingencies.

SIDEWINDER AND SPARROW DESCRIPTIONS

Senator SYMINGTON. Why do you need the Sparrow with the Sidewinder?

General GLASSER. They are complementary, Senator, in that the Sparrow is a long-range missile which can be used in the weather to give you that standoff capability——

Senator SYMINGTON. You said Sparrow before.

General GLASSER. Sorry. The Sparrow is the radar missile, long-range radar missile. The Sidewinder allows you to operate against the IR signature and is a close-in weapon.

Senator SYMINGTON. What is the range of the Sidewinder?

General GLASSER. The envelope, of course, varies, depending on the angle off but it is generally much closer in.

General HILL. About [deleted] feet.

Senator SYMINGTON. What is that for, the Sparrow?

General HILL. [Deleted] miles.

Senator SYMINGTON. Do you still think you need them both?

General GLASSER. One allows you to get the long-range shot. The other is effective for the more close maneuvering.

Senator SYMINGTON. The Phoenix goes much farther than the Sparrow. What is the cost of the Sparrow and the cost of the Sidewinder, roughly?

General GLASSER. The unit production cost on the Sparrow is about [deleted] a copy. On the Sidewinder, about [deleted] a copy. An added utility of the Sparrow that we didn't mention is that this is what enables you to operate against an aircraft like the Foxbat which might otherwise have a sanctuary at high altitude.

SIDEWINDER RANGE

Senator SYMINGTON. Why can't the Sidewinder get to that high altitude?

General GLASSER. It does not have the range.

Senator SYMINGTON. You said [deleted] feet. That is over [deleted] miles.

General GLASSER. We are talking about up. When you are flying along in the F–15, for example, you want to be able to loft a missile up to the altitude of the Foxbat which otherwise enjoys a sanctuary up there.

FOXBAT CHARACTERISTICS

Senator SYMINGTON. What is the Foxbat, 80,000 feet?

General GLASSER. It could be.

Senator SYMINGTON. What is the F–15?

General GLASSER. [Deleted.]

Senator CASE. What is the number of the Foxbat?

General GLASSER. It is often called the Mig 23.

Senator CASE. Besides its altitude, is it faster?

General GLASSER. It is a Mach 3 aircraft.

Senator CASE. What do we have to match it?

General GLASSER. We don't have anything coming into the inventory except the F–15. We did have the YF–12, but they were not produced.

Senator CASE. What is the doctrine of dealing with——

F–15 CAPABILITY

General GLASSER. As I say, the F–15 using the Sparrow is the way of countering it if he stays up there. Of course, if he comes down, then he becomes an inferior airplane because it is a lower Q aircraft. It does not have a turning capability. He will have serious trouble if he comes down and attempts to fight other airplanes.

Senator CASE. He is faster?

General GLASSER. He is faster but he loses that speed immediately if he attempts to turn.

YF–12

Senator YOUNG. Why was the YF–12 discontinued? I know it was high priced. Was that a titanium plane?

General GLASSER. It was steel for the most part.

Senator YOUNG. It was a Mach 3 aircraft.

General GLASSER. It was a Mach 3 airplane; yes, sir.

Senator YOUNG. Why was it discontinued?

General GLASSER. It just never was accepted as a program. It was part of an air-defense modernization program which was simply never accepted.

Senator YOUNG. Was the cost a factor?

General GLASSER. The price was rather substantial.

F–15 Speed

Senator Symington. What is your F–15 maximum speed?

General Glasser. [Deleted.]

Senator Symington. What do you figure as a prospect, [deleted]?

General Glasser. [Deleted], I believe.

Senator Case. Can you get the Foxbat from the ground?

General Glasser. With a missile, you mean? I don't think we have anything that would do that.

Senator Symington. What would be the speed of a Sparrow missile fired from an F–15? Would you have to lead it as a bird in order to hit, or is it faster than the Foxbat?

General Glasser. It is much faster. I would have to get the number, but it is substantially faster.

Senator Symington. Such as what?

General Glasser. I would rather not commit myself, but I will find out.

Senator Case. There is acceleration.

General Glasser. Yes, but he is starting from pretty good speed when he leaves the wing.

(The information follows:)

The missile will accelerate to a maximum velocity of [deleted] Mach above the launch aircraft velocity when launched at [deleted] feet altitude. It is anticipated that, against the Foxbat, an F–15 would launch the Sparrow missile in the velocity range of [deleted] Mach to [deleted] Mach; thereby, providing a velocity advantage to the missile. The Sparrow flies a lead-collision course to the target and the aircraft fire control system provides the pilot with the necessary aiming and range information for launch.

Mach 3 Requirement

Senator Symington. I asked the question, Why haven't we started development of a plane as fast as the Soviets now have?

Why is it we have not tried to get a Mach 3 airplane in the combat area?

General Glasser. The answer to that would be that what we are building is an optimized aircraft against the general threat that we see and the F–15 much more nearly meets the threat than would building an aircraft of that type.

Senator Symington. They are covered both ways—Flogger, Flagon B, and Foxbat.

General Glasser. We have compared additional aircraft and chose the F–15. Certainly we would like to have one similar to the Foxbat, but if you can have only one, then the one choice would be the F–15 variety.

Sparrow Velocity

Sir, I am informed that the AIM–7 is a Mach [deleted] transiting velocity.

Senator Symington. That is the Sparrow?

General Glasser. Yes. Starting with [deleted] it will accelerate right out to Mach [deleted].

Senator Young. That is your goal, but it has only flown Mach [deleted].

General GLASSER. I am talking about the missile, sir, a moment ago we mentioned would be used to attack a Foxbat. That missile will go at about Mach [deleted].

Senator YOUNG. According to your figures here, it is [deleted].

General GLASSER. That is the number that has been demonstrated to date.

Senator YOUNG. The requirement notes [deleted] but it has not achieved that performance to date?

General GLASSER. Right.

PUBLIC INFORMATION AVAILABILITY

Senator YOUNG. General, we will be required to defend this bill on the floor. Every page is marked "Secret". I assume your statement will be declassified?

General GLASSER. There will be a declassified version made available.

Chairman ELLENDER. Can you give us a thumbnail sketch of what you have included in this which makes it secret?

General GLASSER. We have printed copies available for you, sir, that are very nearly the same statement. There are just a few numbers and things of that sort. We have removed few, in fact, which makes it an unclassified version.

Chairman ELLENDER. Next year when we have hearings, I wish we could hold most of the hearings in the open. Executive sessions could take care of classified matters. I would like to have more people listen to this.

Senator YOUNG. The problem is everything is marked "Secret." When I leave a hearing here, I don't know what is secret and what isn't. My problem is to determine what can I talk about and what can't I talk about. If there was some indication of what was classified and what was not, it would be helpful.

General GLASSER. It is very hard to do this in this sort of dialog, Senator Young.

Senator CASE. There is not much that is secret.

General GLASSER. No; but interspersed throughout our conversation. We have a completely unclassified version of the same thing.

Senator SYMINGTON. An Assistant Secretary of Defense came up the other day with a 46-page statement, every page marked "Secret". I asked why it was all secret. He said he wasn't sure. After I left, Senator Harry Byrd asked him to find out before the afternoon session. Of the 46-page statement, he declassified, that afternoon, all but two sentences on one page, and they were debatable.

Chairman ELLENDER. When Mr. Laird comes up next week, we could have a little dialog on making some of these hearings available to the public. The people who have to pay for all this should know what goes on.

Senator CASE. It is important, Mr. Chairman. A great many people are fearful of the Foxbat and other Russian capabilities. Some think we are sitting ducks for this sort of thing, that we aren't able to give the Russians any kind of combat. All that's left is disquiet.

I ran into that last week, when there was an announcement about the Foxbat. One of the most normal, placid and quiet individuals I know indicated that for the first time in his life he was really stirred up over what appeared to be a real threat.

I didn't know the answer at the time. More information would be very reassuring to everyone.

SPARROW PROPULSION

Senator SYMINGTON. What is the method of propulsion on the Sparrow?

General GLASSER. Rocket motor.

Senator CASE. Is that used all the way to the target?

General GLASSER. Of course, it is a function of range. I don't know exactly the burnout range.

AIM–9L SIDEWINDER MISSILES

Chairman ELLENDER. $14.3 million is requested for the procurement of [deleted] AIM–9L Sidewinder missiles. The missile data sheet will be included in the record at this point.

FISCAL YEAR 1973 PRESIDENT'S BUDGET ESTIMATE MISSILE DATA SHEET

Service: Air Force — P–1 Line Item: 9
Nomenclature: AIM–9L — Popular name: Super Sidewinder

Description/Mission: The AIM–9L will be an Infra-Red (IR) missile for defense and air-to-air superiority. The missile will common to the Air Force and the Navy and will satisfy the *interim* IR missile requirements of both services. The AIR–9L is a "dogfight" version of previous AIM–9 configurations and will be a new production missile.

COST DATA

[In millions of dollars]

	Fiscal year 1970 and prior	Fiscal year— 1971	1972	1973	1974	1975	1976	1977	Cost to complete	Current estimate, total program
Missile procurement:										
Quantity				[Deleted]	[Deleted]	[Deleted]	[Deleted]	[Deleted]	[Deleted]	[Deleted]
Cost				[Deleted]	[Deleted]	[Deleted]	[Deleted]	[Deleted]		101.5
Missile program unit cost				[Deleted]	[Deleted]	[Deleted]	[Deleted]	[Deleted]	[Deleted]	[Deleted]
Weapon system cost				14.3	31.8	19.9	17.9	17.6		101.5
Initial spares				1.0	.9	.7	.7	.7		4.0
R.D.T. & E		7.0								7.0
MILCON										
Program acquisition cost		7.0		15.3	32.7	20.6	18.6	18.3		112.5
Program unit cost										[Deleted]
Total additional cost					1.1	1.0	.9	.9		3.9

Basis for fiscal year 1973 Budget Request: The AIM–9L is being developed by the Navy on a cost sharing basis with the Air Force. Subsequent procurement will be made by the Navy for the Air Force. An initial buy quantity of [deleted] missiles in fiscal year 1973 will provide the Air Force with missiles to be used for compatibility testing with carrier aircraft.

Test Data

The AIM–9L, SIDEWINDER, is being developed and tested by the Navy. Naval Technical Evaluation, Phase I will begin in March 1973 and end in May 1973. Phase II will begin in August 1973 ending in October 1973. Operational Evaluation, Category III begins in October 1973 ending in February 1974.

Contract Data

Development is being conducted at the Naval Weapon Center, China Lake. Production contractors not determined.

[Dollar amounts in millions]

Cost history comparison	Quantity	Amount
nitial planning estimate:		
Procurement		$117.2
R.D.T. & E.		
Milcon		
Total, program costs		117.2
Current estimate total program (fiscal year 1972 budget submission):		
Procurement		117.2
R.D.T. & E.	[Deleted].	7.0
Milcon		
Total, program costs		124.2
Current estimate total program (fiscal year 1973 budget submission):		
Procurement		105.5
R.D.T. & E.		7.0
Milcon		
Total, program costs		112.5

Explanation of Difference Between Fiscal Year 1972 and Fiscal Year 1973: The initial buy-quantity of missiles programmed for fiscal year 1972 slipped into fiscal year 1973 and was combined with the fiscal year 1973 buy-quantity for a total of [deleted] missiles. The total program was further aligned in the outyears for an adjusted buy-quantity of [deleted] missiles through fiscal year 1977.

SIDEWINDER (AIM–9L)

General GLASSER. The AIM–9L Sidewinder air-to-air missile uses an infrared heat seeking guidance system. Improvements in performance over earlier models of Sidewinder will result from changes in the guidance and control section, an improved fuze and warhead, and an increased aerodynamic range.

The AIM–9L program was initiated in June 1970 as a joint service missile development and acquisition program. The missile is designed as an interim short range air-to-air missile which will be used by the Air Force with F–4D/E and F–15 aircraft.

The design phase has progressed satisfactorily and the first engineering models will be delivered for test in May.

Satisfactory performance in this test phase will provide the basis for awarding a pilot production contract in December of this year.

As you may recall, production funds were requested in fiscal year 1972 to support an early release of the pilot production contract in fiscal year 1973. However, the fiscal year 1972 funds were not required because of a schedule change and were deleted.

The fiscal year 1973 requirement for $14.3 million will support the total pilot production of [deleted] missiles and nine guidance units for the Air Force.

FISCAL 1972 PROGRAM

Chairman ELLENDER. As I recall, the original request for fiscal year 1972 included about $4 million for a limited number of pilot production missiles, and this request was disallowed. Just what was the basis for this disallowance?

General GLASSER. The fiscal year 1972 request was based on the AIM–9L program being initiated by June 1, 1971. This would require early funding in the first quarter of fiscal year 1973 for the initial increment of pilot production. Because this early fiscal requirement was not consistent with initial funding in fiscal year 1973, the fiscal year 1972 request was to protect this program schedule. The AIM–9L program, however, was not initiated until August 1, 1971. This delay in initiating the program resulted in a similar delay in the pilot production contract award until the second quarter of fiscal year 1973. Since this revised date was more consistent with initiating funding in fiscal year 1973, the fiscal year 1972 request was disallowed.

Senator YOUNG. On the missile data sheet I note the following statement: "The AIM–9L is a "dogfight" version of previous AIM–9 configuration and will be a new production missile." Just what is meant by a "dogfight" version, and what capability will this version of the missile have that previous AIM–9 Sidewinders did not have?

General GLASSER. The term "dogfight" refers to the fighter versus fighter encounter with close-in maneuvering at high G's. This is considerably different from the original AIM–9 encounter which was planned against a nonmaneuvering bomber-type target. In regard to the second part of your question, the most significant improvement in capability in the AIM–9L is the new seeker which will result in a forward hemisphere launch. Additionally, the AIM–9L will incorporate an improved warhead and fuze for increased lethality.

Senator YOUNG. I also note the following statement on the missile data sheet: "An initial buy quantity of 100 missiles in fiscal year 1973 will provide the Air Force with missiles to be used for compatibility testing with carrier aircraft." Does the term "carrier aircraft" mean aircraft to be flown off aircraft carriers, or does it mean the aircraft that will be equipped to carry this new version of the Sidewinder missile?

General GLASSER. The term refers to aircraft that will carry the missiles.

Chairman ELLENDER. What aircraft will carry this missile?

General GLASSER. The AIM–9L is planned to be carried by the F–15 and the F–4D/E aircraft.

Chairman ELLENDER. When do you expect this missile to become operational?

General GLASSER. The initial operational capability with the F–15 is [deleted] and with the F–4D/E is [deleted].

TARGET DRONES

Chairman ELLENDER. The next item is the request of $7.7 million for the procurement of target drones. Please continue, General Glasser.

General GLASSER. The Firebee II (BQM–34F) drone program was begun in 1969 and provides a high performance supersonic target capability. Firebee II is used by the Air Force to develop air-to-air missile tactics and to test and evaluate our aircraft and missile weapon systems. We plan a total buy of 244 Firebee II target systems through fiscal year 1977. In fiscal year 1972, Congress approved the procurement of 25 Firebee II drones. This year our request is again for 25 drones at a cost of $7.7 million.

Air Force flight acceptance tests of the Firebee II will be completed in September 1972 and the initial operational capability will follow in October.

MODIFICATION OF MISSILES

Chairman ELLENDER. $43.9 million is requested for the modification of in-service missiles. Page 99 of the justifications will be included in the record at this point.

(The information follows:)

Activity: 3. Modification of inservice missiles

	Thousands
Program requirements, fiscal year 1973	$43,900
Program requirements, fiscal year 1972	53,800
Program requirements, fiscal year 1971	100,700

PART I—PURPOSE AND SCOPE

This activity provides for updating, modification of missile systems and drones, direct ground support equipment, missile training equipment and components of these equipments. Also included are modification kits, special tools, revised handbooks and engineering effort. Using cost/effectiveness criteria, these programs are designed to improve reliability, enhance performance, and increase maintainability by incorporating approved alterations resulting from technical advances, service use and from deficiencies revealed in the continuing test programs.

PART II—JUSTIFICATION OF FUNDS REQUESTED

The modification programs provide for two categories (1) MINUTEMAN Update which includes funds for the MINUTEMAN motor aging and surveillance program, modification of MINUTEMAN III gyros and continuation of the updating of MINUTEMAN III sub-systems to improve the capability, reliability and safety of the system; and (2) Class IV Modification support of the total Air Force in-service inventory including such systems as MINUTEMAN, SRAM, MAVERICK, and FALCON missiles.

The following table reflects missile modification program requirements for fiscal year 1972 and fiscal year 1973:

[In thousands of dollars]

System	Fiscal year 1972	Fiscal year 1973
Class V modifications: Falcon (WSEM)	500	
Class IV modifications	6,700	7,000
Minuteman update	46,600	36,900
Total	53,800	43,900

General GLASSER. Funding to modify our inservice missile systems is needed to correct deficiencies, eliminate safety hazards, and to improve the performance and capability in our missile systems. The fiscal year 1972 budget request included $53.8 million for missile modifications.

The funds requested for inservice missile modifications is reduced to $43.9 million for fiscal year 1973. There are two categories of funds included in this request.

CLASS IV MODIFICATIONS AND MINUTEMAN MISSILE UPDATE

Seven million dollars is for class IV modifications to install solid state components in the Minuteman wing security system, to modify trainers to achieve configuration compatibility with the Minuteman weapon system and to improve several other missiles based on inservice experience.

In the Minuteman update category, $36.9 million is requested to continue the Minuteman aging and surveillance program, to modify Minuteman III gyros, to continue the updating of other subsystems and to make needed improvements in wing V facilities.

IN SERVICE MODIFICATION

Chairman ELLENDER. What is the difference between what you are requesting here and the $273.6 million requested for modification?

General GLASSER. This is modifications to equipments that have already been delivered and are in service.

CLASS IV MODIFICATIONS

Chairman ELLENDER. Of the $43.9 million requested, $36.9 million is for Minuteman modifications that we discussed earlier. The balance of the request—$7 million—is for class IV modifications. Please comment on the nature of these modifications, and give us some examples of the systems that are included in the planned program for fiscal year 1973.

General MCKEE. This is a level of effort that continues from year to year to improve flight safety, maintainability/reliability and logistics support. Here are some specific efforts planned for fiscal year 1973 funding: for the Minuteman II we will replace the current pendulous integrating gyro assembly (PIGA) wheels with a new design. PIGA is currently causing 40 percent of our system failures. This is a continuation of the effort started in fiscal year 1972. For Minuteman I we have a modification to a solid state device of the Sylvania security transmitter now used with the wing II and V Sylvania security system. We are replacing components that are causing 98 percent of the present failures. For all Minuteman systems we have a modification of trainers to provide configuration compatibility with the weapon system, and a modification to improve the north reference by making the gyro compass assembly partially independent of the auto colimator. This modification will also improve accuracy and the response to seismic shock. For the AIM–4 Falcon there is a modification of chassis No. 6 to correct a guidance anomaly discovered during flight test. On

the LGM–25C Titan II, there are changes to the electrical system motor driven switches to maintain system effectiveness and associated changes to system aerospace ground equipment. Finally, on the AGM–28, AGM–65, AGM–69, Hound Dog Maverick, and SRAM we will have improvements in safety, reliability, maintainability, and logistic based on inservice experience.

MISSILE SPARES AND REPAIR PARTS

Chairman ELLENDER. $46.7 million is requested for missile spares and repair parts. Page 100 of the justifications will be included in the record at this point.

Activity: 4. Spares and repair parts

	Thousands
Program requiremests—fiscal year 1973	$46,700
Program requirements—fiscal year 1972	43,600
Program requirements—fiscal year 1971	47,700

PART I—PURPOSE AND SCOPE

This activity provides for the procurement of initial and replenishment spares and repair parts for balistic missiles, other missiles, target drones, aerospace ground equipment, training equipment, replacement depot test equipment, provisioning documentation, and spares to support modification programs.

PART II—JUSTIFICATION OF FUNDS REQUESTED

Spares and repair parts requirements are developed by detailed provisioning actions which consider operational deployment of the end-item, usage rate trends, and service life, i.e., time change items. The majority of the spares and repair parts program results from MINUTEMAN and SRAM initial spares requirements. Items with a high unit cost, such as MINUTEMAN and SRAM Guidance and Control Unit Components, are individually computed and procured within this category.

The following table distributes the initial spares requirements by weapon system for FY 1972 and FY 1973:

[In thousands of dollars]

System	Fiscal year 1972	Fiscal year 1973
Minuteman	13,100	10,200
SRAM	12,000	12,300
Sidewinder		1,100
Sparrow	100	2,500
Maverick	5,200	4,900
Classified drones	1,300	2,900
Target drones	300	1,300
Total initial spares	32,000	35,200
Replenishment spares	11,600	11,500
Total spares and repair parts	43,600	46,700

General GLASSER. This program comprises replacement equipment, and initial and replenishment spares to support the current and programed Air Force missile inventory. For fiscal year 1972, this program totals $43.6 million.

The greater portion of this amount, $32 million, is for initial spares, of which $25.1 million is for support of Minuteman and SRAM programs.

In the replenishment spares area, there is $11.6 million to support programs such as Minuteman, Titan, and classified drones as well as our smaller air-to-air and air-to-ground missiles.

Our fiscal year 1973 request is $46.7 million. Of this amount, $35.2 million is allocated for initial spares and $11.5 million for replenishment spares.

Once again, our major effort in the initial spares area is in support of the Minuteman and SRAM missiles.

It is worthy to note that the requirement for Minuteman initial spares has been substantially reduced because of the excellent mean time between failure record of the Minuteman III missile guidance set. The replenishment spares request is for continued support of our operational systems.

COMPUTING REQUIREMENTS

Chairman ELLENDER. Earlier we had some discussion as to how you compute the requirement for initial spares for aircraft. Could you explain how you compute the requirement for initial spares for missiles?

General GLASSER. Initial spares are computed for the missile operational program by application of: first, historically developed factors applied to missiles and other hardware; second, manually for certain selected high-value items based on administrative and production lead-time months, repair cycle days, and mean time between failure rates; and third, approved firing schedules.

Chairman ELLENDER. I note in the justifications that, of the total requested, $35.2 million is for initial spares and $11.5 million is for replenishment spares. How do you compute the requirement for missile replenishment spares?

General GLASSER. Missile replenishment spares are computed by mechanical computation based upon the projected missile inventory and by manual computation. The latter is computed on "time-change" items by considering the projected shelf or service life of individual items and leadtime.

OTHER SUPPORT

Chairman ELLENDER. $672.8 million is requested for the budget activity entitled "Other support". Page 101 of the justifications will be included in the record at this point.

Activity: 5. Other support

	Thousands
Program requirements—fiscal year 1973	$672,800
Program requirements—fiscal year 1972	525,700
Program requirements—fiscal year 1971	624,400

PART I—PURPOSE AND SCOPE

Funds budgeted under this activity are for support of industrial facilities, space programs, and classified projects. Industrial facilities provides for expansion or modification of Government-owned production facilities, nonrecurring maintenance and modernization of machine tools and equipment, preparation, crating, and shipping of Government tools, improved manufacturing methods, and environmental protection measures instituted at Government-owned plants. Space programs provide launch vehicles, space vehicles, peculiar ground support equipment, and miscellaneous launch support costs other than those chargeable to the operation and maintenance appropriation.

PART II—JUSTIFICATION OF FUNDS REQUESTED

The fiscal year 1973 budget request of $672,800,000 is comprised of $3,500,000 for Industrial facilities, plus funds for space programs, and other projects.

Funds requested for Industrial facilities include $600,000 for Capital Type Rehabilitation, $1,500,000 for Manufacturing methods, $540,000 for Packing and crating, $100,000 for Expansion, and $760,000 for Environmental Protection. Capital Type Rehabilitation will take place in fiscal year 1973 at Air Force plants 38, 44, 70, 77, and 78 and includes replacement of water supply lines and electrical transmission lines, update of plumbing, air-conditioning, and heating systems, and rework of air-compression systems. Manufacturing methods provides for establishment and improvement of manufacturing processes, techniques, or equipment and maintains a suitable level of industrial preparedness by assuring the availability of improved machine tools and other production equipment. Environmental protection provides Air Force plant improvements necessary for compliance with Federal and State pollutant control standards.

Details of the other projects and space program content are classified.

General GLASSER. This last category in the missile procurement program is designated Other support equipment and facilities and contains some of our space efforts, industrial facilities' requirements and programs which are highly classified. In fiscal year 1972, we requested $608.8 million for these programs. Our budget request for fiscal year 1973 is $672.8 million with the following allocations:

	Millions
Industrial facilities	$3.5
Defense satellite communications system	4.2
Defense system applications program	12.9
Defense support program	165.0
Military satellite communications system	2.0
Classified drones	16.3
Classified projects	468.9
Total	$672.8

CLASSIFIED PROJECTS

Senator CASE. You refer to $468.9 million for classified projects. What does that mean?

General GLASSER. That is for a variety of programs that are of a classification that cannot be discussed in the open. I believe the chairman is familiar with those.

Senator CASE. You stated that $165 million is for the defense support program. Is this for the support of other nations?

General GLASSER. No, Senator Case. This is a space satellite program.

INDUSTRIAL FACILITIES

Chairman ELLENDER. The total requested includes $3.5 million for industrial facilities. Please comment on this request.

General GLASSER. The $3.5 million requested for fiscal year 1973 under this appropriation is for capital-type rehabilitation of Government-owned contractor-operated industrial production facilities utilized in missile and missile support production programs. It will also pay for installation of production equipment for support of the maintenance force and the scale-up of manufacturing processes which have been demonstrated as feasible in the laboratory. Finally, it will support the environmental protection program for missile supporting

Government-owned facilities to achieve compliance with the National Environmental Protection Act. I would like to provide the estimated amounts for these categories for the record.

(The information follows:)

Support and cost

	Millions
Capital type rehabilitation	$.6
Installation of industrial production equipment	.1
Preparation for shipment	.5
Manufacturing methods	1.5
Environmental protection	.8
Total	$3.5

DEFENSE COMMUNICATIONS SATELLITE

Senator YOUNG. What is involved in the request of $4.2 million for the Defense Communications Satellite?

General GLASSER. The request for $4.2 million for the defense communications satellite program includes $1.6 million for booster/payload integration and guidance equation validation; $1.9 million for revised launch schedule and payload storage; and $0.7 million for systems engineering and technical direction.

MILITARY SATELLITE COMMUNICATIONS SYSTEM

Senator YOUNG. Please comment on the request for $2 million for the Military Satellite Communications System, and tell us how this differs from the request for the Defense Communications Satellite.

General GLASSER. The request for $2 million for the Military Satellite Communications System is required for the procurement of the first two ultra-high-frequency [deleted] communication [deleted]. These two [deleted] will be placed [deleted] on two host satellites to provide execute messages to the nuclear strike forces. These [deleted] differ from the Defense Communications Satellite in the frequency used and in planned operational use. The Defense Communications Satellite operates in the super-high-frequency range and provides long-distance communications. The Military Satellite Communications System [deleted] operate in the ultra-high-frequency range and will provide command and control communications of the Strategic Air Command airborne strike forces in the polar regions.

Senator YOUNG. The total requested for support equipment includes $12.9 million for the defense systems applications program, $165 million for the defense support program, and $16.3 million for classified drones. Comment briefly on these items.

General GLASSER. The $12.9 million for the Defense systems application program includes the following: $2.9 million for the procurement of a booster and motors; $4.7 million for the procurement of a payload for spacecraft; $3.9 million for updating receiver stations to receive and process high speed digital data support; and $1.4 million for contractor launch and orbital operational support.

The $165 million for the Defense support program includes $69 million for the procurement of Titan III boosters, and $96 million for the procurement and testing of satellites.

The $16.3 million for classified drones is required for two purposes: $4.9 million for improving operational capabilities of in-service reconnaissance drones and engines; and $11.4 million for procurement of a new navigation/avionics subsystem for 50 low-altitude photo reconnaissance drones and associated support equipment.

SUMMARY

The Air Force aircraft and missile procurement program request for fiscal year 1973 is $4,385 million, of which $2,613 million is for aircraft procurement and $1,772 million is for missile procurement.

I am confident that this request presented for your consideration will permit the Air Force to operate effectively to meet challenging worldwide commitments and a growing military threat.

I will be happy to respond to your questions.

Chairman ELLENDER. Are there any further questions?

MOVABLE ICBM'S

Senator SYMINGTON. General Glasser, what are you all doing on moving ICBM's?

General GLASSER. Senator Symington, we are not doing anything about movable ICBM's. We have proposed programs for several years in that area and they have not met with favor.

Senator SYMINGTON. The Hiroshima bomb was actually 14 kilotons. You have weapons that weigh about 5 percent as much as that bomb, but are infinitely stronger in kilotonnage, so everything is becoming ideal from the standpoint of moving them around. It would also save a lot of money. It might save a mission. It might do a lot of things.

As you know, for years I have been prodding on this, especially after seeing some of the exhibitions at the May Day performances of the Soviet Union.

General GLASSER. There have been several study programs along that line. I believe you are familiar with the shelter base, off road mobile, several airborne launch platform approaches.

Senator SYMINGTON. We are spending many billions of dollars for these fixed positions; and many more billions to defend them. If you could only put them on some form of truck—I do not seem to get far with this suggestion, but have felt this same way for years.

Chairman ELLENDER. If there are no further questions, we will proceed.

Other Procurement, Air Force

STATEMENT OF MAJ. GEN. WILLIAM W. SNAVELY, ASSISTANT DEPUTY CHIEF OF STAFF, SYSTEMS AND LOGISTICS

ACCOMPANIED BY:

MAJ. GEN. JOSEPH R. DeLUCA, DIRECTOR OF BUDGET

MAJ. GEN. LEE M. PASCHALL, DIRECTOR OF COMMAND CONTROL AND COMMUNICATIONS, DCS/PROGRAMS AND RESOURCES

MAJ. GEN. JAMES A. HILL, DIRECTOR OF AEROSPACE PROGRAMS

COL. EINAR STEELNACK, DEPUTY DIRECTOR OF SUPPLY AND SERVICES, DCS/SUPPLY AND LOGISTICS

BUDGET REQUEST

Chairman Ellender. The next appropriation to be considered is "Other procurement, Air Force," for which the fiscal year 1973 budget estimate is $1,883,300,000.

PROGRAM AND FINANCING

At this point in the record there will appear certain program and financing from the justifications.

(The information follows:)

DEPARTMENT OF DEFENSE—MILITARY OTHER PROCUREMENT, AIR FORCE PROGRAM AND FINANCING

[In thousands of dollars]

	Budget plan (amounts for procurement actions programed)			Obligations		
	1971 actual	1972 estimate	1973 estimate	1971 actual	1972 estimate	1973 estimate
Program by activities:						
Direct:						
1. Munitions and associated equipment	722,538	700,700	621,000	578,469	650,500	563,000
2. Vehicular equipment	59,119	49,800	32,300	57,934	45,900	39,300
4. Electronics and telecommunications equipment	270,457	245,200	236,200	281,303	270,768	229,400
7. Other base maintenance and support equipment	503,194	578,298	993,800	442,231	614,973	1,000,400
Total direct	1,555,308	1,573,998	1,883,300	1,359,937	1,582,141	1,832,100
Reimbursable (total)	39,845	50,000	55,000	53,822	58,000	49,000
Total	1,595,153	1,623,998	1,938,300	1,413,759	1,640,141	1,881,100
Financing:						
Receipts and reimbursements from—						
Federal funds	−30,501	−42,925	−44,000	−28,377	−42,925	−44,000
Trust funds	−46,977	−30,776	−10,900	−44,657	−30,776	−10,900
Non-Federal sources	−409	−145	−100	−424	−145	−100
Unobligated balance available, start of year—						
For completion of prior year budget plans				−398,083	−335,708	−317,998
Available to finance new budget plans	−205,253	−166,927		−205,253	−166,927	
Reprograming from (−) or to prior year budget plans	−239,340	−1,567				
Unobligated balance transferred from other accounts		−90,000			−90,000	
Unobligated balance transferred to other accounts		187,340			187,340	
Unobligated balance available, end of year—						
For completion of prior year budget plans				335,708	317,998	375,198
Available to finance subsequent year budget plans	166,927			166,927		
Budget authority	1,239,600	1,478,998	1,883,300	1,239,600	1,478,998	1,883,300
Budget authority:						
Appropriation	1,338,700	1,478,998	1,883,300	1,338,700	1,478,998	1,883,300
Transferred to other accounts	−101,600			−101,600		
Transferred from other accounts	2,500			2,500		
Appropriation (adjusted)	1,239,600	1,478,998	1,883,300	1,239,600	1,478,998	1,883,300

Note: Reimbursements are derived principally from cash sales to foreign governments—22 U.S.C. 2315.

PRESENTATION FORMAT

Chairman ELLENDER. The principal witness is Maj. Gen. William W. Snavely, Assistant Deputy Chief of Staff, Systems and Logistics. General Snavely, will you summarize your statement for the committee.

General SNAVELY. Yes, sir.

Chairman ELLENDER. We will insert your full statement after your summary.

You may proceed, sir.

APPROPRIATION COMPONENTS

General SNAVELY. Mr. Chairman and members of the committee, I am pleased to appear before this committee and to present, for your consideration, the Air Force fiscal year 1973 "Other procurement" appropriation request totaling $1,883,300,000.

This request is for "Munitions, vehicular, electronics, telecommunications, and other base maintenance and support equipment" in table A.

(Table A follows:)

TABLE A.—DEPARTMENT OF THE AIR FORCE, FISCAL YEAR 1973 BUDGET, OTHER PROCUREMENT APPROPRIATION

[In millions of dollars]

Program/activity	Fiscal year— 1971	1972	1973
Munitions	722.5	700.7	621.0
Vehicles	59.1	49.8	32.3
Electronics and telecommunications	270.5	245.2	236.2
Comsec, Sigint	15.6	19.0	29.6
Communications electronics	221.1	193.0	175.2
Industrial facilities	1.8	2.0	2.0
Modifications	32.0	31.2	29.4
Other base maintenance support	503.2	578.3	993.8
Total	1,555.3	1,574.0	1,883.3

MAJOR OBJECTIVES

General SNAVELY. This request has been carefully reviewed. It represents the minimal dollars required to permit the Air Force to support its assigned mission during the program period.

The major objectives for which these fiscal year 1973 funds are requested include:

(a) Support of Southeast Asia, including requirements for U.S. Forces while providing necessary support to free world forces there.

(b) Replacement of equipment due to attrition or because it is no longer economical to operate.

(c) Modernizing the war readiness materiel stocks and replacing those consumed in Southeast Asia.

(d) Provision for essential modernization through continued acquisition and modification of electronics and telecommunications systems.

(e) Support of the longrange depot plant modernization program.

REDUCTIONS RESULTING FROM PHASE-DOWN

Excluding the classified program, which can be covered as the chairman desires in separate session, the funds requested in fiscal year 1973 for other procurement are $203 million less than the fiscal year 1972 program.

This reduction is due to a planned phasedown of operations and adjustments in several major programs. The munitions program is down by $80 million; the vehicle program is decreased by $17 million; first destination transportation is $18 million less than in fiscal year 1972; and communications electronics is $18 million less.

Efforts continue to reduce and control costs and otherwise improve the management of resources. For the most part, quantities proposed for procurement in fiscal year 1973 are less than in previous years. However, the rising costs of material and services cause the price of

our new procurements, modifications, and maintenance to continue to increase.

It is essential to continue a phased and orderly program of modernization if we are to reduce the impact of price increases on future operating cost.

(Table I follows:)

Table I.—Department of the Air Force, Munitions and Associated Equipment, Fiscal year 1973 program estimate

[In millions of dollars]

Rockets and launchers	$ 29.1
Cartridges	65.3
Bombs	430.8
Targets	1.2
Other items	37.1
Fuzes	57.5
Total program	621.0

Munitions and Associated Equipment

Chairman Ellender. General, before you proceed with your discussion of the $621 million requested for munitions and associated equipment, I want to include pages 122 and 123 of the justifications in the record at this point.

(The information follows:)

Direct program requirements:	*Thousands*
Fiscal year 1973	$621,000
Fiscal year 1972	700,700
Fiscal year 1971	722,538

Activity: Munitions and Associated Equipment

PART I.—PURPOSE AND SCOPE

This activity provides for the procurement and modification of munitions and associated equipment, armament training devices, and spares and repair parts. Major conventional type munitions planned for procurement in FY 1973 include: rockets and rocket components; 7.62 and 20 millimeter cartridges; fire bombs, dispenser type munitions, guided bombs, general purpose iron bombs, associated fuzes; flares; and spares and repair parts.

PART II.—JUSTIFICATION OF FUNDS REQUESTED

This estimate provides for the continuation of programs directly related to: (1) the indoctrination of aircrews in the latest warfare and bombing techniques and (2) the training of special weapons personnel in the maintenance, storage, movement, assembly, loading and the operational use of atomic munitions. Provision is also made for procurement of war readiness materiel (WRM) and for the continued support of USAF and the Free World Forces in Southeast Asia.

Past, current and budget year program requirements for major categories of munitions and associated equipment, are reflected in the following table:

DIRECT PROGRAM REQUIREMENTS

[In thousands of dollars]

	1971	1972	1973
1. Rockets and launchers	$24,243	$39,445	$29,089
2. Cartridges	55,950	73,182	65,341
3. Bombs	509,355	485,720	430,789
4. Targets	1,717	1,818	1,214
5. Other items	39,526	45,720	37,046
6. Fuzes	91,747	54,815	57,521
Total direct program requirements	722,538	700,700	621,000

Rockets and Launchers.—The 1973 program provides for procurement of 2.75" rocket motors and warheads, rocket launchers and rocket components including meteorological probes. Requirements for the 2.75" rocket motor (MK–40/SR–105) and 2.75" rocket head fragmentation account for the major part of the FY 1973 program.

Cartridges.—The 1973 program provides for continued procurement of 7.62mm, 5.56 ball, caliber .38, 20mm training/combat, engine starter, and parachute ejection cartridges.

Bombs.—The 1973 program provides for procurement of general purpose (250, 500, 750 and 2,000 lb) bombs, cluster munitions, antipersonnel and materiel, guided, dispenser munitions and practice bombs. Provisioning of War Readiness Materiel (WRM) initiated in FY 1971 continues in the 1973 program. Decreased requirements for support of USAF forces in Southeast Asia account for the lower 1973 program.

Targets.—The 1973 program provides for continued procurement of target devices.

Other Items.—This category provides for the procurement of flares, signal kits, atomic ordnance training devices (excluding nuclear materials), spares and repair parts, and modification of munitions items.

Fuzes.—This category provides for the procurement of all types of mechanical and electrical fuzes, delay elements and other items used with general purpose bombs and dispenser type munitions. The 1973 program is in consonance with the change in bomb production.

MUNITIONS PROGRAM

General SNAVELY. The fiscal year 1973 munitions program (table I) of $621 million is a reduction of approximately $80 million from the current fiscal year 1972.

This program is directly related to Southeast Asia activities; therefore, it is constantly reviewed, evaluated, and realined to closely coincide with changing operational requirements.

SORTIE REDUCTION

Chairman ELLENDER. Is this reduction due to the reduction in personnel in SEA?

General SNAVELY. Yes, sir; that is true in part; however, the major reduction is due to the reduced number of sorties that we are flying.

Chairman ELLENDER. Although we may have to maintain the Vietnamese Forces, will there still be a reduction in the amount of munitions that are necessary to carry on there?

General SNAVELY. Yes, sir. Although the requirements for the Vietnamese Forces are increasing from previous levels, U.S. requirements are decreasing. Secondly the Vietnamese expend a smaller variety of munitions and carry a smaller load per sortie than U.S. tactical fighters. The eventual result is a net decrease in munitions requirements.

Chairman ELLENDER. Proceed.

General SNAVELY. For example, the Air Force request to OSD for the 2.75-inch rocket (motor and head) was reduced this year by $15.9 million; the requirement for the BLU–27 750-pound fire bomb has been canceled; the CBU–55 FAE (fuel air explosive munition) has been reduced by $10 million.

Conversely, items such as the CBU–25 low-speed jungle bomblet and MK–81 250-pound bomb which are predominantly used by the VNAF/RLAF, have been increased to meet higher expenditure rates.

PROGRAM OBJECTIVES

This program is designed to accomplish the following objectives:

First, continued but reduced support of U.S. Forces in Southeast Asia, and the increasing requirements of the free world forces.

U.S. tactical sorties are programed at [deleted] per month through June 1972 and reduced to [deleted] per month beginning [deleted].

Arc light (B–52) sorties are programed [deleted].

Monthly sorties for VNAF/RLAF increase from [deleted] at the end of June 1972 [deleted] in December 1972, and up to [deleted] per month by June 1973.

Second, built up and modernization of war readiness materiel (WRM) toward meeting our end objectives for WRM by end 1976.

Third, continued support of peacetime aircrew training which is increasing as the effort in Southeast Asia declines.

ROCKETS AND LAUNCHES

Chairman ELLENDER. Please provide for the record a P–1-type tabulation setting out the various items included in the request for $29.1 million for the procurement of rockets and launchers for fiscal year 1973, along with the programs for fiscal years 1971 and 1972.

General SNAVELY. I will provide that for the record, Mr. Chairman.

(The information follows:)

Line No.	Item nomenclature	Identification code	Fiscal year 1973 unit cost	Millions of dollars					
				Fiscal year 1971		Fiscal year 1972		Fiscal year 1973	
				Quantity	Cost	Quantity	Cost	Quantity	Cost
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	ROCKETS AND LAUNCHERS								
1	2.75-inch rocket motor, MK–40	A	24	492,000	10.6	760,000	16.5	497,876	12.2
2	2.75-inch rocket motor, SR 105	B	100	16,750	3.4	20,000	2.0	20,000	2.0
3	2.75-inch rocket head, fragmentation.	A	16	120,000	1.8	410,392	6.7	499,144	8.1
4	Launcher, LAU–68	A	300	7,008	2.2	7,788	2.3	6,444	1.9
5	Items less than $500,000	A			.8		1.6		1.6
6	MB–1 rocket motor	A	3,003			552	1.7	536	1.6
7	Meteorological probe, PWN–11A	A	1,217			340	.4	1,360	1.7
8	2.75-inch rocket head, W.P			288,900	3.3	394,608	7.1		
9	Meteorological probe, PWN–8B			614	.5	1,456	1.2		
10	2.75-inch rocket head, flechette			42,600	1.6				
	Subtotal				24.2		39.5		29.1

General SNAVELY. The request for $29.1 million for Rockets and launchers is a reduction of $10.4 million from the current fiscal year 1972 program. This decrease is due to a reduction in rocket utilization by the Air Force.

NEW ITEMS

Chairman ELLENDER. Does your request for fiscal year 1973 include funds for the procurement of any items that have not been procured in previous fiscal years, and if so, please describe each of the items.

General SNAVELY. No sir, there are no new procurement items in the fiscal year 1973 P–1 exhibit.

2.75 INCH ROCKETS

Senator YOUNG. I note that your request includes $12.2 million for the procurement of nearly 500,000 of the MK–40 2.75-inch rocket motors and $2 million for the procurement of 20,000 of the SR–105 2.75 rocket motors. Just what is the difference in these two items?

General SNAVELY. The MK–40 2.75 rocket motor is basically the standard MK–4 rocket motor except the nozzles are canted to impart spin to the rocket upon launch. This is essential to reduce dispersion when firing from helicopters. The SR–105 is a completely new motor incorporating a high energy propellant, a newly designed igniter, a newly designed nozzle and a modified standard fin. The main advantage of the SR–105 is the increased standoff range afforded by the higher energy motor. This increased velocity improves the effectiveness of flechette warheads and is essential to the PAVE ROCK shelter penetrator under development.

CARTRIDGES

Chairman ELLENDER. Please provide a P–1 type tabulation for inclusion in the record at this point listing each of the items included in the $65.3 million requested for cartridges, along with the items included in the programs for fiscal years 1971 and 1972.

General SNAVELY. I have that information here, Mr. Chairman.

(The information follows:)

Line No.	Item nomenclature	Identification code	Fiscal year 1973 unit cost	Millions of dollars: Fiscal year 1971 Quantity	Fiscal year 1971 Cost	Fiscal year 1972 Quantity	Fiscal year 1972 Cost	Fiscal year 1973 Quantity	Fiscal year 1973 Cost
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	CARTRIDGES (thousands of rounds)								
11	7.62 millimeter M–13 link	A	90	72,800	7.0	159,999	14.4	199,772	18.0
12	5.56 ball	A	60	46,528	2.4	54,067	3.2	25,179	1.5
13	20 millimeter training	A	920	21,800	19.9	31,349	28.6	25,918	23.9
14	20 millimeter combat	A	1,350	15,486	20.3	12,867	17.9	9,980	13.5
15	Cartridge, impulse ARD–863–1	A	650	992	.6	2,352	1.5	643	.4
16	Items less than $500,000	A			3.9		2.9		3.1
17	Caliber .38	A	70			34,224	2.4	23,352	1.6
18	Signal MK–4 Mod 3	A	320			1,867	.6	1,904	.6
19	Engine starter, MXU–4A	A	15,980					168	2.7
20	Engine starter, MXU–129/A			39	.5	48	.7		
21	Cartridge, impulse MK–2					530	.5		
22	Cartridge chaff RR141					57	.5		
23	Caliber .50 tracer M17			1,318	.6				
24	40 millimeter HEI–P			666	.8				
	Subtotal				56.0		73.2		6[illegible].3

General SNAVELY. In the cartridge category, we are requesting $65.3 million which is $7.9 million less than the fiscal year 1972 program. An increase in support of the Vietnamese gunship program is provided.

However, this was offset by a corresponding decrease in U.S. Air Force Southeast Asia activity and reduced procurement of training items based upon inventory assets.

NEW ITEMS

Chairman ELLENDER. Does this request for $65.3 million for procurement of cartridges include funds for the procurement of any items which have not been funded in previous fiscal years, and if so, please comment on each of these items.

General SNAVELY. No sir, items shown in the P–1 exhibit have been procured in the past fiscal years.

Senator YOUNG. I note on line 16 of the P–1 exhibit a request for $3.1 million for "Items Less than $500,000." Give us several examples of the types of items you intend to procure with these funds.

General SNAVELY. Our estimates of procurements to be made in fiscal year 1973 include such items as 20-millimeter TPT bulk and 20-millimeter dummy plastic-type cartridges; 40-millimeter practice, HE and cannister type cartridges; a variety of impulse type cartridges; and M57 aircraft seat ejection cartridges.

Senator YOUNG. I note that $18 million is requested for the procurement of nearly 200 million rounds of 7.62-millimeter ammunition. I assume that this is an item that is used extensively in Southeast Asia. Am I correct about this?

General SNAVELY. Yes, sir; you are correct.

TRAINING AMMUNITION

Chairman ELLENDER. I note on line 13 of the P–1 exhibit that you are requesting $23.9 million for the procurement of nearly 26 million rounds of 20-millimeter training ammunition, and on line 14, there is a request of $13.5 million for the procurement of approximately 10 million of 20-millimeter combat ammunition. Please comment on the requirements for the procurement of this large amount of training ammunition.

General SNAVELY. Sir, this ammunition is used in training tactical fighter aircrews. It is expended in air-to-air gunnery training as well as practice air-to-ground strafing. We have determined that on an average each crew needs approximately 4,000 rounds per year to maintain proficiency. As our tactical squadrons are withdrawn from Southeast Asia, there is a proportional requirement increase for training munitions.

BOMBS

Chairman ELLENDER. Provide a P–1 type tabulation with respect to the various items included in the $430.8 million requested for the procurement of bombs.

General SNAVELY. Yes, sir.

(The information follows:)

Line No.	Item nomenclature	Identity code	Fiscal year 1973 unit cost	Millions of dollars: Fiscal year 1971 Quantity	Fiscal year 1971 Cost	Fiscal year 1972 Quantity	Fiscal year 1972 Cost	Fiscal year 1973 Quantity	Fiscal year 1973 Cost
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	BOMBS								
25	Dispenser and Bomb, CBU-25.	A	782	14,213	1.9	39,459	27.9	47,958	37.5
26	Dispenser and Bomb, CBU-55.	A	1,932	650	1.9	650	1.9	4,800	9.3
27	Dispenser and Bomb, CBU-58.	A	1,023	37,483	33.0	33,000	31.0	43,200	44.2
28	Cluster bomb, MK-20 Mod 3 (Rockeye).	A	3,200	13,458	43.4	5,853	18.7	J,000	96.0
29	Bomb, GP, 250 pound, MK-81.	A	119	171,400	19.2	167,38	19.7	261,875	31.2
30	Bomb, GP, 500 pound, MK-82.	A	148	1,035,000	146.3	1,058,500	153.5	620,400	92.0
31	Bomb, GP, 2,000 pound, MK-84.	A	575	10,600	7.0	9,232	5.4	7,915	4.5
32	Bomb, GP, 750 pound, M117.	A	212	478,000	93 0	320,000	66.2	212,500	45.0
33	Laser bomb guidance kit	A	3,398	13,357	44.7	20,504	71.1	12,420	42.2
34	E-O bomb guidance kit	A	16,969	864	14.4	795	13.8	700	11.9
35	Bomb, 500 pound, MK-82 empty.	A	65	10,740	.7	22,188	1.4	20,274	1.3
36	Bomb, practice BDU-33	A	4	940,000	3.9	1,500,000	6.0	1,527,000	6.1
37	Bomb, practice MK-106	A	3	88,104	.3	340,664	1.2	152,256	.5
38	Items less than $500,000	A			1.6		.2		.6
39	Anti-PAM, 500 pound, BLU-32.	A	158			54,800	8.1	53,870	8.5
40	Bomblet, BLU-26, LAP					2,000,000	1.4		
41	Dispenser and bomb, CBU-14.			8,000	1.6	7,000	1.2		
42	Dispenser and bomb, CBU-38.			1,475	4.0	11,100	38.7		
43	Dispenser and bomb, CBU-52.			4,900	8.7	15,000	15.8		
44	Bomb, 15,000 pound, BLU-82/B.			225	1.6	60	.5		
45	Anti-PAM, BLU-27 empty			12,000	1.6	15,204	2.0		
46	Anti-PAM, 750 pound, BLU-27.			56,400	10.0				
47	Dispenser and bomb, CBU-24/49.			58,158	44.7				
48	Dispenser and bomb, CBU-70.			400	1.8				
49	Incendiary cluster, 750 pound M-36.			17,999	20.4				
50	Cluster fragmentation, M1A4.			9,400	1.6				
51	Bomb, 750 pound, M117 empty.			12,934	1.2				
	Subtotal				509.4		485.7		430.8

General SNAVELY. As in the past, this category of munitions is the largest dollar item at $430.8 million and accounts for nearly 70 percent of the fiscal year 1973 munitions budget.

This is a $54.9 million reduction from the fiscal year 1972 program and reflects the reduction of sortie rates in Southeast Asia by U.S. Air Force Tactical Forces.

$172.7 million of the bomb dollars are for the conventional "iron bombs," including $30.5 million for war reserve material.

$187 million are for the Cluster Dispenser Munitions including $140.2 million for war reserve materiel.

The balance $71.1, million, is for firebombs, bomb guidance kits, and practice bombs.

We are procuring a greater proportion of our munitions in the guided bomb and cluster munitions categories ($241.1 million) as opposed to the free-fall bombs. Guided munitions have proved to be the more effective type.

NEW ITEMS

Chairman ELLENDER. Does the $430.8 million requested for the procurement of bombs in fiscal year 1973 include funds for any type of bomb or other equipment not procured in previous fiscal years, and if so, please comment on these new items.

General SNAVELY. No, sir; it does not.

Chairman ELLENDER. Give us two or three examples of the types of items you expect to procure with the $600,000 requested on line 38 of the P–1 exhibit for "Items less than $500,000."

General SNAVELY. These would be items such as the MK–84 empty bomb, the M124 practice bomb, and suspension LUG F/practice bomb (G–257).

WAR RESERVE MATERIEL

Senator YOUNG. In your statement, you refer to $30.5 million for the procurement of war reserve materiel in the "iron bomb category" and $142 million for the procurement of war reserve materiel in the "cluster dispenser munition category." Just what is involved in the procurement of these items for war reserve materiel?

General SNAVELY. Sir, the mix of munitions procured for war reserve materiel is determined by wartime sortie rates and selection of the munitions based upon least cost per target kill. A computer model, called Saber Mix, is used to compare each munition against each type target with attack environment and attrition considered. The munition that is the most cost effective in destroying the target is identified for the war reserve materiel stockpile. Although the total stockpile objective is to be achieved in the fiscal year [deleted] time frame, we procure incremental quantities to provide a steady flow of munitions into the war reserve stockpile. We also give priority to procuring those items required for prepositioning in USAFE.

TARGETS

General SNAVELY. The $1.2 million request in this category which is $0.6 million less than the fiscal year 1972 program is to provide armament training devices for combat crews.

Chairman ELLENDER. I note that of the total of $1.2 million requested for targets, $1 million is for the procurement of some 7,600 targets designed "TDU–10/B." Please describe this item, and tell us why you need to procure 7,600 in fiscal year 1973 when you procured only 1,900 in fiscal year 1972.

General SNAVELY. Sir, the TDU–10/B is a dart-shaped tow target used in air-to-air gunnery practice. It is 16 feet long and has a wing span of 6 feet. It is made of aluminum honeycomb and has an aluminum rail as a centerpiece. It weighs approximately 200 pounds. Our procurement for this item is paced by requirements established at using commands. The consumption of these tow targets is directly proportional to air-to-air gunnery training. In the fiscal year 1972 program, we originally programed for 6,466 items, however, a train-

ing sortie reduction required us to only buy 1,900 items. The current P–1 exhibit reflects our present estimate for tow targets based on planned training sorties.

Chairman ELLENDER. Give us two or three examples of items you expect to procure with the $200,000 requested for "Items less than $500,000."

General SNAVELY. We have only one item on our planned procurement list at this time. This is the transmitter group with installation kit.

OTHER ITEMS

Chairman ELLENDER. Provide a P–1-type tabulation with respect to the $37.1 million requested for "Other items," along with the items included in this category for fiscal years 1971 and 1972.

General SNAVELY. I will provide that information for the record.

(The information follows:)

Line No.	Item nomenclature	Identification code	Fiscal year 1973 unit cost	Millions of dollars					
				Fiscal year 1971		Fiscal year 1972		Fiscal year 1973	
				Quantity	Cost	Quantity	Cost	Quantity	Cost
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	OTHER ITEMS								
55	Flare, parachute MK-24/LUU-2	A	36/60	287,800	15.6	341,000	21.4	420,000	18.6
56	Personnel distress kit	A	20	60,000	1.2	51,200	1.0	27,400	.5
57	Arming wire w/accessories	A			.4		.5		.3
58	Spares and repair parts	A			5.0		4.7		4.7
59	Modifications	A			8.2		8.9		7.5
60	Items less than $500,000	A			3.2		3.9		3.8
61	Project Service Star	A			.3		.6		.1
62	Ground signal, white star	A	7			169,632	1.2	134,784	.9
63	Flare, parachute M8A1	A	53					22,804	1.2
64	Flare, target marking, LUU-1/LUU-5			20,165	.9	16,284	.7		
65	Flare, I.R., RR-119 A/L					8,009	.7		
66	Dispenser, SUU-30 and LAP					5,726	1.7		
67	Retardation device MC-2606					667	.4		
68	MHU-7/M AGE			100	1.1				
69	MHU-20C/PWU 6E AGE			224	.9				
70	Dispenser, SUU-14			6,727	1.6				
71	Dispenser, SUU-25			956	1.1				
	Subtotal				39.5		45.7		37.1

This category includes miscellaneous items such as flares, signal kits, atomic ordnance training devices, arming wire, spares and repair parts, and modifications.

The request for $37.1 million is $8.6 million less than the fiscal year 1972 program. This decrease is due to a unit cost reduction for the MK–24/LUU–2 flares; a reduced modification program; and no requirement in fiscal 1973 for programs which totaled $3.5 million in fiscal year 1972.

PARACHUTE FLARES

Chairman ELLENDER. On line 55 of the P–1 exhibit, I note a request of $18 million for the procurement of 420,000 MK–24 and LUU–2 parachute flares. Is this a Southeast Asia item?

General SNAVELY. Yes sir, it is.

Chairman ELLENDER. I note that one of these flares cost $36 each and the other costs $60 each. How do these flares differ?

General SNAVELY. Sir, the LUU–2B, which is the more expensive of the two, has a 5-minute burning time versus 2½ minutes for the MK–24 flare. It also provides twice the candlepower and incorporates engineering improvements in the fuze that greatly enhances handling safety. The current LUU–2B price is based on a second year procurement quantity of 186,000 flares. We anticipate further price reduction in future year procurement for increased quantities. The LUU–2B replaces the MK–24 for USAF forces in Southeast Asia and for war reserve materiel stocks.

Senator YOUNG. You are requesting $600,000 for the procurement of 7,400 personnel distress kits. Comment on this item.

General SNAVELY. Sir, the personnel distress kit consists of a small, hand held, projector and signal cartridges that expel red signal flares to a height of 300 feet. Each aircrew member is issued this kit as part of his survival equipment.

Senator YOUNG. I note on line 59 of the P–1 exhibit a request of $7.5 million for modifications. Could you tell us a little bit about the type of equipment you intend to modify with these funds?

General SNAVELY. Sir, the item to be modified is the standard 40-millimeter high-explosive projectile used in the AC–130 gunship program. Essentially, the projectile's fuze and explosive filler are removed and an incendiary liner is fitted into the projectile. A smaller explosive charge is then inserted along with the fuze to complete the improved projectile modification.

Senator YOUNG. Give us several examples of the types of items you expect to procure with the $3.8 million you have requested for "Items less than $500,000."

General SNAVELY. In this category of "Other items," our planned procurements cover a wide range of minor munitions and munitions components. Included are such items as hand grenades, illumination signals, explosive simulators, demolition charges, blasting caps, and marine location night markers.

PROJECT SERVICE STAR

Senator YOUNG. Just what is involved in the request for $100,000 for "Project Service Star" set out in line 61 of the P–1 exhibit?

General SNAVELY. Sir, Project Service Star is a program for evaluating the operational ballistic missile nuclear reentry systems. The request for $100,000 will be used to purchase fuzes, arming devices, and separation devices required for reliability testing of reentry systems.

Chairman ELLENDER. $900,000 is requested for the procurement of nearly 135,000 White Star ground signals. Please describe this item, and comment on its uses.

General SNAVELY. Sir, the White Star ground signal is a hand launched, parachute retarded, illuminating flare used for base defense night operations. The flare is expelled from an integral tube to a height of 700 feet and burns for 30 seconds at 50,000 candlepower. When security forces suspect enemy activity or need to define a target, this flare is used for illumination.

Chairman ELLENDER. On line 63 of the P–1 exhibit, there is a request of $1.2 million for the procurement of nearly 23,000 M8A1 parachute flares. Please describe this item.

General SNAVELY. Sir, the M8A1 flare is used in recovery and rescue missions. It is air launched, parachute retarded, illumination flare that burns for 3 minutes at 350,000 candlepower. It is approximately 2 feet long, 4 inches in diameter, and weighs about 18 pounds. It is the basic flare used in automatic launchers in C–119 and C–130 flare ships.

Chairman ELLENDER. I note that funds were not provided in fiscal years 1971 and 1972 for the procurement of this flare. Is this a new item?

General SNAVELY. No, sir; it is not. The M8A1 flare has been in the inventory for many years.

FUZES

Chairman ELLENDER. Please provide a P–1 type exhibit setting out the items included in the $57.5 million requested for fuzes, along with the items included in the program for fiscal years 1971 and 1972.

General SNAVELY. I have that information here, Mr. Chairman.

(The information follows:)

(Millions of dollars)

Line No.	Item nomenclature	Identity code	Fiscal year 1973 unit cost	Fiscal year 1971 Quantity	Fiscal year 1971 Cost	Fiscal year 1972 Quantity	Fiscal year 1972 Cost	Fiscal year 1973 Quantity	Fiscal year 1973 Cost
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	FUZES								
72	M904 nose	A	13	1,880,000	23.0	1,372,750	17.5	1,474,191	18.4
73	M905 tail	A	16	1,410,000	17.1	548,620	7.1	619,064	10.1
74	FMU–7 (set)	A	26	76,000	2.3	36,260	.9	32,150	.8
75	FMU–56 proximity	A	350	102,883	36.2	40,000	15.2	43,200	15.1
76	FMU–72 long delay	A	240	22,000	6.5	50,000	12.0	12,000	2.9
77	FMU–54	A	85	5,000	1.9			120,000	10.2
78	Fuze delay elements M–9 (all types).			757,120	.5	2,720,000	2.1		
79	FMU–81			6,000	1.8				
80	M–1 fuze extender			260,000	1.9				
81	Items less than $500,000				.5				
	Subtotal				91.7		54.8		57.5

General SNAVELY. The last munitions category is fuzes. We require $57.5 million for fuzes to maintain the pogram in balance with the proposed bomb procurements. This is an increase of $2.7 million over fiscal year 1972 requirements.

You will note that although bomb procurements are down, the requirement for fuzes has increased. This is due to requirements for fuzes for CBU munitions entering the war reserve materiel inventory, and a change in the mix of air surface fuzes for conventional bombs in the war reserve materiel buildup.

TYPES OF FUZES

Chairman ELLENDER. Does the $57.5 million requested for fuzes include funds for any items that have not been procured in previous years, and if so, please describe each of these new items.

General SNAVELY. No sir, all fuzes listed in the P–1 exhibit have been previously procured.

Chairman ELLENDER. On line 75 of the P–1 exhibit, there is a request of $15.1 million for the procurement of 43,200 FMU–56 proximity fuzes at a cost of $350 each. Please describe this fuze and tell us why it is so expensive.

General SNAVELY. Sir, the FMU–56 fuze provides an air burst capability for dispenser munitions. The electronic radar proximity system provides a burst height from 250 to 3,000 feet above the target. The high cost of the fuze is caused by its complex design and the degree of reliability required in burst height functioning.

Chairman ELLENDER. On line 76 of the P–1 exhibit, there is a request of $2.9 million for the procurement of 12,000 FMU–72 long delay fuzes at a cost of $240 each. Just why is this fuze so expensive?

General SNAVELY. Sir, the high cost of the FMU–72 fuze is inherent in electronic fuzing systems, particularly when quantitative requirements are not large enough to take full advantage of sophisticated mass production techniques. This particular fuze incorporates a complex safe release circuit and an antidisturbance feature to deny the enemy access to the bomb before planned detonation occurs. The fuze also incorporates its own electrical power source.

FISCAL YEAR 1972 REPROGRAMING ACTIONS

Chairman ELLENDER. Please comment on any major reprograming increases or decreases in the fiscal year 1972 program for munitions and associated equipment, and you might also comment on any additional reprograming actions that you contemplate for fiscal year 1972 which have not yet been transmitted to the Congress.

General DE LUCA. There have been two major reprograming actions affecting the fiscal year 1972 program for munitions and associated equipment which resulted in a net decrease adjustment of $2 million. The first of these reprogramings (DOD Serial No. fiscal year 1972–3) provided for an increase of $23.7 million for additional quantities of the dispenser and bomb, CBU–25 to support 7th Air Force, Vietnam and Laos operations in Southeast Asia. The funds to cover this increase were made available as a result of cutbacks in requirements for other munitions—namely, the M–36, 750 lb. incendiary cluster and the MK–81 bomb. The second of these reprogramings (DOD Serial No. fiscal year 72–43) provided for an additional decrease of $2 million against the MK–81 bomb to cover an increase in the fiscal year 1972 classified program. This reprograming requires prior congressional approval.

At the present time we anticipate an additional reprograming in the fiscal year 1972 program for munitions and associated equipment, to cover additional procurements of the M–117 general purpose bomb to support a contemplated increase in ARC LIGHT sortie levels in Southeast Asia.

COSTS ATTRIBUTED TO WESTERN EUROPE

Chairman ELLENDER. How much have you in here for Western Europe? I don't suppose there is much of it used there except for practice, maybe?

General SNAVELY. Sir, I will provide the detailed figures on Western Europe quantities for the record; however, out of the total budget of

$621 million, $245.1 million is programed for WRM and Western Europe has first priority for the build-up of their WRM stockpile. Furthermore, none of the munitions for WRM will be expended since we include training munitions in the budget for that purpose.

(The information follows:)

AMT FOR WESTERN EUROPE, ETC.

The FY 1973 Budget provides $245.1 million for the procurement of WRM munitions. Included in these funds are $139.9 million in support of Europe, with the balance of $105.2 million for the Pacific.

WAR RESERVE

Chairman ELLENDER. Has your "war reserve" request decreased?

General SNAVELY. Yes, sir. It was necessary to draw approximately 120,000 tons of munitions from the worldwide WRM stockpile in 1965 and 1966, in order to support the rapid increase of Southeast Asia combat operations. However, we have made provisions in the fiscal year 1971 and fiscal year 1972 buy programs and the fiscal year 1973 budget to procure $504.4 million or 244,000 tons of munitions for replacement and modernization of the WRM stockpile.

Chairman ELLENDER. That is not solely for Southeast Asia, is it?

General SNAVELY. No, sir. The WRM munitions are to support any future force deployment around the world.

VEHICULAR EQUIPMENT

Chairman ELLENDER. Before you begin your discussion of the request of $32.3 million for the procurement of vehicular equipment, I want to have included in the record at this point pages 124 and 125 of the justifications.

(The information follows:)

	Thousands
Direct program requirements—fiscal year 1973	$32,300
Fiscal year 1972	49,800
Fiscal year 1971	59,119

PART I.—PURPOSE AND SCOPE

Activity: Vehicular Equipment.

This activity provides for the procurement of passenger carrying vehicles; general and special purpose vehicles including trucks, tractors and trailers; fire-fighting equipment; materials handling equipment; base maintenance equipment and other support including spares and repair parts and modifications for support of vehicular equipment. Major items planned for procurement in FY 1973 include passenger carrying vehicles, pick-up trucks; 5,000 Gallon fuel tank trucks R-9, crash trucks P-4, and 40,000 lb. aircraft loader trucks.

PART II.—JUSTIFICATION OF FUNDS REQUESTED

The vehicles and related equipment included in this estimate will be utilized at combat and support bases, worldwide, for the transportation of personnel; for the transportation of cargo from railroad sidings and flying field aprons to depots, warehouses, hangers, and other places of storage or use; for transportation of fuel, oil, supplies and materials in support of aircraft and base maintenance for fire and rescue operations.

The following table summarizes the program requirements for each of the major categories of equipment in the past, current and budget year programs:

DIRECT PROGRAM REQUIREMENTS

[In thousands of dollars]

	1971	1972	1973
1. Passenger-carrying vehicles	$4,885	$3,924	$5,867
2. Cargo and utility vehicles	14,649	10,011	4,465
3. Special purpose vehicles	9,999	11,790	8,956
4. Firefighting equipment	8,512	9,589	3,164
5. Materials handling equipment	10,592	7,366	3,734
6. Base maintenance equipment	10,482	7,120	6,114
Total direct program requirements	59,119	49,800	32,300

Passenger Carrying Vehicles.—Increased requirements for the replacement of light sedans and 28-passenger buses over those planned in FY 1972 account for the approximate $2.0 million increase in the FY 1973 Program. (Planned replacements of sedans and station wagons in both FY 1972 and FY 1973 are within limits prescribed and conditions set forth in Bulletin No. 72–8 of the Office of Management and Budget, Executive Office of the President, dated December 1, 1971.)

Cargo and Utility Vehicles.—The decrease in the program for FY 1973 compared with the programs for FY 1972 and FY 1971 is basically the result of current management objectives to defer requirements in this category to the later year programs. Cutbacks in FY 1973 procurements of ½ ton pick-up, and 1 ton multi-stop trucks reflects implementation of actions to achieve such objectives.

Special Purpose Vehicles.—Reduced procurements of telephone maintenance and demineral water trucks, MB–4 and AGE tow tractors account for the approximate $2.8 million decrease in this category from the FY 1972 program.

Firefighting Equipment.—The FY 1973 Program is approximately one-third the level of the FY 1972 program due to a reduction in the procurement of the P–4 Crash Fire Truck.

Materials Handling Equipment.—The FY 1973 Program is approximately 50% lower than the FY 1972 Program due to a reduction in procurement of all line items, except the 10,000 lb. adverse terrain, fork-lift truck.

Base Maintenance Support.—The reduction in the level of funding for FY 1973 in this category is less severe than the reduction reflected for other categories in this budget activity. This is the result of having to maintain the level of funding for spares and repair parts at a rate approximately that of prior years. This is necessary in anticipation of increased activity in the maintenance of vehicles over the age and mileage limitations.

General SNAVELY. The total vehicular equipment request for fiscal year 1973 is $32.3 million (includes $0.5 million for VNAF support). This is a decrease of $17.5 million from fiscal year 1972.

This budget estimate provides for replacing 3,802 vehicles of the projected inventory of 111,000. There will still be 23,300 pieces of equipment overdue for replacement.

(Table II follows:)

TABLE II.—*Department of the Air Force, Vehicular Equipment, fiscal year 1973 program estimate*

[In millions of dollars]

Passenger carrying vehicles	$5.8
Cargo and utility vehicles	4.4
Special purpose vehicles	9.0
Firefighting equipment	3.2
Materials handling equipment	3.8
Base maintenance equipment	6.1
Total program	32.3

VEHICLE INVENTORY REDUCTION

General SNAVELY. We have initiated actions to reduce the vehicle inventory and improve utilization. This has been accomplished through more positive direction to vehicle authorization/utilization boards, explicit instructions to vehicle control officers, and improved maintenance and operations management through command emphasis.

SEA VEHICLES

Chairman ELLENDER. Have you the actual figures that are proposed to purchase munitions and vehicles and anything else in this budget for Southeast Asia?

General SNAVELY. Yes, sir.

Chairman ELLENDER. Do you have that separate?

General SNAVELY. Yes, sir.

Chairman ELLENDER. We may be questioned on that. I would like to have that in the record.

General SNAVELY. We will provide that for you.

Chairman ELLENDER. For each country.

General SNAVELY. Yes, sir.

Chairman ELLENDER. South Vietnam, Laos, Cambodia, Thailand, any items you have for Southeast Asia.

General SNAVELY. It is primarily Vietnam. We have it, sir. We can provide it.

(The information follows:)

SEA PURCHASES BY COUNTRY, FISCAL YEAR 1973

Munitions and associated equipment:	
Vietnam	162.007
Laos	46.468
Subtotal	208.475
Vehicular equipment:	
Vietnam	0.500
Subtotal	0.500
Electronics and telecommunications equipment:	
Vietnam	0.100
Subtotal	0.100
Appropriation summary:	
Vietnam	162.607
Laos	46.468
Thailand	-------
Total	209.075

ITEMS FOR THAILAND

Chairman ELLENDER. Would the items earmarked for Thailand really be utilized in and for South Vietnam?

General SNAVELY. No; the material that is marked for Vietnam is intended for Vietnam.

Chairman ELLENDER. Do we transport material from Thailand?

General SNAVELY. No, sir. Thailand is in the (MAP) military assistance program. This is handled under Air Force-funded programs. Both Laos and Vietnam are in a different program category.

Chairman ELLENDER. The military still provides the needs for all of Southeast Asia except Thailand; is that right?

General SNAVELY. Basically, I would say that is correct.

General DELUCA. That is correct. The military assistance service-funded program is responsible for the support of South Vietnam, and Laos only in fiscal year 1973.

PASSENGER-CARRYING VEHICLES

Chairman ELLENDER. Please provide a P–1 type tabulation setting out the items included in the passenger-carrying vehicle category for fiscal years 1971 and 1972 and the request for fiscal year 1973.

General SNAVELY. Yes, sir.

(The information follows:)

Line No.	Item nomenclature	Identification code	Fiscal year 1973 unit cost	Millions of dollars					
				Fiscal year 1971		Fiscal year 1972		Fiscal year 1973	
				Quantity	Cost	Quantity	Cost	Quantity	Cost
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	PASSENGER CARRYING VEHICLES								
82	Sedan, light, 4-door, 4 by 2	A	2,451	608	1.5	292	0.7	600	1.4
83	Station wagon, 9-passenger, 4 by 2	A	2,859	438	1.2	345	1.0	350	1.0
84	Bus, 28-passenger	A	6,495			3	(1)	275	1.8
85	Truck, ambulance, field, 4 by 4	A	7,960	78	.9	93	.7	89	.7
86	Ambulance, auto	A	8,885	79	.7	23	.2	30	.3
87	Items less than $500,000	A		78	.6	108	1.3	83	.6
	Subtotal			1,281	4.9	864	3.9	1,427	5.8

General SNAVELY. $5.8 million is requested for passenger-carrying vehicles; sedans, station wagons, buses, and ambulances. This is an increase of $1.9 million over the fiscal year 1972 program.

The increase will provide replacement for 561 vehicles which were deferred from the fiscal year 1972 program because of higher priority requirements for funds.

NEW VEHICLES

Chairman ELLENDER. I note in the proposed budget language on page 309 of the appendix to the budget that, of these 1,427 passenger vehicles you are requesting, 1,425 are for the replacement of existing vehicles. Please comment on the two vehicles that are not for replacement.

General SNAVELY. Yes, sir. The Air Training Command requires two additional 41-passenger buses at Lackland Air Force Base to provide transportation to the Air Force Band which is required to make an increased number of appearances in support of Project Volunteer.

Chairman ELLENDER. The request includes funds for the procurement of six medium sedans at not to exceed $3,000 each. Please comment on the requirement for these six medium sedans, and indicate how many of these six are for replacement of existing vehicles.

General SNAVELY. Sir, these six medium sedans are required to replace six 1967 Mercurys which have exceeded their economic life.

Senator YOUNG. On line 84 of the P–1 exhibit, there is a request of $1.8 million for the procurement of 275 28-passenger buses at a cost of $6,495 each. Please comment on the requirements for these buses.

General SNAVELY. These buses are required to replace buses which have exceeded their life expectancy and are requiring excessive expenditures of maintenance funds to remain in operation. These are used to transport dependent children to and from school and military and civilian personnel on official duty.

CARGO AND UTILITY VEHICLES

Chairman ELLENDER. Please provide a P–1 type exhibit setting out the items included in the request of $4.4 million for cargo and utility vehicles for fiscal year 1973, along with the items included in the programs for fiscal years 1971 and 1972.

General SNAVELY. I will furnish that, Mr. Chairman.

(The information follows:)

Line No.	Item nomenclature	Identification code	Esscal year 1973 unit cost	Millions of dollars					
				Fiscal year 1971		Fiscal year 1972		Fiscal year 1973	
				Quantity	Cost	Quantity	Cost	Quautity	Cost
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	CARGO AND UTILITY VEHICLES								
88	Truck, stake and platform, 1½-ton, 4 by 2.	A	2,920	282	0.8	99	0.3	150	0.4
89	Truck, cargo-utility, ¼-ton, 4 by 4.	A	3,775	221	.8	119	.4	150	.6
90	Truck, pickup, ½-ton, 4 by 2	A	2,348	2,065	4.5	1,500	3.5	400	1.0
91	Truck, panel, multistop, 1-ton, 4 by 2.	A	3,044	761	2.4	700	2.1	175	.5
92	Truck, cargo-utility, ½-ton, 4 by 2, 4-door.	A	2,964	603	1.9	264	.8	150	.4
93	Truck, dump, 2½-ton, 4 by 2	A	2,939	146	.7	73	.2	50	.1
94	Truck, carryall, 4 by 2	A	2,620	190	.6	102	.3	75	.2
95	Items less than $500,000	A			2.3		1.3		1.2
96	Truck, utility, ¼-ton, M151A2					140	.5		
97	Truck, tractor, 5-ton			123	.6	123	.6		
	Subtotal				14.6		10.0		4.4

[1] Under $50,000.

General SNAVELY. $4.4 million is requested for cargo and utility vehicles to replace like vehicles which have outlived their economical life. The reduction of $5.6 million from the fiscal year 1972 program is due to reduced requirements for pickup and panel trucks.

REPLACEMENT VEHICLES

Chairman ELLENDER. This request of $4.4 million for cargo and utility vehicles includes funds for 1,150 vehicles. How many of these are for the replacement of existing vehicles, and comment on the need for new vehicles being requested.

General SNAVELY. Yes, sir. We are replacing the total 1,150 vehicles in this category. We sometimes buy an improved model to replace an outmoded model; however, we do so only after the outmoded version has worn out and then only on a replacement basis.

Senator YOUNG. $1 million is requested for the procurement of 400 ½-ton pickup trucks at a cost of around $2,300 per truck. How many

of these trucks do you have in your inventory, and just what is the need for these 400 you are requesting?

General SNAVELY. Sir, we now have 15,543 of these trucks in our inventory. The 400 we are requesting are to replace vehicles which are worn out.

Senator YOUNG. Please comment on the need for the 50 2½-ton trucks you are requesting.

General SNAVELY. Yes, sir. Our inventory of 2½-ton dumptrucks contains over 400 which should be replaced because of excessive age, mileage or repair costs. The 50 we are requesting will replace a portion of these.

General ELLENDER. Give us several examples of the types of equipment you expect to procure with the $1.2 million requested for "Items less than $500,000."

General SNAVELY. Our planned procurements in fiscal year 1973 call for such items as cargo carrier snow trucks; 5-ton wrecker trucks; 2½-ton, 6-by-6 cargo trucks, 2½-ton chassis trailers; and the 2½-ton van truck.

SPECIAL-PURPOSE VEHICLES

Chairman ELLENDER. Please provide a P–1-type tabulation for the $9 million requested for special-purpose vehicles, along with the programs for fiscal years 1971 and 1972.

General SNAVELY. I have that information, Mr. Chairman.

(The information follows:)

Line No.	Item nomenclature	Identification code	Fiscal year 1973 unit cost	Millions of dollars					
				Fiscal year 1971		Fiscal year 1972		Fiscal year 1973	
				Quantity	Cost	Quantity	Cost	Quantity	Cost
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	SPECIAL-PURPOSE VEHICLES								
98	Truck, telephone maintenance 2½ ton, 4 by 4.	A	34,750	36	1.2	24	0.8	10	0.3
99	Truck, tank, fuel 5,000 gallon, R-9.	A	34,780	57	1.9	93	3.2	150	5.2
100	Truck, demineral water, 2,600 gallons A2.	A	32,928	24	.8	40	1.4	20	.7
101	Tractor, A/C tow, MB-4	A	11,258	60	.7	75	.8	25	.3
102	Tractor, tow, AGE, wheeled	A	3,999	56	.3	339	1.4	100	.4
103	Tractor, wheeled, IW-55	A	2,951	135	.4	305	.9	100	.3
104	Truck, refuse, self-contained	A	26,767	5	.1	23	.6	10	.2
105	Truck, tank, 1,500 gallons R-8	A	15,888	54	.9	30	.5	10	.2
106	Truck, hi-lift, 9 ton	A	23,484	24	.6	12	.3	3	.1
107	Items less than $500,000	A			2.4		1.9		1.3
108	Truck, tank, 1,200 gallons 4 by 2			70	.7				
	Subtotal				10.0		11.8		9.0

General SNAVELY. For special-purpose vehicles, $9 million is required to replace wornout vehicles. This is $2.8 million less than the fiscal year 1972 program. The largest part of the requirement ($5.2 million) is for the R–9 aircraft refueling truck which is replacing 20-year-old vehicles.

TELEPHONE MAINTENANCE TRUCKS

Chairman ELLENDER. Just what is the need for the 10 telephone maintenance trucks you are requesting?

General SNAVELY. Sir, the 10 2½-ton telephone trucks we are requesting are required to replace wornout and overaged trucks of the same type.

Senator YOUNG. You referred to the $5.2 million requested for the R–9 aircraft refueling truck. What is the total estimated cost of these trucks?

General SNAVELY. Sir, the unit cost of this truck is $34,780. We are proposing to procure 150 in fiscal year 1973 for a total cost of $5,217,000.

Senator YOUNG. I note that 57 of these trucks were procured in fiscal year 1971 and 93 in fiscal year 1972, and as indicated earlier, you are requesting 150 for fiscal year 1973. How many of these trucks do you plan to buy, and are they replacing the older trucks on a 1-for-1 basis?

General SNAVELY. Sir, we are proposing to procure 150 of these trucks per year beginning in fiscal year 1973 and extending through fiscal year 1977. Our current contract—fiscal year 1969 through 1973 funds—will permit us to replace the F–6 and MJ–1 refueling trailers on a one-for-one basis. The F–6's and MJ–1's were originally procured for the B–36 aircraft and have exceeded their economical life. In addition to replacing the trailers, our requirement for tractors to pull the trailers will also be reduced. Our follow-on program of 150 per year in fiscal year 1974 will permit us to begin replacing R–2 refuelers which were procured in the 1959–62 time period. We have over 750 of the R–2's in our inventory which we will replace on a 1-for-1 basis.

Chairman ELLENDER. Give us several examples of the types of items you expect to procure with the $1.3 million requested for "Items less than $500,000."

General SNAVELY. Items planned for procurement in fiscal year 1973 include the 45- and 65-foot hi-reach truck, refuse trucks, the ¾ ton 4 by 2 maintenance truck, and the 1,200 gallon, 4 by 4 tank truck.

FIREFIGHTING EQUIPMENT

Chairman ELLENDER. Please provide a P–1 type tabulation for the $3.2 million requested in fiscal year 1973 for firefighting equipment, along with the items included in the program for fiscal years 1971 and 1972.

General SNAVELY. I will provide that information, Mr. Chairman.

(The information follows:)

Line No.	Item nomenclature	Identification code	Fiscal year 1973 unit cost	Millions of dollars					
				Fiscal year 1971		Fiscal year 1972		Fiscal year 1973	
				Quantity	Cost	Quantity	Cost	Quantity	Cost
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	FIREFIGHTING EQUIPMENT								
109	Truck, crash, P–4	A	92,500	56	5.6	80	7.5	16	1.5
110	Truck, pumper, P–8 (530–B)	A	33,978	40	1.2	20	.7	10	.3
111	Truck, pumper, P–12 (CL–750)	A	27,762	37	.8			40	1.1
112	Truck, fire, P–10	A	15,634			50	.8	10	.2
113	Truck, crash, P–13	A	3,875	75	.9	50	.5	20	.1
114	Items less than $500,000						.1		
	Subtotal				8.5		9.6		3.

General SNAVELY. The requirement for firefighting equipment is $3.2 million, which is $6.4 million less than last year. This program includes both aircraft crash and rescue trucks and structural firefighting equipment. Six million dollars of the difference is related to a stretchout in the production contract schedule of one item, the P–4 truck.

P–4 FIRETRUCK

Chairman ELLENDER. With respect to this P–4 firetruck, I note that you are requesting $1.5 million for the procurement of 16 of these trucks at a unit cost of approximately $92,500. Fifty-six of these trucks were procured in fiscal year 1971, and the program for fiscal year 1972 includes funds for 80. You have referred to a stretchout in the production contract schedule for this truck. Just what is the basis for this stretchout, and what does this do to the total cost of this procurement program?

General SNAVELY. Sir, the original programed production of this truck was delayed because of engineering problems experienced with the test models including late delivery of the water tank from a vendor to the manufacturer. Necessary production continuity will be maintained with fiscal year 1973 funds for only 16 units. This has had and will have no effect on the total cost of this procurement program.

Chairman ELLENDER. What is your total requirement for the P–4 crash truck, how many have been funded through fiscal year 1972, and do you have a schedule for the procurement of the balance?

General SNAVELY. Yes, sir. Our total requirement for these trucks is 530. We have funded a total of 146 through fiscal year 1972. The 80 in fiscal year 1972 together with 16 in fiscal year 1973 constitute the first full year of production—96 units. We propose to procure the remainder at 96 per year—a production rate of eight per month.

Senator YOUNG. You are requesting funds for the procurement of five different types of firefighting trucks. Please comment on each of these.

General SNAVELY. Yes, sir. Our firetruck inventory actually consists of vehicles dedicated to two types of requirements: brush/structural firefighting and aircraft crash fire/rescue. The P–8 and the P–12 are brush/structural firefighters.

The P–8 is a four-wheel drive vehicle which enables it to traverse rough terrain to approach brush fires. It is capable of pumping water from lakes, wells, and hydrants. It also contains a 600-gallon water tank.

The P–12 has two-wheel drive and is primarily a structural firefighter. It pumps water primarily from hydrants, but also has a 300-gallon water tank.

The P–13 is a ramp patrol vehicle. It provides standby service for aircraft during potentially dangerous servicing and maintenance operations involving fueling, defueling, fuel spills, weapons, rockets and missile handling and emergencies or operational incidents of a minor nature. It is a commercial pickup truck with two-wheel drive and contains a 40-gallon bromochloromethane unit and a 500-pound liquid carbon dioxide extinguishing unit plus hose reels and handlines.

The P–10 is a crash rescue vehicle. It arrives with the first crash vehicle and carries equipment necessary to extract personnel. It is a commercial pickup with four-wheel drive and a large engine. It carries no firefighting capability except hand fire extinguishers. Equipment carried includes a resuscitator, gasoline powersaw kit, set of portable floodlights, winch, portable generator, folding ladder, axes, first aid kits, oxygen masks, and blowers for cooling aircraft tires.

The P–4 is an aircraft crash firetruck. It is designed to provide very quick response and fire suppression/extinguishing capability. It is powered by a diesel engine, has six-wheel drive, a closed cab, a 1,500-gallon water tank, and is capable of pumping 1,100 gallons of water/foam per minute. It is transportable in a C–130 aircraft.

The quantities requested in fiscal year 1973 are strictly for replacements. The vehicles being replaced have all exceeded their economic life.

MATERIALS HANDLING EQUIPMENT

Chairman ELLENDER. Please provide a P–1 type tabulation setting out the items included in the $3.8 million requested for materials handling equipment, along with the item included in the program for fiscal years 1971 and 1972.

General SNAVELY. I will provide that for the record, Mr. Chairman.

(The information follows:)

Line No.	Item nomenclature	Identification code	Fiscal year 1973 unit cost	Millions of dollars					
				Fiscal year 1971		Fiscal year 1972		Fiscal year 1973	
				Quantity	Cost	Quantity	Cost	Quantity	Cost
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	MATERIALS HANDLING EQUIPMENT								
115	Truck, A/C loader, 40K	A	72,699	48	3.3	32	2.3	15	1.1
116	Truck, F/L 6,000 pound, GED, PT.	A	6,621	144	1.0	124	.8	60	.4
117	Truck, F/L 10,000 pound, H-10	A	15,004	130	2.0	49	.7	25	.4
118	Truck, F/L 15,000 pound, GED, PT.	A	10,818	61	.7	61	.7	25	.3
119	Tractor, warehouse, 4,000 pound	A	3,525	233	.8	233	.8	100	.3
120	Truck, F/L 10,000 pound, A/T	A	24,137	28	.7	13	.4	15	.4
121	Items less than $500,000	A			2.1		1.7		.9
	Subtotal				10.6		7.4		3.8

General SNAVELY. $3.8 million is required for materials handling equipment. This is a reduction of $3.6 million from last year and is due to the general phasedown of activities. These funds will provide for replacement of wornout forklifts, aircraft loading trucks, and other warehouse vehicles.

REPLACEMENT EQUIPMENT

Chairman ELLENDER. Now, as I understand your statement, these funds are requested to replace existing equipment, and no increases in your inventory levels are involved. Am I correct about this?

General SNAVELY. Yes, sir; that is correct. In all cases, these items will only be for replacement purposes.

Chairman ELLENDER. I note that $1.1 million is requested for the procurement of 15 40,000-pound aircraft loader trucks. Please describe this item and comment on the need for the 15 you are requesting for fiscal year 1973.

General SNAVELY. Yes, sir. This loader is self-propelled, has a 40,000-pound capacity, an enclosed, winterized cab, and a cargo platform which is adjustable in height from 40 to 156 inches. It will accommodate five 108 inch by 88 inch pallets or 10 54 inch by 88 inch pallets. It is transportable in the C–130 aircraft and is used at major air terminals for loading and unloading air cargo. It services both low and high floor cargo aircraft. Again, this is a replacement program. We are replacing 25,000-pound aircraft loaders which accommodate only three pallets. The replacement program will be on less than a one-for-one basis.

Senator YOUNG. Give us several examples of the types of items you intend to procure with the $900,000 you are requesting for "Items less than $500,000."

General SNAVELY. Our planned procurements in fiscal year 1973 call for such items as 4,000-pound forklift trucks, the 10,000-pound warehouse crane, the 6,000-pound electric forklift, and minor replacement items.

BASE MAINTENANCE SUPPORT

Chairman ELLENDER. Provide a P–1-type tabulation, setting out the various items included in the request for $6.1 million for base maintenance support, along with the items included in the programs for fiscal years 1971 and 1972.

General SNAVELY. I will provide that information, Mr. Chairman.

(The information follows:)

Line No.	Item nomenclature	Identification code	Fiscal year 1973 unit cost	Millions of dollars					
				Fiscal year 1971		Fiscal year 1972		Fiscal year 1973	
				Quantity	Cost	Quantity	Cost	Quantity	Cost
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	BASE MAINTENANCE SUPPORT								
122	Crane, track mounted, 20 ton	A	42,042	30	1.3	12	0.5	10	0.4
123	Cleaner, vacuum, runway	A	20,243	49	1.0	43	.9	20	.4
124	Distributor, water, 1,500 gallons	A	13,992	58	.8	25	.3	10	.2
125	Items less than $500,000	A			3.1		2.1		.8
126	Spares and repair parts	A			4.2		2.8		3.8
127	Modifications	A			.1		.5		.5
	Subtotal				10.5		7.1		6.1

General Snavely. Base maintenance support requires $6.1 million. a reduction of $1.0 million from last year. Reduced requirements for equipments of $2 million are partially offset by an increase of $1 million in spares requirements deferred from the fiscal year 1972 program.

20-TON TRUCK CRANES

Chairman Ellender. You are requesting $400,000 for the procurement of 10 20-ton truck-mounted cranes. Give us some examples of your uses for this particular piece of equipment, and tell us if these 10 cranes you are requesting are for the replacement of existing cranes.

General Snavely. Yes, sir. This too is a replacement program. This item is equipped with a 1½ cubic yard shovel, backhoe and clamshell bucket. It is used for handling supplies and for earthmoving operations. It is also used to change engines on aircraft equipped with reciprocating engines.

Senator Young. Comment on your need for the 20 runway vacuum cleaners for which you are requesting $400,000.

General Snavely. Yes, sir. The 20 runway vacuum cleaners are requested for replacement purposes. These items are used for cleaning runways to prevent foreign object damage to jet engines and aircraft tires. The requested quantity will replace 13-year-old sweepers which have exceeded their economical life.

Senator Young. Give us four or five examples of the types of items you will procure with the $800,000 requested for "Items less than $500,000."

General Snavely. Items planned for procurement in fiscal year 1973 include mechanized graders, 8½- and 10-ton cranes, concrete mixers, and minor replacement items.

Senator Young. Comment on the request for $3.8 million for the procurement of spares and repair parts.

General Snavely. Yes, sir. These dollars will buy spare parts to support our vehicle inventory. We procure initial spares to support new vehicles entering the inventory. These consist of parts unique to the new vehicle and which are required for its maintenance and are usually procured on the same contract with the equipment item to be supported. We also procure "replenishment" spares to replace stocks of initial spares which have been used. Requirements for replenishment spares are based on demand experience.

MODIFICATIONS

Chairman Ellender. Just what is involved in the request for $500,000 for modifications?

General Snavely. Sir, modifications are performed on vehicles to eliminate safety hazards, correct service revealed deficiencies and provide added capability for the vehicle.

FISCAL YEAR 1972 REPROGRAMINGS

Chairman Ellender. Please comment on any significant reprograming increases or decreases submitted to the Congress to date involving the vehicular equipment program for fiscal year 1972, and you might

also comment on any further fiscal year 1972 reprogramings contemplated.

General DE LUCA. There has been no major reprograming increases or decreases involving the vehicular equipment program during fiscal year 1972 and none are contemplated at this time.

REDUCTION IN VEHICLE REQUIREMENT

Chairman ELLENDER. General, have you been able to reduce your total requirement for vehicles as the Air Force becomes smaller, and the level of operations in Southeast Asia decreases?

General SNAVELY. There has been a substantial reduction in our total inventory of vehicles. In the last 3 years, we reduced the total authorization by about 15,000 vehicles, from a level of about 131,000 to 116,000.

Chairman ELLENDER. What other factors are involved in this decrease?

General SNAVELY. Part of it is due to leasing vehicles for recruiters. Part of it is much emphasis on controlling the authorization of vehicles and utilization of vehicles. The consequences of the two actions would seem to account for the bulk of the reductions.

ELECTRONICS AND TELECOMMUNICATIONS EQUIPMENT

Chairman ELLENDER. General, before you proceed with your discussion of the request for $236.2 million for the activity entitled "Electronics and Telecommunications Equipment," I want to include in the record at this point pages 126 through 129 of the justification.

(The information follows:)

	Thousands
Direct program requirements—fiscal year 1973	$236,200
Direct program requirements—fiscal year 1972	245,200
Direct program requirements—fiscal year 1971	270,457

PART I.—PURPOSE AND SCOPE

Activity: Electronics and Telecommunications Equipment.

This budget activity provides for procurement, engineering and installation of items of equipment and modification kits, peculiar test and maintenance equipment for electronics and telecommunications systems, sub-systems, and supporting activities required for effective command and control of and communication with the forces, wherever deployed throughout the world. Provision is also made for the multitude of support functions incidental to the world-wide operations of the Air Force, such as weather observation and forecasting, enroute and terminal navigational and landing guidance and assistance, intelligence, and security of Air Force activities, facilities and personnel. The broad spectrum of procurement encompasses items such as communications and navigational radio equipment, landline communications equipment, detection and surveillance radars, communications security devices, data processing and display equipment, meteorological equipment, peculiar test equipment utilized in the operation and maintenance of these systems, and the spares, repair parts, components, and modification kits needed for assurance of effective and continuous operations.

PART II.—JUSTIFICATIONS OF FUNDS REQUESTED

The programs identified in this estimate are required to continue current efforts and to meet budget year programmed objectives for support of all weapon systems in the Air Force program. These programs are aligned with the Air Force concepts and philosophy of programming, funding, procuring, and managing on a weapon and weapon support system basis. Program requirements emphasize

needs for materiel under each of the currently programmed electronic/telecommunications systems which provide the necessary support to Air Force organizations and units in the control of the forces.

The following is a summary of past, current, and budget year program requirements distributed among the major systems and prime elements comprising this activity:

DIRECT PROGRAM REQUIREMENTS

[In thousands of dollars]

	1971	1972	1973
1. Cryptographic (Communications Security and Signal Intelligence) equipment	15,575	19,038	29,587
2. Traffic control and landing system (404–L)	19,221	28,298	35,408
3. Tactical air control system improvements (485–L)		19,400	12,770
4. Weather observation and forecast system (433–L)	7,160	1,600	2,975
5. Aerospace defense	31,900	39,000	31,700
6. SAC command and control networks (436–M)	500	1,995	7,950
7. Cheyenne Mountain complex (427–M)		4,440	7,917
8. Special communications/electronics projects	42,109	31,706	19,218
9. Air Force communications	7,792	11,437	7,546
10. Defense Communications Agency programs	15,411	2,500	8,645
11. Organization and base	53,509	45,688	41,119
12. Industrial facilities	1,786	2,000	2,000
13. Modifications	32,043	31,144	29,365
14. Completed electronics programs	43,451	6,954	
Total, direct program requirements	270,457	245,200	236,200

The 1973 program requirements reflect a decrease of approximately $9.0 million as compared with the 1972 program requirements. Significant adjustments as compared with the 1972 program, are discussed in the following:

Cryptographic Equipment: $21.8 million and $7.8 million, respectively, are requested for Communications Security equipment and Signal Intelligence equipment. This program is devoted to procurement and installation of devices for encryption and decryption of communications, primarily for ensuring security of voice, teletype and data communications.

Procurement is continued for a family of space-oriented cryptographic systems [deleted].

[Deleted.]

Procurement is also continued for the cryptographic equipment and ancillaries for the Air Force portion of the Department of Defense AIMS (MARK XII). This equipment satisfies a requirement for a rapid, secure, positive aircraft identification system.

Requirements for Signal Intelligence equipment provide for procurement of special communications and electronic intelligence equipment which is utilized by the USAF Security Service [deleted].

[Deleted.]

System 404–L (Traffic Control and Landing Equipment).—This system provides for orderly upgrading of command system navigational aids and air traffic control equipment common to the DOD mission and not provided by the FAA. The $35.4 million requested for FY 1973 provides for the procurement of sixteen AN/TPN–19 Mobile Traffic Control Radars and other equipment as covered on Page 140 of the Data Sheets.

System 485–L (Tactical Air Control System Improvements).—The fiscal year 1973 program continues efforts initiated in fiscal year 1972 to fully automate the Tactical Air Control System. Of the $12.8 million requested, $2.1 million is for engineering support. Page 141 of the Data Sheets provides additional information on the mission of the program.

System 433–L (Weather Observation and Forecast System).—This system provides for the acquisition of a variety of weather equipment including wind measuring equipment, weather plotters, weather remoting devices, facsimile equipment and so forth. The fiscal year 1973 program provides for the funding of five tactical weather systems. Page 142 of the Data Sheets provides additional information on the mission of the program.

Aerospace Defense.—The major procurement effort for this classified program is programmed in fiscal years 1971, 1972 and 1973. Out-year programs required to complete acquisition are considerably lower.

SAC Command and Control Networks (436-M).—The fiscal year 1973 program provides for procurement of a computer and replacement of aging and hard-to-maintain equipment. Page 144 of the Data Sheets provides additional information on the mission of the program.

Cheyenne Mountain Complex (427-M).—This program provides the command control and communications to support HQ CONAD/NORAD and the Spacetrack Center at the Cheyenne Mountain Complex. Funds are being reprogrammed to cover the 1972 requirement which was not included in the President's Budget. Funds required in fiscal year 1972 and fiscal year 1973 are required to upgrade the command, control and communications facilities of NORAD. Page 145 of the Data Sheets provides additional information on the equipment involved.

Special Communications-Electronics Projects.—This program is an aggregation of special projects which are not system-oriented. The major item in the fiscal year 1973 program is $9.0 million for Cobra Dane, a multi-object Tracking Radar. Additional information on this item and other requirements in this category are covered in Pages 146 through 149 of the Data Sheets.

Air Force Communications.—This program provides communications systems and facilities germane to the Air Force. Principal 1973 requirements provide for continued support of the Programs Communications Support Program (PCSP)-Air Force and CRITICOMM. Also included are provisions for the replacement of obsolete and logistically unsupportable USAF Aeronautical Ground Station communications equipment under the nickname of "SCOPE PATTERN." Details relating to mission and funding of the PCSP and CRITICOMM programs are covered in Pages 150 and 151 of the Data Sheets.

Defense Communications Agency Program.—This program provides support for components of the Defense Communications System. The increase in the FY 1973 program is essentially associated with the requirements for the National Military Command Center, the Wideband Systems upgrade, and the Defense Communications Satellite Programs. These are discussed in detail on Pages 152 through 155 of the Data Sheets.

Organization and Base.—This program provides for organizational, base level communications and electronics mission training equipment for the regular forces, Air National Guard and Reserve forces, and the spares and repair parts for this total budget activity. Details relating to major line items and funding requirements are covered on Pages 156 through 159 of the Data Sheets.

Industrial Facilities.—Page 160 of the Data Sheets describes the program and elaborates on individual item funding requirements in FY 1973.

Modifications.—The major item in the FY 1973 program is the Traffic Control and Landing System (404-L) modifications, which is mainly continuation of the effort to modify the air traffic control radar beacon system as part of the DoD Air Traffic Control and Radar Beacon System/Identification Friend or Foe/MARK XII System (AIMS) Program. This and other major modifications planned in FY 1973 are covered in Pages 161 through 164 of the Data Sheets.

(Table III follows:)

TABLE III.—DEPARTMENT OF THE AIR FORCE ELECTRONICS AND TELECOMMUNICATIONS EQUIPMENT, FISCAL YEAR 1973 PROGRAM ESTIMATE

[In millions of dollars]

Communications security equipment	$21.8
Signal intelligence equipment	7.8
Electronics programs	98.7
Special communications electronics projects	19.2
Air Force communications	7.6
Defense communications agency programs	8.6
Organization and base	41.1
Industrial facilities	2.0
Modifications	29.4
Total program	236.2

General SNAVELY. The electronics and telecommunications program request totals $236.2 million to procure communications security equip-

ment, cryptologic equipment, communications-electronics equipment, modifications to in-use equipment, and for industrial facilities. This is a reduction of $9 million from the fiscal year 1972 program of $245.2 million.

COMMUNICATIONS SECURITY EQUIPMENT

Chairman ELLENDER. Please provide a P–1 type tabulation setting out each of the items included in the request of $21.8 million for the procurement of communications security equipment, along with the items included in the programs for fiscal years 1971 and 1972.

General SNAVELY. I will provide that information, Mr. Chairman.

(The information follows:)

Line No.	Item nomenclature	Identification code	Fiscal year 1973 unit cost	Millions of dollars: Fiscal year 1971 Quantity	Fiscal year 1971 Cost	Fiscal year 1972 Quantity	Fiscal year 1972 Cost	Fiscal year 1973 Quantity	Fiscal year 1973 Cost
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	COMMUNICATIONS SECURITY EQUIPMENT (COMSEC)								
128	Space systems	A			6.7		5.0		8.3
129	DOD AIMS (Mark XII) program	A					3.6		3.5
130	HN–12	A	2,500			90	.4	238	.6
131	TSEC/KI–22	A	5,000					200	1.0
132	TSEC/KG–34	A	8,800					141	1.2
133	TSEC/KG–38	A	4,400					119	.5
134	TSEC/KY–65	A	8,000					104	.8
135	TSEC/KY–75	A	8,000					200	1.6
136	Items less than $500,000	A			.2				.2
137	Spares and repair parts	A			2.5		3.0		3.8
138	Modifications	A			.1		.4		.3
	Subtotal				9.5		12.4		21.8

General SNAVELY. This year's program reflects an increase of $9.4 million from fiscal year 1972. Of the $21.8 million requested in fiscal year 1973, for the communications security equipment program, $10.3 million will be used to procure crypto equipment and associated spares needed to protect telemetry and command and control data communication links to and from space vehicles, $4.4 million will procure equipment and spares to provide a capability to automatically identify United States and friendly military aircraft, as opposed to hostile aircraft. The remaining $7.2 million will be used to obtain equipment and spares needed to secure tactical and strategic command and control communications circuits.

SIGNAL INTELLIGENCE EQUIPMENT

Chairman ELLENDER. Provide a P–1 type tabulation setting out the various items included in the $7.8 million requested for signal intelligence equipment, along with the items included in the programs for fiscal years 1971 and 1972.

General SNAVELY. I have that information here, Mr. Chairman.

(The information follows:)

Line No.	Item nomenclature	Identification code	Fiscal year 1973 unit cost	Millions of dollars					
				Fiscal year 1971		Fiscal year 1972		Fiscal year 1973	
				Quantity	Cost	Quantity	Cost	Quantity	Cost
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	SIGNAL INTELLIGENCE EQUIPMENT (SIGINT)								
139	Ketchum	A	761,333					3	2.3
140	ROMO II	A	765,000					3	2.3
141	Windjammer	A	680,000					1	.7
142	Sentinel pay	A							.5
143	Items less than $500,000	A			.3		.9		1.4
144	Spares and repair parts	A			.8		.6		.6
145	EARS phase II					2	1.9		
146	AN/GYQ-7 Catfish					2	1.4		
147	AG-22 improved system						1.7		
148	Roma Wondra				2.5				
149	Air Force special project				.9				
150	Guardrail				.5				
151	Modifications				.1		.1		
	Subtotal				6.1		6.6		7.8

General SNAVELY. Signal intelligence equipment.

The $7.8 million for signal intelligence equipment in fiscal year 1973 will provide three special communications and electronic intelligence systems which are for worldwide collection, processing, and reporting of intelligence information.

These systems are designed to respond to national and theater critical intelligence requirements, improve collection capability, offset manpower reductions and operating costs, and provide a more timely and reliable product to the theater and national level users.

Ketchum provides technical improvement in collection through the automation of many functions now performed manually; Windjammer increases productivity through improved station management techniques; and, Romo II integrates the air situation picture into a single display system for timely identifications of friendly and hostile aircraft. Sentinel Pay, a unique highly classified intelligence project, requires funds to update obsolete equipment.

ELECTRONICS PROGRAM

Chairman ELLENDER. Provide a P–1 type tabulation setting out the items in the programs for fiscal years 1971 and 1972 and the request for fiscal year 1973 for electronics programs.

General SNAVELY. I will provide that information, Mr. Chairman.

(The information follows:)

Line No.	Item nomenclature	Identification code	Fiscal year 1973 unit cost	Millions of dollars					
				Fiscal year 1971		Fiscal year 1972		Fiscal year 1973	
				Quantity	Cost	Quantity	Cost	Quantity	Cost
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	120)
	ELECTRONICS PROGRAMS								
152	Traffic control and landing (404–L).	A/B			19.2		28.3		35.4
153	Tactical air control system improvement (485–L).	A					19.4		12.8
154	Weather observation and forecast system (433–L).	B			7.2		1.6		3.0
155	Aerospace defense	A			31.9		39.0		31.7
156	SAC command and control networks (436–M).	A			.5		1.9		7.9
157	Cheyenne Mountain complex (427–M).	A					4.5		7.9
158	Over-the-horizon radar (440–L)				6.0		5.5		
159	Tactical air control system (407–L).				35.4		1.5		
160	USSTRICOMM system (492–L)				.6				
161	Emergency rocket communications system (494–L).				1.5				
	Subtotal				102.3		101.7		98.7

General SNAVELY. The fiscal year 1973 requirement for electronics programs totals $98.7 million and is a reduction of $3 million from the fiscal year 1972 program.

The traffic control and landing system (404–L) requires $35.4 million for procurement of equipment to support the air traffic control mission of the Air Force which is to insure the safe, orderly, and expeditious movement of aircraft.

$31.8 million of the $35.4 million provides for procurement of the additional 16 AN/TPN–19 mobile air traffic control radars needed to complete the buy program and to replace outdated radars.

The remaining $3.6 million will be used to procure a simulator for training our control tower personnel, new voice recorders, and radio and land line key systems.

TRAFFIC CONTROL AND LANDING SYSTEM

Chairman ELLENDER. The communications data sheet on the traffic control and landing system on page 140 of the justifications will be included in the record at this point.

(The information follows:)

OTHER PROCUREMENT, AIR FORCE

OTHER COMMUNICATIONS DATA SHEET

Service: Air Force.
P–1 line item: 152.
Nomenclature: Traffic Control and Landing (404–L).

Mission/description.—TRACALS combines USAF ground facilities and equipment (fixed and mobile) with personnel and procedures to provide safe, orderly and expeditious aerospace vehicle movements on a world-wide basis. It encompasses those "systems" common to the DOD mission and not provided by FAA in the following major functional areas: enroute and terminal navigation, approach and landing, air traffic control communications and necessary interfaces with other systems (both National and International). TRACALS facilities are located world-wide and include aircraft used to perform flight inspection and service evaluation missions.

[Dollar amounts in millions]

	Fiscal year—					
	1971		1972		1973	
	Quantity	Amount	Quantity	Amount	Quantity	Amount
Cost data		$19.221		$28.298		$35.408

Basis for FY 1973 Request.—The FY 1973 request will provide the funds required to continue the modernization of the outdated and deteriorating equipment used to support the TRACALS mission. FY 1973 funds are required to procure 16 AN/TPN–19 radars ($31.769 million), air traffic control voice recorders ($.920 million), a control tower simulator ($2.000 million) for training, radio keying equipment ($.600 million), and to complete procurement of landline key equipment for control towers ($.119 million).

TOTAL COST

Chairman ELLENDER. What is the total estimated cost of this modernization effort, how much has been funded through fiscal year 1972, and when do you expect to complete the program?

General PASCHALL. The traffic control and landing system (Tracals) (404L) is an open-ended program designed to keep the Air Force abreast of current capabilities to provide for the safe, orderly, and expeditious movement of aircraft, and maintain compatibility with the national airspace system. Tracals were established as a system program in calendar year 1968. Since that time through fiscal year 1972 the program has been funded at $66.2 million. The estimated cost of the program from fiscal year 1973 through fiscal year 1978 is $150 million. This is an estimate since the costs associated with the introduction of the national microwave landing system and any collision avoidance system which may be adopted on a national basis are not definitized. The increasing density of traffic and the complexity of operations within national and international airspace are the driving forces in the modernization program. These factors dictate continued change to maintain a satisfactory level of safety and operational effectiveness.

TACTICAL AIR CONTROL SYSTEM

General SNAVELY. The tactical air control system (TACS) improvement program (485–L) is continuing. The $12.8 million requested for fiscal year 1973 includes software and engineering services to support automation hardware being procured with fiscal year 1972 funds to increase and enhance the capability of the Tactical Air Control Center (TACC).

This facility is the air operations element wherein the employment of Tactical Air Forces is planned, controlled, and coordinated.

Fiscal year 1972 and 1973 funds are buying only preproduction hardware and related software. Production equipment will not be procured until extensive test and evaluation has been completed.

Chairman ELLENDER. The communications data sheet on the tactical air control system improvements appearing on page 141 of the justification will be included in the record at this point.

(The information follows:)

OTHER PROCUREMENT, AIR FORCE

OTHER COMMUNICATIONS DATA SHEET

Service: Air Force.
P–1 line item: 153.
Nomenclature: Tactical air control system improvements (485–L).

Mission/Description.—Provides tactical commanders with all mobile communications and electronics equipment and operating facilities required for the control of deployed tactical forces. With these facilities, the Air Force component commander can effectively execute and control all tactical air operations such as counter air, air interdiction, close air support, tactical air reconnaissance, tactical airlift, and air traffic control. Effective performance of these functions for command communications; detection, tracking surveillance and identification of all aircraft over the battle area; positive and quick reaction support of Army requirements for air support; and readily available support of combat air units upon arrival at a bare base.

[Dollar amounts in millions]

	Fiscal year—					
	1971		1972		1973	
	Quantity	Amount	Quantity	Amount	Quantity	Amount
Cost data				$19.400		$12.770

Basis for FY 1973 Request.—The FY 1973 request includes $10.700 million to procure software for the TACS automation program and $2.070 million for systems engineering support.

COST HISTORY

Chairman ELLENDER. What is the total cost of this improvement program, how much has been funded through fiscal year 1972, and when do you expect to complete this program?

General PASCHALL. The tactical air control system improvement program (485–L) is the acquisition program through which evolutionary materiel improvements are provided the tactical air control systems and related functions in the mobile communications groups

worldwide. These improvements are being implemented on an incremental basis. Since additional materiel that will be needed in the future is expected to be included in this program, the total cost and completion date of this program cannot be established. The program functions as an "open end" program. The total cost of those items currently included in the program is $168.9 million. No funding was associated with this program prior to fiscal year 1972. The program was established in fiscal year 1972 as a follow-on to the 407–L acquisition program which provided the incremental system improvements prior to fiscal year 1972. System improvements included in the improvements program currently extend through fiscal year 1978.

WEATHER OBSERVATION/FORECASTING SYSTEM

General SNAVELY. The weather observation and forecasting system (433–L) provides the resources needed to satisfy weather support requirements of the Air Force and certain operational requirements for weather information for the Army.

The sum of $3 million is required to provide five tactical weather systems (TWS) for the tactical air control system (TACS) and the bare base program. The TWS is a comprehensive weather information system designed to support tactical operations. Transportable modular design permits a variety of system configurations including communication facilities and forecaster and maintenance work areas.

Chairman ELLENDER. The communications data sheet on the weather observation and forecast system appearing on page 142 of the justifications will be included in the record at this point.

(The information follows:)

OTHER PROCUREMENT, AIR FORCE

OTHER COMMUNICATIONS DATA SHEET

Service: Air Force.
P–1 line item: 154.
Nomenclature: Weather observation and forecasting system (433–L).

Mission/Description.—This system provides the resources needed by the Air Weather Service to fulfill operational requirements of Air Force and Army forces for information on the national environment. Included are equipments for observing the weather and for operating forecasting/aircrew briefing facilities at Air Force and Army garrison airfields throughout the world. Mobile equipments are provided to support Tactical Air and Field Army operations. ADPE collects, processes and disseminates environmental information and accomplishes the complex calculations needed to forecast total atmospheric conditions and enables real-time support to appropriate combatant command, Air Force and Army command and control systems. The 433–L Program also satisfies military requirements for services, such as: (1) the observing and forecasting of solar flares and their associated radiation effects on the earth's electromagnetic and near-space atmospheric environments; (2) the statistical study and analysis of climates; and (3) the application of weather modification techniques to military operations.

[Dollar amounts in millions]

	Fiscal year—					
	1971		1972		1973	
	Quantity	Amount	Quantity	Amount	Quantity	Amount
Cost data		$7.160		$1.600		$2.975

Basis for fiscal year 1973 requests.—The FY 73 request provides for the funding of five Tactical Weather Systems that are currently being developed to satisfy requirements for weather services for the Tactical Air Control Systems and the Bare Base Program.

BARE BASE PROGRAM

Senator YOUNG. Is this total request associated with the procurement of equipment to support the Air Force's "bare base" program?

General PASCHALL. Procurement of the tactical weather system is dictated by both the number of tactical air control systems (TACS) and bare base systems programed. The standard tactical weather system, of which a total of six will be procured, is composed of four basic modules. These modules may be employed in various configurations to provide weather support to TACS, operations at a bare base, or to any contingency operation employing TACS or bare base assets.

BALLISTIC MISSILE WARNING

General SNAVELY. The Aerospace Defense Program is a system which will provide the national command authority special information on a timely basis. This program will provide information considerably faster than any other existing system. The FY 1973 funds amounting to $31.7 million will procure equipment for the ground stations.

Chairman ELLENDER. What operational systems do we have now?

General PASCHALL. At the present time, sir, we have the ballistic missile early warning systems; we have the 440–L, forward scatter warning system.

Chairman ELLENDER. Who operates them?

General PASCHALL. The Air Force funds and operates both of these systems.

Chairman ELLENDER. Where are they located?

General PASCHALL. The ballistic missile early warning system or BMEWS has three sites. Fylingdales, England—this is operated by the Royal Air Force, United Kingdom, with a small contingent of American people there. The second BMEWS site is located at Thule Air Force Base in Greenland, operated solely by the U.S. Air Force. The third site is at Clear, Alaska. This, too, is solely operated by the Air Force. These systems have been in being since the late 1950's and early 1960's.

Let me add that the ballistic missile early warning system, BMEWS, provides a minimum of 15 minutes warning for land-launched ICBM's. It has no detection or warning capability against submarine-launched ballistic missiles.

The 440–L system is a group of [deleted] transmitter sites located along the [deleted] and [deleted] receiver sites located in [deleted].

The high frequency radio waves traverse the Soviet land mass and one can see a missile as it goes through the ionosphere in a vertical launch, through a disturbance in the received radio signal. These signals are correlated at a computer center in [deleted]. Both these inputs are fed to the Norad Cheyenne Mountain Space Defense Center.

Senator YOUNG. Is that fairly accurate?

General PASCHALL. The 440–L system is good against multiple launches, providing us warning within [deleted] minutes of such a launch. It is less reliable against single launches.

BMEWS, of course, can see all ICBM's except submarine launched systems.

The other warning system that we have in being today, which has just become operational, can see the submarine-launched missile system. This consists of some modified aircraft control and warning radars along the East and West Coast. These are modified to be able to see SLBM's launched from within [deleted] miles of the coast.

WARNING OF LAND-LAUNCHED AND SUBMARINE-LAUNCHED ICBM'S

Chairman ELLENDER. Now this one you are talking about at the bottom of the page is a new one?

General PASCHALL. This is a new system.

Chairman ELLENDER. This is in addition to all the systems you have now?

General PASCHALL. Yes, sir. This one will provide very early warning—that is, almost real time warning—of both ICBM's land-launched as well as submarine-launched ballistic missiles except for [deleted].

It also has the capability of detecting nuclear events for test ban monitoring.

Chairman ELLENDER. Has this system been perfected?

General PASCHALL. No, sir. [Deleted.] We expect to reach interim operational capability IOC [deleted]. We have experimental data now. [Deleted.] We believe it has great promise.

Chairman ELLENDER. After you perfect it, will you be able to dismantle many of the other systems?

General PASCHALL. Each of the three systems that I have described, or four systems, really, that I have described, has advantages and some disadvantages.

The [deleted] satellite surveillance system does not have all of the advantages of all the other systems. Nevertheless, the Air Force in the out years is examining existing systems such as 474–N, the sea-launched ballistic missile detection system, as well as the 440–L and BMEWS to see which of these can be phased back or phased out as we gain confidence in the satellite surveillance system. I don't believe we would ever want to remove them all simply because some redundancy is required.

Chairman ELLENDER. Proceed.

SAC COMMAND AND CONTROL

General SNAVELY. The SAC command and control system (SACCS) is the principal high speed data communications system supporting the Commander in Chief Strategic Air Command (CINCSAC) for command management of the SAC force.

It consists of data communications, processing, and display devices throughout the SAC force and is a major element of the worldwide military command and control system (WWMCCS). The input/output devices associated with this system are obsolete, experience high failure rates, and are no longer economical to repair. Of the $7.9 mil-

lion required in fiscal year 1973, $5.9 million will be used to replace these devices to procure a computer interface. The remaining $2.0 million will provide a WWMCCS computer.

Chairman ELLENDER. The communications data sheet on the SAC command and control network appearing on page 144 of the justifications will be included in the record at this point.

(The information follows:)

OTHER PROCUREMENT, AIR FORCE

OTHER COMMUNICATIONS DATA SHEET

Service: Air Force.
P-1 line item: 156.
Nomenclature: SAC Command and Control Networks (436-M).

Mission/Description.—This program provides CINCSAC and his staff with high-speed command, control and continuous communications and data on a worldwide basis for positive and rapid control of the SAC forces.

[Dollar amounts in millions]

	Fiscal year—					
	1971		1972		1973	
	Quantity	Amount	Quantity	Amount	Quantity	Amount
Cost data		$0.500		$1.995		$7.950

Basis for fiscal year 1973 request.—The fiscal year 1973 program contains $1.995 million for procurement of a force control computer for SAC and $5.955 million for equipment—keyboards, printers, message storage devices, and their associated tech data and AGE to replace aging, worn-out, hard-to-maintain equipment which forms a part of SAC Command and Control System.

WWMCCS COMPUTER

Chairman ELLENDER. You referred to the $2 million included in this request for procurement of the WWMCCS computer. Is this one of the 35 computers planned for this total program?

General PASCHALL. Yes, sir; it is.

Chairman ELLENDER. It is my understanding that the total Air Force budget for fiscal year 1973 includes $10.3 million for the procurement of these specific computers. I wish you would identify these funds by the various projects.

General PASCHALL. I will furnish a table for the record.

(The information follows:)

Funding (in millions)	Project	Fiscal year 1973
Location		
Norad/ADC	$427M	$2.000
Continental Air Defense Command-Intelligence Data Handling System (Conad-Idhs)		.800
SAC	436M	2.000
MAC	415L	1.500
AU		.800
Air Force Operations Center (AFOC)		.800
TAC		.800
PACAF		.800
USAFE		.800
Total		10.300

NORAD CHEYENNE COMPLEX

Chairman ELLENDER. Proceed.

General SNAVELY. The Norad Cheyenne Mountain complex (NCMC) improvement program (427–M) will update the data processing, communications, and display elements of the CINCNORAD/CONAD command and control system.

The program provides for the replacement of the NORAD combat operations centers 425–L system and the space defense center's elements of the 496–L Spacetrack system. It also contains provisions for integrating the Safeguard Ballistic Missile Defense Center.

The $7.9 million in fiscal year 1973 will procure a second WWMCCS computer, consoles, displays, and interface hardware.

CHEYENNE MOUNTAIN COMPLEX

Chairman ELLENDER. The communications data sheet on the Cheyenne Mountain complex appearing on page 145 of the justifications will be included in the record at this point.

(The information follows:)

OTHER PROCUREMENT, AIR FORCE

OTHER COMMUNICATIONS DATA SHEET

Service: Air Force.
P–1 line item: 157.
Nomenclature: Cheyenne Mountain Complex (427–M).
Mission/Description.—This program provides the command, control and communications to support HQ CONAD/NORAD and the SPACETRACK Center at the Cheyenne Mountain Complex.

[Dollar amounts in millions]

	Fiscal year—					
	1971		1972		1973	
	Quantity	Amount	Quantity	Amount	Quantity	Amount
Cost data				$4.440		$7.917

Basis for fiscal year 1973 request.—The fiscal year 1973 request includes a computer for the NORAD Computer System (NCS) ($1.995 million), consoles for the NCS ($.900 million) and Space Computational Center (SCC) ($1.200 million), an SC common used display ($.600 million), interface hardware ($1.500 million) and AGE, tech data and other support ($1.722 million). This equipment represents a portion of that to be procured to upgrade the command, control, and communications facilities at the NORAD Cheyenne Mountain Complex.

WWMCCS COMPUTER

Chairman ELLENDER. Now, I note that this request also includes funds for the procurement of another one of the WWMCCS computers. How much of the total is for this purpose?

General PASCHALL. Two million dollars.

Chairman ELLENDER. Proceed.

General SNAVELY. The fiscal year 1973 requirement is $19.2 million or $12.5 million less than fiscal year 1972. Major program requirements include:

$2.5 million for the Air Force Satellite Control Facility;

$2.3 million of this is for a wide band communications system. This system will be acquired on a phased basis through fiscal year 1977 and will replace the existing narrow band voice and data circuits.

The wide band system will operate through Defense satellite communications system phase II satellites and will provide greatly increased, real-time, data rates between the satellite control facility remote tracking stations and the Satellite Test Center.

The remaining $200,000 provides for minor items of communication equipment at remote tracking stations.

Chairman ELLENDER. The communications data sheet appearing on page 146 of the justifications on the satellite control facility will be included in the record at this point.

(The information follows:)

OTHER PROCUREMENT, AIR FORCE

OTHER COMMUNICATIONS DATA SHEET

Service: Air Force.
P–1 line item: 162.
Nomenclature: Satellite control facility.

Mission/Description.—The Satellite Control Facility is the DOD designated on-orbit tracking and command network for DOD space programs. It is composed of a network/mission control center, the Satellite Test Center (STC) at Sunnyvale, California, remote tracking stations throughout the world, and a space vehicle recovery organization. Communications, instrumentation automatic data processing and display equipment provide the means for tracking, telemetry and command functions between the STC and space vehicles throughout the remote tracking sites.

[Dollar amounts in millions

	Fiscal year—					
	1971		1972		1973	
	Quantity	Amount	Quantity	Amount	Quantity	Amount
Cost data		$2.884		$1.650		$2.500

Basis for fiscal year 1973 request.—The FY 1973 program will begin procurement of new wideband communications equipment ($2.300 million) to replace the current narrowband voice and data channels which interconnect the remote tracking stations and the STC. The current system does not have the capacity to provide real-time transmission of all required data; in addition to providing the channel capacity required the new system will provide for consolidation of data processing equipment and software at the STC, centralization of the command and control function, and simplification of remote tracking system communications. The program also includes $.200 million for procurement of new and replacement items of communications equipment used at the remote tracking station.

Senator YOUNG. With respect to the $2.3 million of this total request that is for the wideband communications system, you state that this is a phase program to be completed through fiscal year 1977. What is the total estimated cost of this effort, and how much has been provided through fiscal year 1972?

General SNAVELY. The total estimated cost of this effort is $19.660 million, none of which has been provided prior to fiscal year 1972.

CREEK RIB

The requirement for Creek Rib is $1.5 million. The purpose of this program is to provide the European Command with a [deleted] capability and to retain an adequate [deleted] capability in Europe.

Chairman ELLENDER. Is that solely of use to our forces?

General PASCHALL. This is a [deleted] effort. The $1.5 million here is logistics support. There are several other countries involved. I am sure they use it as well as ourselves.

Chairman ELLENDER. Proceed.

General SNAVELY. Creek Rib complements but does not duplicate conventional U.S. [deleted] activities.

The fiscal year 1973 program equals that of fiscal year 1972 and includes ancillary equipment needed to continue the receiver update program, which will enhance the collection capability and keep pace with Soviet technological advances in electronics systems.

INTELLIGENCE DATA HANDLING SYSTEM

The intelligence data handling system (IDHS) needs $0.6 million in fiscal year 1973 to provide a specialized ELINT display and new equipment to assist in programing Minuteman targeting; continued system augmentation of the centralized information reference and control system (CIRC); and, the acquisition of special purpose equipment to support estimates and warning functions.

The $3.6 million requested for the SAC security system will complete the program to secure the permanent alert aircraft parking areas. It will also provide for detection and alarm systems for temporary alert areas; protection for alert and special mission aircraft; entry control systems for weapons storage areas, command posts and permanent alert areas.

Chairman ELLENDER. The communications data sheet on the SAC security system appearing on page 147 of the justifications will be included in the record at this point.

(The information follows:)

OTHER PROCUREMENT, AIR FORCE

OTHER COMMUNICATIONS DATA SHEET

Service: Air Force.
P-1 line item: 165.
Nomenclature: SAC security system.

Mission/Description.—The purpose of the Strategic Air Command Security System (the SAFE RAMP Program) is to provide increased security for the United States Air Force Strategic Alert Aircraft. The system, that has been developed/assembled to satisfy the security requirement, is an intrusion detection alarm system. It is designed to augment the security mission that is presently accomplished by a totally human oriented physical security system. The intrusion system consists of line and point sensors that are so configured around

the aircraft permanent alert areas to make an undetected intrusion into the alert area almost impossible. All of these detection devices (sensors) are electrically connected to a Runway Supervisory Unit which houses the security system operators and the annunciator and display equipment.

[Dollar amounts in millions]

	Fiscal year—					
	1971		1972		1973	
	Quantity	Amount	Quantity	Amount	Quantity	Amount
Cost data		$1.670		$1.530		$3.610

Basis for fiscal year 1973 request.—Funds provided in FY 1971 and FY 1972 have been and will be used to procure and integrate the intrusion detection alarm system described above at 17 Air Bases. The FY 1973 funds will be used to procure and integrate additional intrusion detection systems to the remaining 9 Air Bases that have permanent alert areas and provide an intrusion detection capability at 16 of the Air Bases having temporary alert areas. In addition, FY 1973 funds will be used to provide entry control systems at 26 Air Bases and Low Light Level Television coverage at 10 Air Bases.

COST DATA

Chairman ELLENDER. What is the total estimated cost of this effort, and how much has been funded through fiscal year 1972?

General SNAVELY. The total estimated cost is $6.8 million through fiscal year 1973; $3.2 million has been funded through fiscal year 1972; $2 million is needed in fiscal year 1973 to maintain the Eastern Test Range's capability to support ballistic missile testing and easterly space launches. This amount provides for improved and more secure communications, a new range safety officer console and display, and improved collection of real-time radar and telemetry data from down range tracking stations.

EASTERN TEST RANGE

Chairman ELLENDER. The communications data sheet on the Eastern Test Range appearing on page 148 of the justifications will be included in the record at this point.

(The information follows:)

OTHER PROCUREMENT, AIR FORCE

OTHER COMMUNICATIONS DATA SHEET

Service: Air Force.
P–1 line item: 166.
Nomenclature: Eastern Test Range.

Mission/Description.—The Eastern Test Range (ETR) is one of six National Ranges. Its mission is the development, maintenance and operation of a range to support assigned programs. Specifically, the ETR has been reduced and resized over the past three years to support a basic DoD workload of missile test programs and space launches. The ETR technical objectives are to maintain instrumentation responsive in the proper time frame to the qualitative and quantitative requirements of the DoD users. Major areas of instrumentation include trajectory measurements, telemetry reception, optical coverage, re-entry signature data, range safety, and impact scoring. These areas are supported by communications, data handling and reduction, and command/control systems.

[Dollar amounts in millions]

	Fiscal year—					
	1971		1972		1973	
	Quantity	Amount	Quantity	Amount	Quantity	Amount
Cost data				$0.808		$2.00

Basis for fiscal year 1973 request.—The proposed FY 1973 program consists of several equipment items to maintain and more economically provide the required capability described above. The OSD directive to reduce the ETR also stated that as a long term goal the ETR was to evolve into a modern and efficient plant capable of expansion when necessary. This FY 1973 request provides a means of reaching that goal particularly in the range safety, communication, and collection and handling of radar and telemetry data areas.

NATURE OF EQUIPMENT

Senator YOUNG. On the data sheet, I note the following statement, "The proposed fiscal year 1973 program consists of several equipment items to maintain and more economically provide the required capability." Give us an example of how the equipment you are planning to buy in fiscal year 1973 will accomplish this goal.

General SNAVELY. The Eastern Test Range has the inflight safety responsibility for all missiles and space boosters launched on that range. The range safety officer now bases his decision to terminate the flight of such boosters as Saturn 5 and Titan 3 on position and impact data display on several plotting boards. They do not have the capability to display dynamic changes such as variable launch azimuths and engine-out cases. Some of the items to be bought with this program will provide a cathode ray tube type display and a dual range safety officers' console with this important dynamic display capability. This will reduce the probability of human error and effect an annual O. & M. savings of about $100,000 when installed.

Senator YOUNG. As I understand the communications data sheet, this is the initial procurement request for this project. Am I correct about this?

General SNAVELY. Yes, sir. $9 million is required for Cobra Dane, a multiobject tracking radar, which will replace the existing Spacetrack single beam radars at Shemya AFS, Alaska, which cannot provide all the data required on [deleted].

Chairman ELLENDER. What is the total estimated cost of this project, including funds from all sources? Identify these sources of funding.

General PASCHALL. The total costs for the Cobra Dane radar acquisition is currently estimated at $54 million. $53.1 million is in the other procurement appropriation and $0.9 million in the military construction appropriation.

AIR FORCE COMMUNICATIONS

General SNAVELY. A total of $7.6 million is requested for the Air Force communications program which provides for terminal equipment and control facilities required for access to, and use of, the worldwide Defense Communications System (DCS).

This is a reduction of $3.8 million from fiscal year 1972.

PROGRAM COMMUNICATIONS SUPPORT PROGRAM

Chairman ELLENDER. The communications data sheet on the program communications support program appearing on page 150 of the justifications will be included in the record at this point.

(The information follows:)

OTHER PROCUREMENT, AIR FORCE

OTHER COMMUNICATIONS DATA SHEET

Service: Air Force.

P–1 line item: 178.

Nomenclature: Program communications support program (PCSP)—Air Force.

Mission/Description.—This program provides a means of satisfying requests for new or changes to existing Communications-Electronics (C–E) facilities which are generated by new mission requirements or other requirements which do not permit normal programming actions. This level-of-effort program also allows the Air Force to accomplish the minor changes needed to improve efficiency or to relocate or consolidate C–E facilities as necessary to accommodate changes to base mission.

[Dollar amounts in millions]

	Fiscal year—					
	1971		1972		1973	
	Quantity	Amount	Quantity	Amount	Quantity	Amount
Cost data		$2.478		$3.000		$3.000

Basis for fiscal year 1973 request.—The FY 1973 requirement for $3.0 million will be expended on Communication-Electronics Implementation Plan (CEIPS) generated by the major air commands and approved by HQ USAF.

UNANTICIPATED REQUIREMENTS

Chairman ELLENDER. As I understand this request, this is to give you a sum of money in order that unanticipated requirements can be met as they develop during the year. Am I correct in this?

General PASCHALL. Yes. However, these are for both anticipated and unanticipated requirements. Unanticipated requirements include unit relocations, mission changes, and consolidations to promote economy. Anticipated requirements are the numerous small projects such as teletype, telephone, and radio projects that do not justify a separate line for each item.

General SNAVELY. $1.5 million of the total is required to complete the programed upgrade of the Air Force's ground-air-ground communications system. This upgrade is being completed with a total cost of some $6.9 million less than originally planned through redirection which reduced the scope of the program and provided for re-use of existing assets.

Senator YOUNG. Is the $1.5 million you are discussing now the same as the $1.5 million set out in line 179 in the P–1 exhibit?

General PASCHALL. Yes.

Senator YOUNG. You indicate that this upgrade program is being completed with a total of some $6.9 million less than the original plan. What was your originally planned cost for this modernization program?

General PASCHALL. $15.7 million.

General SNAVELY. $2.2 million is needed to improve the Critical Intelligence Communications (CRITICOMM) terminals and to facilitate the integration of CRITICOMM into the automatic digital network (Autodin).

Chairman ELLENDER. The communications data sheet on the critical communications system will be included in the record at this point.

(The information follows:)

OTHER PROCUREMENT, AIR FORCE

OTHER COMMUNICATIONS DATA SHEET

Service: Air Force.
P-1 line item: 181.
Nomenclature: CRITICOMM (Critical Communications).
Mission/Description.—CRITICOMM is a world-wide communications network established to support the national intelligence collection effort. It is composed of a number of relay centers and tributary communications centers. The system operates predominantly at 100 wpm, although on selected circuits and trunks, high speed data terminals are in use.

[Dollar amounts in millions]

	Fiscal year—					
	1971		1972		1973	
	Quantity	Amount	Quantity	Amount	Quantity	Amount
Cost data		$0.670		$2.796		$2.146

Basic for fiscal year 1973 request.—The fiscal year 1973 CRITICOMM funds will be used primarily to improve CRITICOMM terminals and circuitry. These improvements include: upgrade of existing teletypewriter equipment at five locations, introduction of high speed terminal equipment at four locations, automatic message preparation equipment at four locations, installation of error detection/correction equipment at eight locations, provisioning of two rapid action support packages capable of immediate deployment during crisis situations, a transportable communications support package to support the transportable [deleted] facility, and automatic format generating equipment being installed at six locations. The integration of the DSSCS (CRITICOMM) into the AUTODIN is now in progress and is proceeding on schedule towards a final operating capability in 1973. The Defense Special Security Communications Systems/AUTODIN (DSSCS/DIN) integration does not negate the need for CRITICOMM terminal improvements.

SYSTEM IMPROVEMENTS

Chairman ELLENDER. Does this effort involve the installation of a new system or the improvement of an existing system?

General PASCHALL. The funds requested in fiscal year 1973 ($2.2 million) for the critical intelligence communications network (CRITICOMM) will be used to improve existing CRITICOMM terminals and circuitry and not to install a new system. These improvements include upgrading some of the existing teletypewriter equipment, the introduction of high-speed terminal equipment at designated locations, the installation of automatic message preparation equipment and error detection/correction equipment, and other actions designed to increase the overall traffic-handling capability of the CRITICOMM network.

General SNAVELY. $3.9 million is required for changes to base communications facilities necessitated by base mission changes and for support of a classified project.

CLASSIFIED PROJECT

Chairman ELLENDER. Be sure that the committee is provided with the details on the $500,000 request set out in line 180 of the P–1 exhibit.

General DE LUCA. Arrangements will be made to brief the committee on this requirement, as the chairman desires.

Chairman ELLENDER. Proceed.

DEFENSE COMMUNICATION AGENCY PROGRAMS

General SNAVELY. $8.6 million is needed for tasks assigned to the Air Force by the Defense Communications Agency (DCA) for Defense Communications Systems (DCS) and National Military Command System (NMCS) programs managed by DCA.

NATIONAL MILITARY COMMAND CENTER

Chairman ELLENDER. The communications data sheet on the National Military Command Center appearing on page 152 of the justifications will be included in the record at this point.

(The information follows:)

OTHER PROCUREMENT, AIR FORCE

OTHER COMMUNICATIONS DATA SHEET

Service: Air Force.
P–1 line item: 185.
Nomenclature: (U) National Military Command Center.

Mission/Description: The National Military Command Center (NMCC) is the primary command center of the National Military Command System. Located on the second floor of the Pentagon, it provides the communications, facilities and personnel to support the National Command Authority in the strategic direction of US Military forces. The NMCC receives, processes, and displays timely requisite decision making data for the National Command Authority and provides the facilities to disseminate, control and monitor the implementation of these decisions. The NMCC is manned on a 24-hour basis by personnel from the Operations Directorate of the Joint Staff and individuals from other defense and government agencies.

[In millions of dollars]

	Fiscal year—		
	1971	1972	1973
Cost data	0.320	0	2.345

Basis for fiscal year 1973 request.—The $2.345 million in FY 1973 will be used as the first portion of a procurement program phased over a two year period which will satisfy the C–E requirements of the expanded NMCC. The total procurement is expected to require about $3.5 million. Funding in FY 1973 is required to allow for contract of long lead time items.

DCA PROGRAMS

Chairman ELLENDER. Please provide a P–1 type tabulation setting out the request for fiscal year 1973 and the programs for fiscal years 1971 and 1972 for the Defense Communications Agency (DCA) program.

General SNAVELY. Yes, sir.

(The information follows:)

Line No.	Item nomenclature	Identification code	Fiscal year 1973 unit cost	Millions of dollars					
				Fiscal year 1971		Fiscal year 1972		Fiscal year 1973	
				Quantity	Cost	Quantity	Cost	Quantity	Cost
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	DCA PROGRAMS								
184	Autovon overseas support (490-L).	A			$5.1		$0.5		$0.4
185	National Military Command Center.	A			.3				2.3
186	AUTOSEVOCOM	A							.9
187	National Military Command system.	A			.2		1.1		.7
188	Wideband systems upgrade	A							2.0
189	Items less than $500,000	A			.7		.9		.3
190	Defense communications satellite.	A			3.2				2.0
191	USAFE microwave				1.3				
192	UK microwave				3.9				
193	Preconfigure DCS entry station				.7				
	Subtotal				15.4		2.5		8.6

General SNAVELY. $2.3 million of this is for the expanded National Military Command Center (NMCC) and has been time phased to insure long leadtime equipment items will be available for installation as soon as construction schedules will permit. The remaining fiscal year 1973 funding of $6.3 million is to continue DCA programs to improve the NMCS and the DCS transmission media.

NATIONAL MILITARY COMMAND CENTER

Chairman ELLENDER. As I understand your statement and the data sheet, this request includes $2.3 million that is for the long leadtime items involved in a total of about $3.5 million for improvement of the National Military Command Center. Is this correct?

General PASCHALL. More than half of the $2.3 million is required to procure the audiovisual distribution system switching facility, a long leadtime item, and some of its ancillary devices. The remainder has been requested to allow us to phase the equipment procurement program over a 2-year period.

Chairman ELLENDER. You refer to $6.3 million to "continue DCA programs to improve the National Military Command system and the Defense Communications System transmission media." Is that the total of the balance of the items included in the $8.6 million?

General PASCHALL. Yes, sir.

WIDEBAND SYSTEMS UPGRADE

Chairman ELLENDER. The communications data sheet on the wideband systems upgrade appearing on page 153 of the justifications will be included in the record at this point.

(The information follows:)

OTHER PROCUREMENT, AIR FORCE

OTHER COMMUNICATIONS DATA SHEET

Service.—Air Force.
P–1 Line Item.—188.
Nomenclature.—Wideband Systems Upgrade.
Mission/Description.—This program supports the reliability/maintainability/performance upgrade of 8 selected Defense Communications Systems Wideband transmission facilities.

[Dollar amounts in millions]

	Fiscal year—					
	1971		1972		1973	
	Quantity	Amount	Quantity	Amount	Quantity	Amount
Cost data						$2.000

Basis for fiscal year 1973 request.—This line item supports the reliability/maintainability/performance upgrade of selected Defense Communications Systems Wideband transmission facilities. The selected communications links to be upgraded are dispersed world-wide geographically. Individual projects are justified by reduction in O&M cost or essential improvements to provide the quality of communications to support such systems as AUTODIN, AUTOVON, AUTOSEVOCOM and Command and Control networks supporting Unified and Specified Commanders.

DCA SUBSYSTEM

Chairman ELLENDER. Is this the initiation of a new effort?

General PASCHALL. This line item finances eight projects designed to improve the defense communications system transmission media. These projects are documented in the Defense Communications Agency subsystem project plan 1–71 for funding in fiscal year 1973. Previous improvements of this nature were funded as individual items of less than $500,000; such previous efforts did not appear as separate line entries.

Senator YOUNG. What is the total estimated cost of this effort?

General PASCHALL. The total cost estimate for fiscal year 1973 for the DCS wideband systems upgrade is $2 million. The presently approved DCS wideband systems upgrade program for fiscal year 1974 through fiscal year 1977 totals $12.5 million.

DEFENSE COMMUNICATIONS SATELLITE

Chairman ELLENDER. The communications data sheet on the defense communications satellite appearing on page 155 will be included in the record at this point.

(The information follows:)

OTHER PROCUREMENT, AIR FORCE

OTHER COMMUNICATIONS DATA SHEET

Service.—Air Force.
P–1 line item.—190.
Nomenclature.—Defense Communications Satellite.
Mission/Description.—(C) Defense Satellite Communications System (DSCS) Phase II will be initiated in late 1972/early 1973 after the successful launch of two satellites by the Air Force. DCA is the overall system manager. The Air Force is responsible for the space environment and development of airborne terminals. The Navy is responsible for shipborne terminals while the Army has the responsibility for the development, procurement and support (using appropriate military department funds) of the ground terminals. The initial Phase II system will use Phase I ground terminals which are being converted for compatibility with the DSCS II satellites. There are 29 terminals in the system, of which the Air Force owns and operates seven (three AN/MSC–46s and four AN/TSC–54s). The Air Force will be provided another MSC–46 by the JCS in early FY 73 for [deleted]. All the terminals are planned for follow-on conversion to a digital DSCS. After successful satellite launch, DSCS Phase II will be gradually expanded through procurement of a few new and more reliable terminals. The exact number of ground terminals to be procured will not be known until DCP No. 37 is approved by OSD. However, tentative guidance available from OSD indicates that the Air Force will not be directed to buy additional terminals as part of the DSCS.

[Dollar amounts in millions]

	Fiscal year—					
	1971		1972		1973	
	Quantity	Amount	Quantity	Amount	Quantity	Amount
Cost data		$3.200				$2.000

Basis for fiscal year 1973 request.—Fiscal year 1973 funds will be used to procure Phase Shift Keying (PSK) modems, digital coders, Pulse Code Modulation (PCM) equipment and Time Division Multiplex (TDM) equipment for the eight terminals the Air Force will have in the 1973 (and later) time frame. $204 thousand of fiscal year 1969 funds were used to purchase four each URC–61 spread spectrum modulators used with the four AN/TSC–54 terminals assigned to the Air Force. Additional $8.2 million ($5.0 million fiscal year 1970 and $3.2 million fiscal year 1971) funds were provided to the US Army Satellite Communications Agency, per direction of DCA, the program manager. This $8.2 million is being used to purchase the needed equipment for the Air Force operated and maintained satellite terminals to make them compatible with the DSCS II satellites. Specifically, the funds will provide the improved bandwidth and frequency capabilities necessary to exploit the new satellites. The Air Force must provide funds to support a digital upgrade of the ground terminals concurrent with conversion of the DSCS to a digital transmission system.

FISCAL YEAR 1973 PROGRAM

Chairman ELLENDER. Specifically, what will this $2 million be used for?

General PASCHALL. The fiscal year 1973 funds will be used to procure the proper modems, coders, and multiplex equipment to allow Air Force-owned terminals to operate in a digital DSCS environment as required by DCP 37. Specifically, the funds will be used to procure the following: Terminal equipment, modems, and coders, $1,056,000; PCM equipment, $312,000; and multiplex equipment, $632,000.

Senator YOUNG. Just what is involved in the request of $400,000 set out in line 184 for Autovon overseas support?

General PASCHALL. The entire $400,000 request for fiscal year 1973 is for engineering support required during the installation of overseas Autovon switch feature changes, resizing equipment, the centralized alarm system, and the traffic data collection system. Due to the critical nature of the operational network, great care and planning must be exercised during this phase of the program to preclude switch outages. Installation and checkout procedures for each item must be analyzed in depth, and an evaluation of their impact upon system operation must be made. Precautionary procedures must be developed to insure operational integrity of the system. Monitoring of the efficiency of installed engineering changes remains a continuing task.

Senator YOUNG. Please comment on the request of $900,000 set out on line 186 for the AUTOSEVOCOM system.

General PASCHALL. Basically, the funds will be used to improve the voice intelligibility on the AUTOSEVOCOM system. We intend to utilize satellite communications techniques and recent technical improvements in voice digitizing to accomplish this improvement. The system, as presently configured, tends to introduce a synthetic voice quality, unintelligible words, and other distortions. The funds requested for this program should eliminate these problems.

Chairman ELLENDER. What is involved in the request of $700,000 set out in line 187 for the National Military Command System, and how does it differ from the National Military Command Center for which you are requesting $2.3 million.

General PASCHALL. The $700,000 on line 187 is in support of evolutionary improvements in the National Military Command Systemwide support. It is primarily to complete the user display segment of the [deleted] at the Alternate National Military Command Center. This provides for two displays showing sensor information from BMEWS, SLBM, 440L and attack assessment data. This improvement will allow the Alternate National Military Command Center to provide attack assessment data to the National Command Authorities in the same manner as is now provided in the National Military Command Center. A portion of the $700,000 will be used to provide an improvement in the Emergency Message Automatic Transmission System (EMATS). The improvement in EMATS is primarily to make the existing system compatible with AUTODIN, to provide automatic synchronizing, cryptographic equipment to existing EMATS terminals, and to decentralize control from the Alternate National Military Command Center to the National Military Command Center.

The $2.3 million is to fund the National Military Command Center's expansion program. The expansion will enlarge the facility from 47,000 square feet to approximately 77,000 square feet. The added space will provide sufficient operational area to allow the Joint Chiefs of Staff to function in accordance with the approved Emergency Operational Procedures within the facility. The $2.3 million includes graphics and briefing equipment, portions of the display and information distribution subsystem, portions of the secure telephone system, and a major part of the physical security system.

Senator YOUNG. Give us three or four examples of the types of equipment you would expect to procure with the $300,000 requested for "Items Less Than $500,000"?

General PASCHALL. The following items are some of the items we will buy: VICOM TD2 Channel Bank, VICOM 8 port Time Division Multiplexer, TTI Model 1140 Universal Transmission Measuring System, Hewlett Packard HP141T Spectrum Analyzer, TTI Model 1200 Phase Jitter Meter & Hit Monitor, Lenkurt 9001B PCM Equipment, Western Electric D1 Channel Bank, and Collins TE880 Transmission Line Simulator.

ORGANIZATION AND BASE EQUIPMENT

Chairman ELLENDER. Please provide a P–1 type tabulation setting out each of the items included in the 1973 request for organization and base equipment and the items included in the programs for fiscal years 1971 and 1972.

(The information follows:)

Line No.	Item nomenclature	Identification code	Fiscal year 1973 unit cost	Millions of dollars					
				Fiscal year 1971		Fiscal year 1972		Fiscal year 1973	
				Quantity	Cost	Quantity	Cost	Quantity	Cost
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	ORGANIZATION AND BASE								
194	Training equipment	A			10.3		5.8		3.0
195	Nontactical radios	A							1.0
196	Air National Guard	A					2.0		2.9
197	Items less than $500,000	A			5.3		4.4		4.0
198	Spares and repair parts	A			31.5		31.0		30.2
199	TAC communications equipment				.3		2.5		
200	UHF/VHF conversion				4.2				
201	AN/PRC—66B radio set			262	1.9				
	Subtotal				53.5		45.7		41.1

General SNAVELY. We require $41.1 million in the Organization and Base Equipment category. This is a reduction of $4.6 million from fiscal year 1972.

The sum of $10.9 million is for equipment 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, and $30.2 million is required to procure initial and replenishment spare parts in support of the Air Force ground communications electronics equipment on procurement or in the operational inventory.

Chairman ELLENDER. Is that in Continental United States?

General PASCHALL. This is both in Continental United States and overseas; sir; all Air Force bases.

FACILITY USE BY ARMY AND NAVY

Chairman ELLENDER. Which of your facilities are used by the Navy and the Army?

General PASCHALL. We have Army and Navy units tenant on many of our installations. We are also tenant on Army and Navy installations.

But, generally, such host-tenant relationships are very small unit type tenants. Where a tenant is located on an Air Force installation, we supply them with the normal kinds of telephone service that we would supply to our own people under an inter-service agreement. If the tenant has a requirement for some special purpose type of communications over and above that which we would provide for ourselves, normally they then fund for that.

Studies on Combining Facilities

Chairman Ellender. Have any studies been made at any time to combine these systems?

General Paschall. Yes, sir. The total purpose of the defense communciations system was to combine the three separate Army, Navy and Air Force long distance communications systems. These have been so combined in the present defense communications systems.

Under DCA's management, the Army, Air Force and Navy each operate some piece or some part of the defense communications system which serves all of us.

We also studied certain base communications functions and, in fact, have a working group that meets weekly or biweekly to examine further consolidations.

A recent case in point is where the Air Force proposes that the Army provide the telecommunications center service at a location near Selfridge Air Force Base. Since the Army has a larger population and they have just modernized their telecommunications center, it is cost effective for them to provide us with message service. These types of things are continuing.

Selfridge Air Force Base Utilization

Chairman Ellender. I understand that the National Guard has taken over Selfridge Air Force Base.

General Paschall. The National Guard now operates Selfridge; yes, sir. However, we had left certain Air Force communications service people (AFCS) there to provide a base telecommunications center.

The Army at a nearby installation has just upgraded their telecommunications center and we have now proposed to the Army that they serve Selfridge with message traffic, thus enabling us to remove that AFCS detachment.

Chairman Ellender. Have you worked out a formula for charges to be borne by each of the services?

General Paschall. We do not cross-reimburse in these kinds of transactions. Again, the normal host-tenant relationship prevails as I described earlier. Nor do we cross-reimburse in the defense communications system. The only place where there is something similar to that is the DCA industrial fund which funds on a rate or reimbursement type basis all leased telephone circuits in the United States.

Industrial Facilities

General Snavely. This category provides for the support of Government-owned contractor-operated industrial facilities at the same level as approved last year.

Of the $2 million requested, $0.38 million will be used for packing, crating, and handling of Government-owned industrial production equipment which becomes standby due to a reduction of DOD requirements; $1 million for supporting manufacturing processes or techniques; $0.2 million for industrial plant rehabilitation projects; and $0.5 million for air munitions mobilization standby packages.

NONTACTICAL RADIOS

Senator YOUNG. On line 195 of the P–1 exhibit, I note a request of $1 million for nontactical radios. Please comment on this request.

General SNAVELY. This is a family of variable frequency portable, vehicular and fixed station radio sets used for point-to-point communications on air bases. They are required by various base radio nets including fire and crash, maintenance and supply expeditor, ramp control, police and security, base taxis, fueling operations, etc. Testing of the developmental equipment will be complete and initial procurement of operational quantities will begin in fiscal year 1973.

AIR NATIONAL GUARD

Chairman ELLENDER. On line 196 of the P–1 exhibit, there is a request of $2.9 million entitled "Air National Guard". The communications data sheet on this program will be included in the record at this point.

(The information follows:)

OTHER PROCUREMENT, AIR FORCE

OTHER COMMUNICATIONS DATA SHEET

Service.—Air Force.

P–1 line item.—196.

Nomenclature.—Air National Guard.

Mission/Description.—The Mobile Communications groups and the Tactical Aircraft Control Groups of the Air National Guard are manned and equipped to augment and extend the capabilities of the regular forces in time of war and national emergency. They have the same mission and equipment as nearly as possible to regular TAC Groups and Mobile Communications Groups and provide the same service to unified commanders in the field in respect to engagement with and defense against aircraft.

[Dollar amounts in millions]

	Fiscal year—					
	1971		1972		1973	
	Quantity	Amount	Quantity	Amount	Quantity	Amount
Cost data				$1.999		$2.917

Basis for fiscal year 1973 request.—The fiscal year 1973 request consists of 70 each AN/MRC–108 Communications Centrals to apply against the program requirements.

TOTAL REQUIREMENT

Chairman ELLENDER. I note that this request is for the procurement of 70 communications centrals to "apply against the program requirement". What is your total program requirement for this equipment, both as to quantity and total dollar cost?

General PASCHALL. The end fiscal year requirement is for 311 centrals at a cost of approximately $13 million. We have 197 on hand leaving a net requirement of 114 at an estimated cost of approximately $4.8 million. As you stated we plan to buy 70 during fiscal year 1973 at a cost of about $2.9 million, leaving a future requirement for 44 at a cost of about $1.8 million.

MISCELLANEOUS ITEMS

Senator YOUNG. Give us several examples of the types of items you expect to procure with the $4 million requested on line 197 of the P–1 exhibit for "Items less than $500,000."

General PASCHALL. Our planned fiscal year 1973 procurements include such items as recorder/reproducers, beacons, survival radios and pararescue equipment and a wide variety of minor items.

SPARES AND REPAIRS PARTS

Senator YOUNG. How much of the $30.2 million requested for spares and repair parts is for the procurement of initial spares and how much is for the procurement of replenishment spares?

General SNAVELY. Sir, $21.9 million is for initial spares and $8.3 million is for replenishment spares.

Senator YOUNG. Name some of the major systems involved in the request for the procurement of initial spares.

General SNAVELY. This budget includes initial spares for the traffic landing and control system, system 404L; tactical air control system improvements, system 485L; the aerospace defense system, special communications electronics projects and defense communications agency and air communications programs.

Chairman ELLENDER. Could you be more specific with what you plan to do with the $1 million request for "supporting manufacturing processes or techniques?"

General SNAVELY. Yes sir. There are five projects to be pursued, and I will discuss each briefly.

Manufacturing process for DNPCL (Dinitropimeloyl chloride): This is a material, presently made only in small quantities, that has been successfully used in a new explosive that is castable, thermally stable, and more powerful than present conventional explosives. It is the objective of this project to establish the manufacturing process for low cost production of the DNPCL.

Hydrostatic extrusion of fine tungsten wire: This is a new manufacturing process for extruding tungsten wire of .0005 (five ten thousandths) inch diameter for use in electronics as wire and as a substrate for composite materials.

Manufacture of polystyrene foam: This is for production techniques for a new packaging material that provides both shock and moisture protection during shipment or storage of sensitive instruments, such as fuzes.

Manufacture of water soluble photoresists: Presently used solvents for etching multilayer circuit boards are expensive and noxious chemicals. The purpose of this project is to establish the manufacturing process for a water soluble photoresist that is less expensive and alleviates the problem of solvent waste disposal.

Fluid jet machining: This is a metal removal technique especially suitable for machining/cutting titanium, specialty steels, and aluminum. A real asset of this cutting technique is that the properties of the metal are not affected or altered, and hence quality is retained.

The above manufacturing processes will be established under contracts with industry, and the contracts will be placed by competitive procurement procedures.

MODIFICATIONS—GROUND COMMUNICATIONS

Chairman ELLENDER. Please provide a P–1 type tabulation for the record setting out the various categories included in the $29.4 million requested for modifications, along with the amounts for the various categories in the fiscal years 1971 and 1972 programs.

General SNAVELY. Yes, sir.

(The information follows:)

Line No.	Item nomenclature	Identification code	Fiscal year 1973 unit cost	Millions of dollars					
				Fiscal year 1971		Fiscal year 1972		Fiscal year 1973	
				Quantity	Cost	Quantity	Cost	Quantity	Cost
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	MODIFICATIONS								
203	Class IV	A			6.1		4.8		4.8
204	Traffic control and landing (404–L).	A			6.5		13.4		14.3
205	Emergency rocket communication system (494–L).	A					1.2		1.9
206	Organization and base	A			5.1		5.0		5.0
207	Spacetrack (496–L)	A			1.2				2.0
208	Eastern test range	A					.6		.4
209	AIRCOMM	A			.7				1.0
210	Conus A.C. & W. (416–L)				7.7		6.1		
211	BMEWS (474–L)				1.6		.1		
212	Tactical air control system (407–L).				1.7				
213	DCA programs				1.4				
	Total, modifications				32.0		31.2		29.4

General SNAVELY. The fiscal year 1973 communications-electronics modification program is $29.4 million, a reduction of $1.8 million from fiscal year 1972.

$4.8 million is for safety modifications that were revealed as necessary during the in-service life of equipment, or to achieve economies from improved logistic support.

The Traffic Control and Landing System will require $14.3 million in fiscal year 1973. Of this, $12.5 million will be used to procure and install equipment in 60 terminal radar facilities to satisfy military requirement for rapid, secure and positive identification. The other $1.8 million provides for installation of new ground-to-air radios in mobile communications systems.

USE BY COMMERCIAL AIRCRAFT

Chairman ELLENDER. To what extent do the commercial airplanes use your facilities, if any?

General PASCHALL. They do at many Air Force installations. This is civil traffic. I don't know the extent of this. Perhaps General Hill does.

General HILL. Mr. Chairman, at the moment, there are some eight bases in the Continental United States at which there are joint military and civil operations. I could name them, a few now: Charleston, S.C.; Sheppard Air Force Base, Tex.; Wichita Falls; Eglin, Fla.; McCoy in Florida, just south of Orlando; Seymour-Johnson, in North Carolina; Travis Air Force Base in California for commuter type service.

General SNAVELY. Ramey Air Force Base in Puerto Rico a recent development. There are a couple of others currently in negotiation: Dover, Del., and Hamilton, Calif., again for commuter service. So, eight bases presently and two under negotiation.

COST SHARING

Chairman ELLENDER. To what extent has that lessened your cost?

General SNAVELY. Are you envisioning a cost-sharing arrangement?

Chairman ELLENDER. Yes; necessarily you must get something out of it.

General SNAVELY. I don't have the details.

Chairman ELLENDER. I wonder if you can give us an idea of those where you have joint civil-military operations and whether or not it has saved any money and the possibilities of extending this program to save more money.

General SNAVELY. I doubt that we can point to any savings that have accrued to the military department. I think it is fair to say that savings have accrued to the commercial by avoiding expenditures here. But we will amplify this for the record.

(The information follows:)

SAVINGS/JT USE OF AIRFIELDS

The use of military airfields by civilian air carriers does not result in any savings to the Department of Defense. At locations at which there is joint civil-military use, landing fees are collected by the civil airport authority and turned over to the military for deposit in the General Treasury of the United States. These fees are designed to offset the governments cost involved in the civil use. However, since they are deposited in the General Treasury they do not reduce the military budget requirement. Also, since they are "off set" type payments, they do not result in any savings.

Extension of joint use agreements is controlled by the compatability of civil aviation with the military mission. If a community desires joint use and the military mission and civil operation are compatible, or if the community can provide the facilities required to make such use compatible then permission for joint military-civil use is granted. Since no savings accrue to the government, the savings aspect is not a consideration in expansion of joint use airfields.

EMERGENCY ROCKET COMMUNICATIONS SYSTEM

Chairman ELLENDER. Proceed.

General SNAVELY. The Emergency Rocket Communications System (ERCS) is one of the essential communications systems for dissemination of the Emergency Action Directive to the Single Integrated Operational Plan (SIOP) forces.

There are 12 communications payloads that require modification to increase the survivability from the efforts of nuclear detonation.

$1.9 million in fiscal year 1973 are required to continue this program which was begun with fiscal year 1972 funds.

The Fansong Simulator (AN/MPQ–T2B) is an updated emitter-evaluator used to train SAC and TAC pilots to recognize and evade SAM anti-aircraft batteries.

The preproduction model is being delivered in March; and, after a thorough evaluation, funds will be required to update the eight other sets used at the SAC Radar-Bomb Scoring sites.

We have programed $0.75 million in fiscal year 1972 for one unit and $5 million in fiscal year 1973 to complete the program.

Senator YOUNG. Is the total request of $5 million for organization and base equipment set out on line 206 for the procurement of the [deleted] simulator equipment?

General SNAVELY. The amount of $5 million as mentioned is required to modify existing [deleted] simulation equipment currently in the Air Force inventory. The purpose of the modification program is two-fold: (1) to improve the system reliability and maintainability, and (2) to improve the accuracy of the electronic threat signals represented. There are eight [deleted] simulator sets affected by this modification requirement.

Chairman ELLENDER. Proceed.

General SNAVELY. $2.0 million is requested for Spacetrack to modify the AN/FPS–85 radar at Eglin Air Force Base, Florida. This modification will provide a Submarine Launched Ballistic Missile (SLBM) detection and warning capability and will enhance space object identification.

Electronics equipment aboard the Advance Range Instrumention Ships (ARIS), USNS *H. S. Vandenberg* and USNS *H. H. Arnold*, assigned to the Eastern Test Range will be modified in fiscal year 1973 for a cost of $0.4 million.

The sum of $1.0 million is requested in fiscal year 1973 for modifying the multichannel tropospheric scatter communications set (AN/TRC–97).

This set is a mobile unit for worldwide use, but the Air Force has found that the antennas are not suitable for locations with high winds (above 60 knots). This modification will provide new antennas for about 10 per cent of the possessed sets. One-half of the funds needed are requested this year, with the balance programed for fiscal year 1974.

(Table IV follows:)

Table IV.—Department of the Air Force, other base maintenance and support equipment, fiscal year 1973 program estimate

[In millions of dollars]

Test equipment	$12.0
Personal safety and rescue equipment	2.4
Photographic equipment	2.7
Maintenance and repair shop equipment	15.3
Electrical equipment	5.6
Miscellaneous equipment	955.8
Total program	993.8

OTHER BASE MAINTENANCE AND SUPPORT EQUIPMENT

Chairman ELLENDER. General, before you proceed with your discussion of the request for $993.8 million for "Other Base Maintenance and Support Equipment," I want to include the record pages 130 and 131 of the justifications.

(The information follows:)

Direct program requirements:	*Thousands*
Fiscal year 1973	$993,800
Fiscal year 1972	578,298
Fiscal year 1971	503,194

PART I.—PURPOSE AND SCOPE

Activity: Other Base Maintenance and Support Equipment

This activity provides for the procurement and modification of common test and calibration equipment, personal safety and rescue equipment, photographic equipment, maintenance and repair shop equipment, electrical equipment, and miscellaneous equipment, including ground equipment for support of the intelligence program. Provision is also made in this activity for the cost of first destination transportation charges for all items procured under this appropriation. Representative items planned for procurement in Fiscal Year 1973 include oscilloscopes, flying clothing, life rafts, intelligence data collection and processing equipment, cameras and photographic processing equipment, aircraft maintenance equipment, electric power generators, automatic data processing equipment, aircraft arresting barriers, cargo pallets and nets, and mechanized materials handling equipment for bases and air terminals.

PART II.—JUSTIFICATION OF FUNDS REQUESTED

The funds requested in this budget estimate provide the essential equipment required to support the peace and wartime operation of the combat, intelligence and logistic support of the activities of the Air Force units world-wide. The equipment included in this estimate will provide for (1) maintenance, calibration and checkout of ground support equipment and ground electronics and communications apparatus, (2) the equipment required to safeguard the lives of air crewmen and other personnel of the Air Force, (3) the photographic equipment required to support the strategic, reconnaissance, training and tactical aerial missions, (4) the equipment required for repair overhaul programs in Air Force operated maintenance shops, (5) equipment to provide mobile electric power, (6) miscellaneous equipment, including the specialized equipment to support the Air Force technical intelligence programs and other Air Force elements of the atomic energy program, automatic data processing equipment that is not a component or integral part of a system separately budgeted, spares and repair parts, and modification of equipment procured under this activity, and (7) first destination transportation charges for all items procured under this appropriation.

The following table reflects the general composition of the FY 1971, FY 1972 and FY 1973 program and provides a comparison of the dollar requirements for each of the major categories of equipment.

DIRECT PROGRAM REQUIREMENTS

[Dollar amounts in thousands]

	1971	1972	1973
Test equipment	$14,016	$11,960	$12,041
Personal safety and rescue equipment	5,602	2,453	2,403
Photographic equipment	5,556	2,853	2,670
Maintenance and repair shop equipment	13,820	16,809	15,328
Electrical equipment	6,584	5,193	5,610
Miscellaneous equipment	457,616	539,030	955,748
Total direct program requirements	503,194	578,298	993,800

Test Equipment.—Major procurements planned in fiscal year 1973 are calibration packages for Air Force and Air Materiel Areas, oscilloscopes, electronic counters, and other items costing less than $500,000 each.

Personal Safety and Rescue Equipment.—Procurements planned in fiscal year 1973 include life rafts, flying helmets and other items costing less than $500,000 each.

Photographic Equipment.—The fiscal year 1973 program provides for continued procurement of equipment for the support of intelligence missions and for other equipment costing less than $500,000 each.

Maintenance and Repair Shop Equipment.—The fiscal year 1973 request provides for continued support of the depot plant modernization program and for other equipment costing less than $500,000 each.

Electrical Equipment.—Major fiscal year 1973 requirements are for static no-break power supply equipment for seven Air Force installations and mobile power plants to support the Air National Guard.

Miscellaneous Equipment.—The fiscal year 1973 program reflects a net increase of $415.5 million. This is primarily attributable to an increase in the classified program which reflects the transfer of support formerly provided under the Aircraft Procurement, Air Force, Appropriation. Substantial offsetting decreases resulted from reductions in the automatic data processing equipment and first destination transportation requirements as well as no requirements for the bare base support program and Free World Forces in fiscal year 1973.

General SNAVELY. The Other Base Maintenance and Support Equipment Program is summarized in table IV.

Of the total amount, $100.1 million is requested for a variety of support and equipment essential to our world-wide operations. This is a decrease of $78.2 million from the fiscal year 1972 program. The remainder of the fiscal year 1973 request is for a Classified Program and First Destination Transportation.

TEST EQUIPMENT

In the first category, $12.0 million is being requested for test equipment. This amount is unchanged from fiscal year 1972.

PROGRAM DETAILS

Chairman ELLENDER. Please provide a P–1 type tabulation for the record setting out each of the items included in the $12 million requested for test equipment, along with the items included in the programs for fiscal years 1971 and 1972.

General SNAVELY. I will provide that information for the record, Mr. Chairman.

(Information follows:)

Line No.	Item nomenclature	Identification code	Fiscal year 1973 unit cost	Millions of dollars					
				Fiscal year 1971		Fiscal year 1972		Fiscal year 1973	
				Quantity	Cost	Quantity	Cost	Quantity	Cost
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	TEST EQUIPMENT								
214	Base/AMA calibration package	A			1.4		1.6		1.5
215	Newark AFS calibration package	A			.9		.6		.8
216	Oscilloscope 50 MHZ Class III	A	1,805	673	1.2	536	1.0	734	1.3
217	Electronic counter	A	1,650	380	.6	438	.7	796	1.3
218	Frequency meter	A	1,334					663	.9
219	Digital Data Analysis System	A	3,830					248	1.0
220	Items less than $500,000	A			8.5		8.1		5.2
221	Test set, peak pulse power			140	1.4				
	Subtotal				14.0		12.0		12.0

Chairman ELLENDER. Proceed.

General SNAVELY. This equipment is required by the Air Force Materiel Depots and base level organizations to overhaul and maintain aircraft, missiles, and communications and electronics equipment.

Chairman ELLENDER. Define, "test equipment"?

General SNAVELY. This is a category of equipment that is used at our bases and at our depots to check out our electronic gear for proper operation, to do diagnostic work for maintenance purposes, to calibrate equipment on our aircraft to make sure it functions properly; this type of thing. That is what this category of equipment is for.

You notice it is both for the base level and our depot facilities.

Senator YOUNG. On line 220 of the P–1 exhibit, there is a request of $5.2 million for "Items Less Than $500,000." Give us several examples of the types of items you expect to procure with these funds.

General SNAVELY. This will provide for the procurement of a wide variety of instrument and laboratory equipment including such items as measuring and testing instruments; chemical analysis instruments, time measuring and optical instruments; and pressure, temperature and humidity measuring and control instruments.

PERSONAL SAFETY AND RESCUE EQUIPMENT

$2.4 million is requested in the Personal Safety and Rescue Equipment category, the same as fiscal year 1972.

Included here are critical safety-of-flight and life support items such as life rafts, flying helmets, and other items costing less than $0.5 million needed to protect our personnel and to provide means of survival until rescue can be made.

Chairman ELLENDER. Please provide for the record a P–1 type tabulation setting out the various items included in the request of $2.4 million for personal safety and rescue equipment, along with the items included in the programs for fiscal years 1971 and 1972.

General SNAVELY. I will provide that information, Mr. Chairman.

(The information follows:)

DEPOT PLANT MODERNIZATION PROGRAM FUNDING REQUIREMENTS BY INSTALLATION

	MCP	Equipment	Total
Hill AFB	43	15	58
Kelly AFB	56	29	85
McClellan AFB	53	21	74
Newark AFS	4	1	5
Robins AFB	45	12	58
Tinker AFB	73	37	110
Total	275	115	390

FLYING HELMETS

Chairman ELLENDER. I note on 224 of the P–1 exhibit a request of $900,000 for the procurement of some 14,000 HGU–26/P flying helmets. Please describe this particular item and tell us why you need to procure it in such large quantities.

General SNAVELY. This is a Fiberglas helmet with internal pads and styrofoam liner equipped with radio/intercom earphones and microphone and a visor to protect against air blast. It is worn by pilots and crew of all fighter and bomber aircraft equipped with ejection seats and by other crew members subject to head injury during flight or bailout. The total Air Force requirement, including the Guard, Rescue and incoming student pilots, is 42,837. This budget included 6,876 to support incoming student pilots and 7,614 to replace lost, damaged and contaminated helmets. The balance of the requirement is on hand.

PHOTOGRAPHIC EQUIPMENT

General SNAVELY. For "Photographic equipment," we require 2.7 million, a decrease of $200,000 from fiscal year 1972.

The majority of these items are to replace worn-out or obsolete items such as cameras, processors, light tables, and projectors. These items support a number of activities including intelligence production, mapping, charting, and geodesy programs.

Senator YOUNG. On line 232 of the P–1 exhibit, there is a request for $1.3 million under photographic equipment for the procurement of "Items less than $500,000." Give us several examples of the types of equipment you expect to procure with these funds.

General SNAVELY. Equipment expected to be procured with these funds are printers, 16-millimeter motion picture cameras, 35-millimeter still picture cameras, photo developing and printing equipment, processors, viewer and automatic timers.

MAINTENANCE AND REPAIR SHOP EQUIPMENT

The "Maintenance and repair shop equipment" requirement for this year is $15.3 million, $1.5 million less than in fiscal year 1972. Of this, $13 million is to support the "Depot plant modernization program," a comprehensive and phased effort to increase the effectiveness of the maintenance and distribution activities in Air Force depots through the provision of modern facilities and equipment.

The objective is to maintain a logistics system which can rapidly and effectively meet the needs of in-being deterrent forces and form a base for mobilization. Also, ongoing organic workload will be more economically accomplished.

The program does not envision increased production for the purpose of bringing contracted work inhouse.

The $13 million will be used to replace worn-out and obsolete shop equipment with new, highly productive units now on the market. Many of the new numerical control tools can replace three manual units resulting in a new savings of funds and manpower.

Chairman ELLENDER. Please provide for the record a detailed statement on the scope of the depot plant modernization program, indicating the number of installations involved, the total estimated cost for each of the planned programs, and the amount provided for this program through fiscal year 1972.

General SNAVELY. Yes, sir.

(The information follows:)

The Depot Plant Modernization Program is to increase the economic operation and responsiveness of depot maintenance and distribution (supply and transportation) functions at the five Air Materiel Area depots and Newark AFS, Ohio. Increased economics and responsiveness will be obtained through the provision of modern equipment and more efficient facilities. The five Air Materiel Areas are located on Robins AFB, Georgia; Tinker AFB, Oklahoma; Kelly AFB, Texas; Hill AFB, Utah; and McClellan AFB, California. The program will not be used to increase maintenance capacity. Maintenance personnel will be reduced as productivity increases so that peace time production will not increase. Inefficient facilities and equipment will be disposed of as replacements become available. The formal integrated and comprehensive program effort will run through FY 76; however, there will be continuing depot modernization requirements after that year. Not including $23.2 million in FY 71 approved MCP projects designated as forerunners, the Depot Plant Modernization Program funding requirements

total $390 million. $275 million of this is for military construction and $115 million is for equipment. Approximately $70 million in additional requirements will be covered through redistribution of assets, such as from the Defense Industrial Plant Equipment Center, and from existing programs without increases in funding levels. To date Congress has approved $89.3 million for this program. The following chart shows the distribution of funding requirements by installation:

Line No.	Item nomenclature	Identification code	Fiscal year 1973 unit cost	Millions of dollars: Fiscal year 1971 Quantity	Fiscal year 1971 Cost	Fiscal year 1972 Quantity	Fiscal year 1972 Cost	Fiscal year 1973 Quantity	Fiscal year 1973 Cost
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	PERSONAL SAFETY AND RESCUE EQUIPMENT								
222	Life raft, 1 man	A	91			7,057	0.6	3,615	0.3
223	Life raft, 20 man	A	485	1,541	0.7	1,492	.7	1,062	.5
224	Helmet flying, HGU-26/P	A	60	12,096	.8			14,394	.9
225	Items less than $500,000	A			1.2		.3		.7
226	Full pressure suit			105	1.1	72	.8		
227	Image stabilized monocular			100	.7				
228	Antiexposure suit CWU-16/P			7,723	.5				
229	Cargo parachutes for ANG/AFR				.6				
	Subtotal				5.6		2.4		2.4

Chairman ELLENDER. Proceed.

General SNAVELY. The balance of $2.3 million is to provide shop equipment for our base maintenance activities.

Chairman ELLENDER. Give us several examples of the types of shop equipment that you plan to procure with the $2.3 million.

General SNAVELY. Equipment expected to be procured with these funds includes grinding machines, metal saws, boring machines, lathes, heat treating equipment, and welding equipment.

ELECTRICAL EQUIPMENT

Chairman ELLENDER. Proceed.

General SNAVELY. Under the "Electrical equipment" category, $5.6 million is required, an increase of $400,000; $1.2 million is required for electrical power units to supply precise 400 cycles mobile electrical power use to support the tactical air control system.

For "Static no-break power units," $3.1 million is required to support fixed computer and communications equipment at seven Air Force bases. The balance of $1.3 million is for replacement of uneconomically repairable equipment.

MISCELLANEOUS

In this category we provide for the procurement of various types of equipment that do not specifically fit the other categories within this program activity.

Chairman ELLENDER. Please provide a P-1 type tabulation for each of the items, exclusive of the classified programs, included in the net request of $104.8 million for miscellaneous equipment, along with the amounts provided for each of these items for fiscal years 1971 and 1972.

General SNAVELY. I will provide that information, Mr. Chairman.

(The information follows:)

Line No.	Item nomenclature	Identification code	Fiscal year 1973 unit cost	Millions of dollars					
				Fiscal year 1971		Fiscal year 1972		Fiscal year 1973	
				Quantity	Cost	Quantity	Cost	Quantity	Cost
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	MISCELLANEOUS								
244	Base procured equipment				24.8		20.9		20.0
245	Scientific and technical intelligence.	A			1.5		2.9		2.5
246	AF technical application center	A			3.1		.7		1.8
247	Automatic data processing equipment.	A			26.1		19.2		11.0
248	Barrier, aircraft arresting system	A	38,462	39	1.2	44	1.5	26	1.0
249	Laundry and dry cleaning equipment.	A			1.0		.8		.8
250	Pallet, air cargo, 108" x 88"	A	263			12,000	3.2	12,000	3.2
251	Net assembly, 108" x 88"	A					1.3		1.0
252	Fuel servicing unit MH-2	A	6,815	104	.7	99	.7	100	.7
253	Base mechanization equipment	A			4.7		6.7		11.0
254	Air terminal mechanization equipment.	A			4.1		5.9		.6
255	Pumps and compressors	A					1.2		.4
256	Items less than $500,000	A			1.5		1.3		2.3
257	Spares and repair parts	A			5.0		5.0		4.8
258	Modifications	A			2.0		1.0		1.0
259	First destination transportation				48.1		61.1		42.7
260	Bare base support program				4.0		59.1		
261	Refueling system R-25			24	.7	12	.3		
262	Free world forces				1.1		7.3		
	Subtotal				129.6		200.1		104.8

Chairman ELLENDER. Proceed.

General SNAVELY. Excluding the classified program, the balance of the Air Force requirements have decreased by approximately $95 million; $2.5 million is for the Foreign Technology Division (FTD) which exploits, processes, analyzes, and reports on foreign scientific and technical (S&T) intelligence information in accordance with DOD programs established by the DIA.

FTD is responsible for developing and maintaining the highest levels of knowledge on foreign aerospace capabilities to minimize the possibility of a foreign power achieving a technological surprise over the United States.

The Air Force Technical Applications Center operates the [deleted] deployed world-wide to obtain and evaluate technical data on the [deleted].

Chairman ELLENDER. Is this $2.5 million you have just discussed set out on line 245 under the heading of "Scientific and Technical Intelligence?"

General PASCHALL. Yes sir, it is.

General SNAVELY. The fiscal year 1973 requirement of $1.8 million is for replacement and upgrading laboratory equipment and seismic equipment.

The Base Mechanized Equipment requirement is $11 million. Of this, $9.9 million is to continue modernization of Air Force depots as part of the comprehensive Depot Plant Modernization Program. Here we will gain economically and decrease flow times by replacing mostly manual distribution methods with mechanized systems.

Chairman ELLENDER. I assume this $11 million you are discussing is set out on line 253 under the heading "Base Mechanization Equipment." Am I correct about this?

General SNAVELY. Yes, that is correct.

Projects included in this request will (1) mechanize small item warehouses; (2) mechanize inter-facility distribution; and (3) provide more efficient component movement for items undergoing maintenance. The remaining $1.1 million will be used to provide mechanized systems for bases other than depots.

Senator YOUNG. How is this request related to the $13 million requested for the depot plant modernization program under "Maintenance and Repair Shop Equipment"?

General SNAVELY. The $9.9 million in Base Mechanized Equipment consists of conveyors, monorails and similar equipment used in the mechanized storage and movement of items undergoing maintenance, going into or out of storage or being prepared for shipment. The $13.0 million for Maintenance and Repair Shop Equipment to support depot plant modernization will procure milling machines, lathes, grinders, plating and cleaning systems and equipment of this type used to maintain and repair weapon systems. Both are part of the comprehensive and phased Depot Plant Modernization Program.

The Air Force is requesting $.6 million to continue the mechanization of air terminals in fiscal year 1973. Mechanized capability will be provided at two passenger terminals and one freight terminal.

The equipment that will be purchased is of the standard commercial type commonly used in industry. Installation of the mechanized systems will permit faster handling of passengers and cargo, thereby reducing aircraft turn-around time.

To provide for equipment modifications and to procure spare parts to maintain the varied items of equipment in this program, $5.8 million is required and $42.7 million for first destination transportation charges for all of the other procurement appropriation.

In addition, under "Miscellaneous" are included many items such as aircraft arresting barrier systems, air cargo pallets, fuel servicing units, and laundry and dry cleaning equipment.

Other major items in this category are Base procured equipment at $20 million. Automatic data processing equipment at $11 million which will be used for purchase of computers to support Worldwide Command and Control Systems and other computers where it is an economic advantage to the Air Force to purchase rather than lease.

Chairman ELLENDER. Please comment generally on the type of equipment you expect to procure with the $20 million requested for "Base procured equipment," and I wish you would prepare for inclusion in the record a detailed statement on this request.

General SNAVELY. This equipment, with a unit cost of $1,000 or more, is authorized for procurement at base level as opposed to other equipment—regardless of unit cost—which is centrally procured and managed by the Air Force Logistics Command. The $20 million request for fiscal year 1973 represents worldwide requirements for the full spectrum of base procured equipment needs for such items as test, shop, food service, medical, recreational, office, and printing and reproduction equipment. Equipment is procured through DSA, GSA, other services, or directly from commercial sources.

Senator YOUNG. You state that $11 million is requested for "Purchase of computers to support worldwide command and control system and other computers." How much of this total is for the procurement of computers to support the Worldwide Command and Control System that we discussed earlier, and how many of these will you procure with these funds?

Mr. FRUCHTER. About $6.3 million is currently programed to purchase eight WWMCCS computers. Final price may vary in accordance with the ultimate configuration based on sizing and experience.

Senator YOUNG. What is the nature of the computers to be procured with the balance of these funds?

Mr. FRUCHTER. The balance of the funds is tentatively planned to purchase computers in support of the MADARS (malfunction, detection, analysis and recording system) and the ASIMIS (aircraft structural integrity management information system).

AIRCRAFT BARRIER SYSTEM

Chairman ELLENDER. You just referred to the procurement of aircraft barrier and arresting systems. I note on line 248 of the P–1 exhibit, you are requesting $1 million for the procurement of 26 of these systems. Please describe this system, and tell us how it is used.

General SNAVELY. The aircraft arresting system consists of cables stretched across each end of the runway about 1,000 feet from the touchdown point. The cable ends are attached to energy absorbing devices on each side of the runway so that when the cable is engaged by the arresting hook of the aircraft, tension is gradually applied and the aircraft is stopped without damage or injury. This provides increased safety and protection to aircrews and aircraft when returning to base with malfunctioning systems such as brakes, hydraulics or landing gear. It also prevents damage during power loss on take off or when tires or landing gear are damaged on landing or take off.

The fiscal year 1973 budget allows us to install these systems below the runway surface at airfields used jointly by the Air National Guard and Civil Aviation. This is an FAA requirement to avoid possible damage to commercial and general aviation aircraft. When required by military aircraft, the cables are raised by the tower operator. After the emergency, the cables are again retracted below the runway surface.

Chairman ELLENDER. On line 250 of the P–1 exhibit, I note the request of $3.2 million for the procurement of 12,000 air cargo pallets. Please describe this piece of equipment and tell us the need for this very large number.

General SNAVELY. These are aluminum covered, wooden cored platforms measuring 108 inches long, 88 inches wide and 2½ inches thick, capable of holding 10,000 pounds of air freight. They are designed to fit the mechanized material handling systems of our major cargo aircraft.

The Air Force requires about 44,000 of these pallets to equip all applicable aircraft, operate our aerial ports in support of Air Force, other services and free world forces and to provide for contingencies. The quantity requested in this budget is to replace those lost, in-

cluding combat losses, and to replace those damaged beyond safe usage.

Chairman ELLENDER. Please comment on the request of $800,000 for the procurement of laundry and dry cleaning equipment.

General SNAVELY. The Air Force operates 29 laundries and 18 dry cleaning plants. Of these, 16 laundries and 14 dry cleaning plants are overseas. All are operated on a break even basis and all are located where economical commercial service is unavailable. They are equipped with standard commercial type equipment. Funds requested in this budget are to replace obsolete and uneconomically reparable equipment.

Chairman ELLENDER. What is involved in the request of $1 million for the procurement of net assemblies as set out in line 251 of the P–1 exhibit?

General SNAVELY. These nets are associated with the cargo pallets and are required to secure cargo to avoid shifting during handling or flight. Two side nets and one top net are required for most pallet loads. They are made of nylon and are subject to wear and breakage. Those requested in this budget are to replace lost, worn and unsafe nets.

Senator YOUNG. On line 256 of the P–1 exhibit, I note a request of $2.3 million for the procurement of "Items Less Than $500,000." Give us several examples of the types of items you expect to procure with these funds.

General SNAVELY. Items planned for procurement in fiscal year 1973 include refrigeration, air conditioning and air circulating equipment; furnace, steam plant and drying equipment; measuring tools; and plumbing, heating and sanitation equipment.

SUPPORT OF FREE WORLD FORCES

Chairman ELLENDER. Based on the information I have, the total requested for this appropriation includes $209.1 million for the support of Free World Forces, of which $162.6 million is for South Vietnam, and $46.5 million for Laos. Are these figures correct?

General DE LUCA. Yes, sir.

Chairman ELLENDER. With respect to the $162.6 million for South Vietnam, how much is for munitions?

General DE LUCA. $162 million is for munitions. The balance of $0.6 million is for vehicles and minor amounts for electronics and telecommunications equipment.

Chairman ELLENDER. Has the committee been furnished with a P–1 type list of the various items included in the total of $162.6 million for South Vietnam?

General SNAVELY. Yes, sir.

Chairman ELLENDER. How much of the $46.5 million for Laos is for munitions?

General SNAVELY. The total of $46.5 million is for munitions.

Chairman ELLENDER. Has the committee been furnished with a P–1 type list of the various items included in this $46.5 million total?

General SNAVELY. Yes, sir.

P–1 EXHIBIT IDENTIFICATION CODE

Chairman ELLENDER. I note a column in the P–1 exhibit entitled "Identification Code," and most items are designated "A" but certain items are designated "B." Just what is the meaning of these designations?

General SNAVELY. A code "A" item is a line item of material approved for service use. In the case of the Air Force, this means that the item has been classified standard or alternate standard. A code "B" item is a line item of material which has not been approved for service use as defined under code "A."

Chairman ELLENDER. Proceed.

General SNAVELY. In conclusion, I would like to restate that prior to presenting the fiscal year 1973 Other Procurement Appropriation estimate the Air Force accomplished a thorough re-examination of all requirements and resource management practices with the objective of reducing fund requirements as much as possible in spite of rising material costs.

That completes my prepared statement, Mr. Chairman.

I will be pleased to respond to any questions you or members of the committee may have.

TOTAL REDUCTION

Chairman ELLENDER. How much will your overall reduction be?

General SNAVELY. Yes, sir; the entire program for the "Other Procurement" appropriation totals $1,883.3 billion and that is $203 million less than the program last year, excluding the classified programs.

Chairman ELLENDER. On page 1, you have in 1972 $1,574 million; in 1973, $1,883 million.

General DE LUCA. Sir, General Snavely is speaking net, exclusive of the classified programs.

In the classified programs in 1972 we have $339 million, and this year we have $851 million. That is a substantial rise in the "Other Procurement" appropriation. I have been informed you have been briefed on why we did that.

Chairman ELLENDER. The difference between $1.5 billion and $1.8 billion is accounted for by the classified items.

General SNAVELY. If you deducted out the classified program for both years, you would have a different set of figures. It would be $203 million less this year.

Chairman ELLENDER. Is there anything else you want to add to what you have said?

General SNAVELY. No, sir.

SUBCOMMITTEE RECESS

Chairman ELLENDER. Thank you.

The subcommittee will recess until 10 o'clock Monday morning when we will have R. & D.

(Whereupon, at 4:40 p.m., Friday, February 18, the subcommittee was recessed, to reconvene at 10 a.m., Monday, February 21.)

DEPARTMENT OF DEFENSE APPROPRIATIONS FOR FISCAL YEAR 1973

MONDAY, FEBRUARY 21, 1972

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, D.C.

The subcommittee met at 10 a.m. in room S–126, the Capitol, Hon. Allen J. Ellender (chairman) presiding.

Present: Senators Ellender, Young, and Allott.

DEPARTMENT OF DEFENSE

DEPARTMENT OF THE AIR FORCE

RESEARCH, DEVELOPMENT, TEST, AND EVALUATION

STATEMENT OF HON. GRANT L. HANSEN, ASSISTANT SECRETARY OF THE AIR FORCE (RESEARCH AND DEVELOPMENT)

ACCOMPANIED BY:

LT. GEN. OTTO J. GLASSER, DEPUTY CHIEF OF STAFF, RESEARCH AND DEVELOPMENT

MAJ. GEN. JOSEPH R. DeLUCA, DIRECTOR OF BUDGET, HEADQUARTERS, U.S. AIR FORCE

MAJ. GEN. JAMES A. HILL, DIRECTOR OF AEROSPACE PROGRAMS, DEPUTY CHIEF OF STAFF, PROGRAMS AND RESOURCES

BRIG. GEN. CHARLES E. BUCKINGHAM, ASSISTANT FOR REQUIREMENTS, DEVELOPMENT AND PROGRAMING, DEPUTY CHIEF OF STAFF, RESEARCH AND DEVELOPMENT

PETER MURRAY, ACTING DIRECTOR OF LABORATORIES, AIR FORCE SYSTEMS COMMAND

BUDGET REQUEST

Chairman ELLENDER. The next appropriation to be considered is "Research, development, test, and evaluation, Air Force" for which $3,193,177,000 is requested. This includes $14,577,000 for the January 1, 1972, pay raise.

PROGRAM AND FINANCING

At this point in the record there will appear certain program and financing information from the justifications.

(The information follows:)

RESEARCH, DEVELOPMENT, TEST, AND EVALUATION, AIR FORCE—PROGRAM AND FINANCING

[In thousands of dollars]

	Budget plan (Amounts for R.D.T. & E. actions programed)			Obligations		
	1971 actual	1972 estimate	1973 estimate	1971 actual	1972 estimate	1973 estimate
Program by activities:						
Direct:						
1. Military sciences	141,909	142,715	146,280	133,998	143,890	149,300
2. Aircraft and related equipment	767,082	1,181,332	1,327,060	874,626	1,167,360	1,321,201
3. Missiles and related equipment	691,509	410,063	387,400	709,141	411,360	383,190
4. Military astronautics and related equipment	429,662	341,086	345,700	414,675	367,766	355,950
6. Ordnance, combat vehicles, and related equipment	89,239	92,525	100,580	81,211	115,390	96,250
7. Other equipment	374,583	404,403	501,992	403,865	423,225	499,333
8. Programwide management and support	333,244	349,304	384,165	329,522	368,079	386,753
Total Direct	2,827,228	2,921,428	3,193,177	2,947,038	2,997,070	3,191,977
Reimbursable (total)	204,600	188,300	180,340	176,330	212,036	181,540
Total	3,031,828	3,109,728	3,373,517	3,123,368	3,209,106	3,373,517
Financing:						
Receipts and reimbursements from:						
Federal funds	−178,714	−186,300	−178,340	−161,490	−186,300	−178,340
Trust funds	−23,566			−20,622		
Non-Federal sources [1]	−2,320	−2,000	−2,000	−5,104	−2,000	−2,000
Unobligated balance available, start of year—						
For completion of prior year budget plans				−400,968	−318,378	−194,000
Available to finance new budget plans	−51,050			−51,050		
Reprograming from (−) or to prior year budget plans	26,334	−25,000				
Unobligated balance transferred from other accounts		−25,000			−25,000	
Unobligated balance transferred to other accounts		25,000			25,000	
Unobligated balance available, end of year, for completion of prior year budget plans				318,378	194,000	194,000
Budget authority	2,802,512	2,896,428	3,193,177	2,802,512	2,896,428	3,193,177
Budget authority:						
Appropriation	2,750,322	2,887,944	3,178,600	2,750,322	2,887,944	3,178,600
Transferred from other accounts	52,190			52,190		
Appropriation (adjusted)	2,802,512	2,887,944	3,178,600	2,802,512	2,887,944	3,178,600
January 1972 pay increase supplemental/amendment		8,484	14,577		8,484	14,577

[1] Reimbursements are derived principally from provision of laboratory services to private organizations (10 U.S.C. 2481).

Note.—Excludes $29,300,000 in 1973 for activities transferred to operation and maintenance, Air Force. 1971, $35,713,000, 1972, $34,900,000.

The amounts shown as January 1972 pay increase supplemental/amendment are not distributed to each individual appropriation in the fiscal year 1973 President's budget, but are reflected as a one-line defensewide contingency amount. The amounts shown above are estimates, pending final determination of the amounts to be requested when supplemental and amended estimates are formally transmitted.

INCREASE OVER 1972

Chairman ELLENDER. The first witness will be the Assistant Secretary of the Air Force for Research and Development, the Honorable Grant L. Hansen, followed by Lt. Gen. Otto J. Glasser, Deputy Chief of Staff for Research and Development.

You may proceed.

Mr. HANSEN. Thank you, Mr. Chairman.

General Glasser and I are pleased to appear before you this morning to present to you the Air Force's fiscal year 1973 budget request for Research, Development, Test, and Evaluation. Our request is for $3.193 billion, which is an increase of $175 million over our fiscal year 1972 budget request of $3.018 billion, and an increase of $280 million over the $2.913 billion actually appropriated for fiscal year 1972. This increase is required to continue current development programs and support an adequate technology effort.

This R.D.T. & E. budget has been formulated within the constraints of our total military requirement for funds and our recognition that you in the Congress must balance the many needs of our Nation.

BUDGET CRITERIA

Our budget criteria have been the adequacy of our developing force structure to meet needed future operating capabilities, our confidence in our ability to successfully execute the required R.D.T. & E., and the balance between our R.D.T. & E. efforts in addressing the strategic, tactical, intelligence, logistic, personnel, and technological requirements of the Air Force.

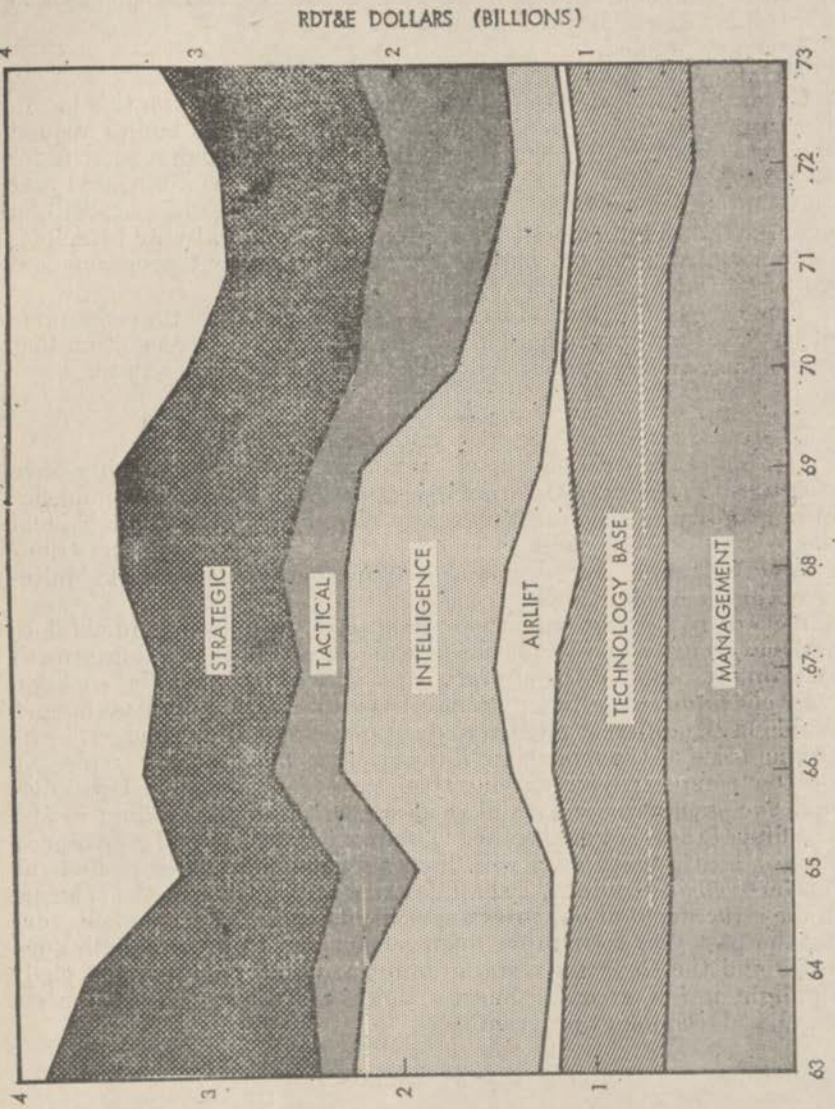
We are requesting only those programs which we deem vital to national security in view of our assessment of the continuing growth and sophistication of the military capability of our potential enemies.

In my prepared testimony today I shall review briefly past budget trends in the different mission and support areas of our budget, identifying some of the more significant events. I hope thereby to present a better perspective for viewing this year's budget request. I will discuss two issues where I think widespread misunderstanding exists. The first of these is what is called "goldplating," the second is advanced development prototypes. I will discuss some issues related to Federal contract research centers. I shall describe to you some of the changes in the structuring of our program elements which we have made during the past year to improve management and to provide both ourselves and the Congress more meaningful visibility. Finally, I shall highlight a few accomplishments which are illustrative of our research and technology program.

BUDGET TRENDS

Figure 1 shows our Air Force R.D.T. & E. budgets from 1963 to 1973, separated by mission areas.

(The chart follows:)


RDT&E DOLLARS (BILLIONS)
4
3
2
1
STRATEGIC
TACTICAL
INTELLIGENCE
AIRLIFT
TECHNOLOGY BASE
MANAGEMENT
63
64
65
66
67
68
69
70
71
72
73
FISCAL YEAR

STRATEGIC PROGRAMS

Mr. HANSEN. Our strategic programs have shown a decrease over this period, but an increasing trend during the last 2 years. R.D.T. & E. on the Atlas, Titan, and Minuteman I missile systems was successfully completed, and these systems have served their strategic deterrent role well. Today they are either phased out or being phased down. The B–70 was completed as a prototype but not pursued to production. R.D.T. & E. on the Skybolt, YF–12, and mobile medium range ballistic missile was terminated before successful completion of the programs. The R.D.T. & E. on FB–111, SRAM, defense support program, and two over-the-horizon radar systems have been essentially completed, and these systems are being or have been successfully introduced into the inventory. Our "advanced ballistic reentry systems" program is continuing to develop options for future strategic missiles, and R.D.T. & E. on Minuteman III, the B–1 bomber, Subsonic Cruise Armed Decoy (SCAD), Airborne Warning and Control System (AWACS), Advanced Airborne Command Post and satellite communications are included in our fiscal year 1973 request. The recent increasing trend in strategic systems provides emphasis to the need for success in the Strategic Arms Limitations Talks (SALT).

Tactical programs have significantly increased during the past 4 years to reflect the improvements shown to be necessary by the Southeast Asian war, the increasing capability of the Warsaw Pact countries, and the tactical situation in the Middle East. The F–111, the RF–4, our Tactical Air Control System (TACS), and LORAN have entered the operational inventory. The effort of the Defense Communication Planning Group has been terminated, and many products from that program are operational. Last year I cited to you the impact of guided bombs upon our operations in Southeast Asia, and R.D.T. & E. on other systems in this program is continuing in fiscal year 1973. The C–130 gunships are a spectacular success story in meeting the problem of interdicting supply movements in Southeast Asia. The Maverick missile R.D.T. & E. will be completed this year, and we are confident that we have a good system. R. D. T. & E. on electronic warfare continues. The major aircraft in this portion of the fiscal year 1973 budget request are the F–15 and the A–X.

B–70 BOMBER PROGRAM

Chairman ELLENDER. Mr. Secretary, at the top of page 4 you state that the B–70 was completed as a prototype but not pursued to production. I remember discussing that quite a few years ago. I wish you would put in the record how much money was spent on that airplane when you decided not to continue it.

Mr. HANSEN. The number is $445 million, Mr. Chairman.

Chairman ELLENDER. Do you recall why it was stopped?

General GLASSER. Yes, sir. The principal reason why the B–70 was not pursued on in production is that it was designed as a high-altitude bomber. The growing SAM threat, the surface-to-air missile threat in Russia made it no longer a viable concept.

Chairman ELLENDER. Do you remember when you started that program?

General GLASSER. I was not personally involved in it, but I do remember the incident.

COUNTERING AND OFFSETTING MILITARY DEVELOPMENT

Chairman ELLENDER. The reason I refer to the B–70 is that I believe it to be a good example of the type of arms race in which we currently find ourselves. At the time, Russia was in the process of developing new offensive and defensive weapons. Also at that time it was believed that the B–70 was necessary to counter Russian efforts.

I believe they developed a bomber which with refueling had the range to reach us, and which had the potentials of our F–111, maybe a little better than that. Am I correct?

General GLASSER. That is correct. It is somewhat better than the FB–111.

Chairman ELLENDER. Thus, as we put new weapons into the field for our own protection, one can expect a potential enemy to do something to offset it and vice versa.

B–70 BOMBER; ABANDONMENT OF PRODUCTION

I am glad that you confirmed my impression of what took place in connection with the B–70. After considerable funds were spent to develop it as a high-altitude bomber, it was abandoned, probably, in part at least, as a result of Russian counteraction.

The surface-to-air missiles have been developed to a point where they are very effective weapons. Am I not right in that thinking?

General GLASSER. That is correct, sir.

B–1 BOMBER PROGRAM

Chairman ELLENDER. One of the reasons given for developing the B–1 is that it is a low-flying bomber, not susceptible to being attacked by the SAM. That is one of the reasons why you are promoting the construction of the B–1, is it not?

General GLASSER. Yes, sir.

Chairman ELLENDER. What evidence do you have, if any, after you produce the B–1 bomber, that our potential enemy or enemies will not be able to construct effective defensive measures against the B–1?

ACTION AND ENEMY REACTION

General GLASSER. Of course, there is never a certainty that you will not encounter some defensive measure. That is the history of warfare for all of recorded history. For every action, the enemy has a reaction.

Chairman ELLENDER. That is the reason for my comparison, General, for every offensive weapon you put in the field, you can expect our potential enemies to take countermeasures.

For a long time now, certainly since the early 1950's, we have been in a continued arms race with Russia. As one nation achieves an outstanding offensive weapon, the other side either attempts to improve on that weapon, or attempts to develop effective countermeasures. This has been the history of warfare through the centuries. We developed certain offensive weapons and followed that with defensive measures, such as the early warning systems and the ABM. The Russians did

likewise. Also as a result we felt it necessary to arm a large number of other nations. The list is long and included practically all the nations of Western Europe, Greece, Turkey, and in the Pacific, the Philippines and Taiwan. In most of these we have our own installations, as we do in Japan and Okinawa, so that we have virtually surrounded Russia militarily.

With this continual tug of war presently in progress, it is difficult to be optimistic about an early peace between the United States and Russia. Yet such a peace is essential to both nations. Certainly it is to this country, for our economy is being strained by these vast expenditures. That is one reason we must pursue the SALT talks with all the vigor and earnestness at our command.

SALT TALKS

Mr. HANSEN. I certainly agree with you, Mr. Chairman, that the SALT talks are very important. [Deleted.]

Chairman ELLENDER. Very important. I have said that from the beginning.

Yet, I cannot see how we can reach agreement on the SALT talks if we both continue an arms race.

You will remember 4 or 5 months ago, and I think you were there, Senator Young, when the President called us to discuss an announcement he was going to make about the SALT talks, how he thought that by December we could come to some agreement to restrict construction of ABM's to Washington and Moscow.

When I heard that was going to be the announcement, I suggested to the President "to show good faith, let us suspend the building of the ABM." But members of the military department said, "Oh, no, we can't do that. We have to keep on building."

So it is my belief that as long as each side—and I am not saying that it applies only to us—but as long as each side continues the construction of these destructive pieces of military hardware, I just cannot see that we will have early agreement in the SALT talks.

REPLACING MINUTEMAN II WITH MINUTEMAN III

Senator YOUNG. General Glasser, I am not clear on the testimony last week wherein there was reference to the cost of Minuteman III emplacment. Does it cost $1 million to replace a Minuteman II with a Minuteman III or was that the cost of hardening a silo?

General GLASSER. The million dollar figure that we mentioned last week was the cost of hardening one silo. The so-called upgraded silo program cost on the average about $1 million per silo. The putting in of a Minuteman III itself, is more like $3 million.

Senator YOUNG. In the wings where you replaced the II's with the III's, you hardened the silos at the same time?

General GLASSER. When we can, we are doing that, but the schedules are not always compatible.

We will be [deleted] into that wing in about [deleted] to upgrade the hardness of [deleted].

WARNING SYSTEMS FOR MISSILES AND BOMBERS

Chairman ELLENDER. We have so many different systems for warning of ICBM or bomber attacks that I can't keep them straight in my mind. I wish you would submit for the record a detailed listing of these, setting out the various costs for fiscal 1970 and prior years, fiscal years 1971 and 1972, and the request for fiscal year 1973.

General GLASSER. I agree with you, Mr. Chairman. I can see why you need to have this type of combined information, and I will supply it for the record.

(The information follows:)

ACQUISITION AND OPERATING COSTS OF WARNING SYSTEMS

The acquisition and operating costs of those warnings systems which are in operation follow:

[In millions of dollars]

	Fiscal year—			
	1970 and prior	1971	1972	1973
Norad combat operations center:				
R.D.T. & E.	20.4			
Other procurement	43.8	0.3	4.6	9.0
Military construction	50.6			
Operations	110.4	13.9	14.5	14.9
O. & M.		(7.7)	(8.3)	(7.8)
Military personnel		(6.2)	(6.2)	(7.1)
TOA	225.2	14.2	19.1	23.9
Back-up interceptor control system (BUIC):				
Other procurement	202.6	.1	.1	.2
Military construction	9.3			
Operations	161.4	12.2	9.5	3.9
O. & M.		(3.3)	(1.1)	(.2)
Military personnel		(8.9)	(8.4)	(3.7)
TOA	373.3	12.3	9.6	4.1
Joint control centers:				
Other procurement	.1			
TOA	.1			
Direction centers/region control centers:				
Other procurement	29.0	.1	.1	
Military construction	1.2			
Operations	580.2	27.0	24.2	25.2
O. & M.		(5.5)	(3.1)	(2.9)
Military personnel		(21.5)	(21.1)	(23.3)
TOA	610.4	27.1	24.3	25.2
Combat centers/Norad manual control centers;				
R.D.T. & E.	82.5			
Other procurement	1,061.8	.1	.1	.1
Military construction	149.2			
Operations	191.4	3.0	2.8	2.8
O. & M.		(.6)	(.5)	(.4)
Military personnel		(2.4)	(2.3	(2.4)
TOA	1,484.9	3.1	2.9	2.9
Communications (416L):				
O. & M.	254.3	31.0	31.6	29.7
TOA	254.3	31.0	31.6	29.7

[In millions of dollars]

	Fiscal year—			
	1970 and prior	1971	1972	1973
Surveillance radars:				
R.D.T. & E.	0.6			
Other procurement	708.2	10.2	7.5	.7
Military construction	532.0	4.0	3.3	3.4
Operations	1,549.5	93.4	104.6	109.2
O. & M.		(31.5)	(46.4)	(48.1)
Military personnel		(61.9)	(58.2)	(61.1)
TOA	2,790.3	107.6	115.4	113.3
DEW line radar stations:				
R.D.T. & E.	10.4			
Other procurement	149.9			
Military construction	362.2			1.8
Operations	683.0	23.3	21.2	21.2
O. & M.		(22.7)	(20.5)	(20.5)
Military personnel		(.6)	(.7)	(.7)
TOA	1,250.5	23.3	21.2	23.0
Airborne early warning and control system:				
R.D.T. & E.	5.0			
Aircraft procurement	341.0	3.7	2.1	2.5
Operations	686.2	30.1	28.1	27.2
O. & M.		(7.5)	(7.6)	(7.6)
Military personnel		(22.6)	(20.5)	(19.6)
TOA	1,032.2	33.8	30.2	29.7
Ballistic missile early warning system (BMEWS):				
R.D.T. & E.	86.6			
Other procurement	821.0	1.8	.3	.1
Military construction	205.7			
Operation	458.7	46.2	44.2	47.2
O. & M.		(40.2)	(37.6)	(39.8)
Military personnel		(6.0)	(6.6)	(7.4)
TOA	1,572.0	48.0	44.5	47.3
Space track:				
R.D.T. & E.	71.2			
Other procurement	53.0	1.6	.4	2.3
Military construction	2.7			
Operations	174.3	28.2	29.9	39.8
O. & M.		(19.6)	(20.8)	(30.1)
Military personnel		(8.6)	(9.1)	(9.7)
TOA	301.2	29.8	30.3	42.1
Forward scatter OTH radar system:				
R.D.T. & E.	34.8	3.0	1.3	
Other procurement	51.9	6.2	6.0	.4
Military construction	6.6			
Operations	43.2	12.5	8.0	8.1
O. & M.		(8.3)	(3.3)	(3.0)
Military personnel		(4.2)	(4.7)	(5.1)
TOA	136.5	21.7	15.3	8.5
[Deleted]				
R.D.T. & E.	[Deleted]			
Missile procurement				
Other procurement				
Military construction				
Operation				
O. & M.				
Military personnel				
TOA				

In addition to these systems, the FY 73 budget includes $160 million for RDT&E funds and $309.9 million for Procurement funds to continue effort on the AWACS. The AWACS program has three phases: Brassboard Radar Development, Full Engineering Development and Production. The program was initiated in July 1970 when the system contract was signed with The Boeing Company. We are currently in the Brassboard Radar Development Phase. The Hughes Aircraft and the Westinghouse Electric Corporations are currently flying two modified Boeing 707 commercial aircraft, each containing one of the candidate radars. Both radars are radiating and the fly-off will continue through July 1972. Data will be reduced, evaluated and a decision on the winning radar is scheduled for November 23, 1972, with a presentation to the Defense System Acquisition Review Council (DSARC). Full system integration will follow with the selected radar and that phase of the program is scheduled to conclude with presentation to DSARC in December 1974. Production would then begin in January 1975.

Also included in the FY 73 budget is $4.4 million of RDT&E funds for the CONUS Over-the-Horizon (OTH) Radar System. The CONUS OTH–B Program is currently in the validation phase and system specifications are being defined. Contract award for a Northeast site is scheduled for late FY 73. The initial operating capability for the Northeast site is scheduled for FY [deleted]. Completion of a Northwest site is scheduled in FY [deleted].

A total of $35 million for RDT&E funds is included in the FY 73 budget for study efforts. These include programs such as the Advanced Surveillance Technology ($24.9 million) and Space Defense System ($10.1 million).

Under PE 64406F, Space Defense System, we are developing satellite defense techniques. These involve two approaches. The first is to develop the means to prevent [deleted] of our surveillance and communications satellites by self-defense methods i.e., [deleted].

Under PE63424F, Advanced Surveillance Technology, we are developing and demonstrating improved space based sensors for detecting and tracking missiles and space boosters during powered flight. The output of these studies will be applied to the [deleted] satellites. We are also developing [deleted] sensors for application to a midcourse detection and tracking system, which will be capable of tracking satellites and missiles after powered flight. These improved systems will greatly increase our ability to detect hostile actions and take appropriate defensive measures.

BUDGET TRENDS

Chairman ELLENDER. You may continue, Mr. Secretary.

Mr. HANSEN. Mr. Chairman, I was discussing the trend in Air Force research, development, testing, evaluation, and expenditures.

There has been a major decrease in the RDT&E supporting the intelligence mission area. RDT&E on the SR–71 is included in the early years, and this system has been very successfully operational.

The logistics, or airlift, RDT&E programs show a pronounced increase in the mid to late 1960's, with a subsequent dropping off. RDT&E was successfully completed on the C–141 aircraft which was introduced into our inventory in mid 1960's. The C–5 aircraft is operational in our Military Airlift Command today. The development of the All Weather Aerial Delivery System (AWADS) on the C–130 aircraft is successfully operational. We have only the medium STOL as a significant program in the fiscal year 1973 budget in support of airlift.

DECREASE IN SUPPORT FOR INTELLIGENCE MISSION AREA

Chairman ELLENDER. When you speak of intelligence missions in the last full paragraph on page 5, was that in any wise connected with the reductions made by this committee in last year's budget?

If you recall, this committee recommended some substantial reductions in the fiscal 1972 requests for various intelligence operations. The conference committee agreed on reductions of approximately $370 million.

Did this decrease in supporting intelligence come about because of that?

Mr. HANSEN. Mr. Chairman, in the trend chart you will note the intelligence section started decreasing between fiscal year 1969 and 1970, and it has steadily decreased in each year since then. We have been responsive to the indicated desires of the Congress in that respect.

Chairman ELLENDER. Your reference to intelligence is limited to the Air Force?

Mr. HANSEN. Yes. This trend chart that I am showing is strictly the Air Force expenditures for the research and development aspect of intelligence programs.

Chairman ELLENDER. Off the record.

(Discussion off the record.)

TECHNOLOGY AND MANAGEMENT

Mr. HANSEN. Our technology base, which includes our research, exploratory development, and some of our advanced development, reflects a purposeful increase this year after a decade of essentially constant funding, while our management program elements have shown a decrease in the last years of this period. Nevertheless, the actual level of effort in technology and management has decreased by over 40 percent because of inflation, as has the effort represented by the total Air Force RDT&E budget as well.

GOLDPLATING

I would like now to address the issue of "goldplating," a term which is loosely used to describe a situation, real or imaginary, where systems are more complicated than they have to be, cost more, and break down more often. I say real or imaginary because while clearly there have been some systems where this has been the case, there have been many more where there seems to be an image in the public's mind which is not consistent with fact. Every setback, every delay, every mechanical or electrical failure becomes an immediate news item, and each news item is almost unquestioningly equated to a proof of "goldplating." This is incorrect, and I hope to place the issue in proper context.

Chairman ELLENDER. For the record, will you define "goldplating" for us? I know what it is.

Mr. HANSEN. I can define goldplating as having features which are not absolutely necessary for the system to accomplish its intended mission, Mr. Chairman.

The single driving fact in the acquisition of major weapon systems is that the capabilities required for survival in war today present hard engineering problems that we have never faced before. It is these hard engineering problems which result in the uncertainties of our estimates at any given time, which take time and effort and money to solve, and force compromise in performance.

This has been true for every system we have built in the past, and will be true for every system we build in the future. It has been true for us, it has been true for our allies, and it has been true for our adversaries.

The history of the cost and complexity of fighter aircraft systems illustrates the problem. In World War I, a fighter aircraft cost about

$5,000. By World War II, this rose to about $50,000. By the Korean war, the price had jumped to $500,000, and the cost of fighter aircraft systems of the 1970's have increased by roughly another factor of 10. If one were to project these trends, by sometime in the 21st century we would be able to afford only one aircraft. Clearly, one aircraft, no matter how capable, will be inadequate for the simple reason that it cannot be more than one place at one time. But we cannot wish ourselves back to the simpler systems of 1917 or 1941, for we would quickly lose our entire force against the existing systems of our potential opponents.

Exchange Ratio and Cost

Obviously, we must compromise between the extremes of capability and numbers to develop new fighter aircraft systems that will have, first, an acceptable exchange ratio against enemy systems, and second, a cost that will allow us to buy and operate enough to achieve and maintain air superiority for the United States if war should ever come. We are developing the F–15 against these criteria.

This escalation of cost and complexity is not unique to military aircraft. The $50,000 price tag of the Ford trimotor transport of 1926 rose to $500,000 for the DC–6 of the late 1940's, to $5 million for the 707's of the early 1960's, and to the $20 million-plus of today's 747 aircraft. These aircraft were developed for commercial airlines who are profit motivated. Despite the increase in the cost per aircraft, our commercial airlines have set the standard for the world and have brought into being an air transportation system that has shrunk continents and oceans for Presidents and average citizens alike. Increasingly complex systems with increasing payoff are common both to military and civilian activities.

Comparison: Early and Current Fighter Aircraft

Let us pursue this comparison between the fighter aircraft systems of yesterday and today further. I include the term "system" advisedly for today's fighter is far more than just an airplane. The fighter system of World War II was a 15,000 pound aircraft with a pilot, radio, perhaps six to eight machineguns, a simple reticle for a sight, rudimentary flight instruments, and a life support system that consisted of little more than an oxygen mask. Our pilots would fly to a given area where the enemy was likely to be, look for their targets visually, and engage that target when they found it. They fought at perhaps 250 knots at 10,000 feet. If they were attacking ground targets, they carried perhaps 1,000 or 2,000 pounds of bombs which they dropped when they thought they were in about the right position.

They faced very little antiaircraft fire from the ground. If they were shot down, they climbed out of their aircraft, jumped, and pulled the ripcord at perhaps 200 knots. We used the same aircraft to attack ground targets one day, intercept enemy bombers the next day, and engage enemy fighters the day after that. Our airmen did a tremendous job with the systems they had.

Today's fighter aircraft systems are much different, to meet a much different situation. The pilot must be equipped with a radar to detect his target, as well as a far more capable, and complex, communication system for data transmission. He carries electronic countermeasure equipment to jam the enemy's radar. He carries computers to help him

aim his guns or drop his bombs. He carries electronics that help him navigate to his target and get back to his home base and land when the weather is bad. He may fly a hundred feet above the ground at 450 knots with a terrain following radar. He may spot a target, punch its location into a computer, and then hit that target on the way back. He may be directed and guided by another aircraft or ground station 100 miles away from his target. He may carry bombs which are guided to their targets by electro-optical seekers or by laser designators. He may carry infrared countermeasures to protect himself against homing missiles of the enemy.

He may carry his own infrared or radar guided missiles, or cannon that fire faster than the machinegun of World War II. He may fly at 450 knots attacking a ground target, or he may fly at 1,000 knots at 30,000 feet in an engagement with enemy fighters. If he is shot down, he ejects at perhaps 400 knots on an explosively driven seat or capsule. And in order to survive in various missions, he may have to fly one airplane for close-air support, another airplane for interdiction, and still another aircraft for air superiority over the enemy's fighters.

These systems do add complexity and cost, but are absolutely necessary, unless we are willing to lose pilots and aircraft at what I believe to be an unacceptable rate. Have we become so enamored with complex gadgetry that we have lost sight of our objective? We are continually reexamining our operational requirements to assure that we do not make that mistake.

Foreign Mystique

Because of the high visibility of problems that have arisen in the development of our aircraft systems, there has arisen something that has been called a "foreign mystique." The idea that other countries manage aircraft programs better and at lower costs than our DOD does is largely a myth. As an example, I cite the reported cost escalation of the Anglo-French light bomber, "Jaguar," as recorded in the British trade press.

According to the French National Assembly, the cost of the Jaguar has risen from an estimated 500,000 British pounds 3 years ago to nearly 2 million pounds today.

The British press notes that 550,000 British pounds was the estimated price based on a production run of 835 aircraft, and that inflation, devaluation, and a reduction of the production run from 835 to 400 had lifted the cost to 1.05 million pounds. Costs of R. & D., spares, fuel, test equipment, maintenance, and new national taxes led to the higher figure of 2 million pounds. It would appear that no magic formula for the development and production of aircraft exists in Europe.

Costs and Complexity Problems

The universality of increasing costs and complexity has serious national implications. If only one corporation ran into serious problems on the development of aircraft, we could be less worried. Any corporation can have problems, but if it has too many, it will not remain competitive. This is as it should be. However, when General Dynamics has problems on the F–111, when Lockheed has problems on the C–5, when Grumman has problems on the F–14, when our allies have problems on the Jaguar and other systems, and similar problems occur on ships and tanks, we must be worried.

REQUIREMENT FOR EXPERTS TO OPERATE SYSTEMS

Chairman ELLENDER. I think the criticism that I have noticed was directed primarily to the fact that it took experts to operate much of this hardware. I believe that is evidenced by the fact that we are trying to provide South Vietnam with a much simpler plane than our personnel use. Would you comment?

Mr. HANSEN. That is absolutely correct, Mr. Chairman. Many of our systems do require very highly trained and skilled people, and in our own forces we are putting emphasis in research and development programs on trying to design our equipment so that it can be used with less application of manpower.

We are very much concerned about the rising cost of manpower, and the rising percent that it is of the total budget. We are trying wherever we can to bear that very much in mind, and try to design our systems so that they will require a minimum utilization of those expensive man-hours.

Chairman ELLENDER. There has been considerable criticism that it took experts to operate our complex weapons. This certainly relates to goldplating.

Mr. HANSEN. Unfortunately, Mr. Chairman, modern warfare is a very complex business. The best way to avoid that complexity is to have peace in the world.

Chairman ELLENDER. Yes; I have been for that all along.

I was glad, by the way, to hear the exchange of toasts this morning between the Chinese and the Americans. I hope that we will have better relations as a result. That is why I supported the President when he first decided to go to China. It is a step toward getting people thinking together—not that we want to embrace their philosophy, but as an indication to the people of the world that peace is our objective. I applaud the President for it. I hope he does something similar when he goes to Russia.

Mr. HANSEN. We all hope that, Mr. Chairman.

Chairman ELLENDER. Proceed.

CRITICAL ANALYSIS AND COST PERFORMANCE

Mr. HANSEN. It is pointless to reflect upon how things used to be in defense, for we cannot go back to the simpler threats. We must look at defense effectiveness as a measure of cost justification, and be willing to pay as much as necessary for our security, but not a cent more. By critical analysis of requirements and by cost-performance trading development, we in the Air Force are placing a maximum of emphasis upon defense value and the avoidance of "goldplating."

PROTOTYPING

There is absolutely no way to avoid hard engineering problems as we develop new systems for the future. But we believe there is a better way to solve these engineering problems early in the game, and that is what we have called prototyping. We are today developing the B–1 bomber as a production prototype for our next strategic bomber. We are minimizing the ancillary equipment which might subsequently be installed on such an aircraft, and concentrating on the basic engineer-

ing aspects of the aircraft itself. Our progress so far gives us confidence that we will not have the surprises that we encountered in the F–111 and the C–5. We are uncovering and solving problems bit by bit, and only when we are sure that we have solved these problems will we propose a system for production. Similarly, in the case of the A–X close support aircraft, we are developing two competing development prototypes. There will be a flyoff later this year. We are spending our development dollars to create relatively unsophisticated systems which will give us confidence before beginning full engineering development or production.

These programs are examples of production and competitive development prototypes. In addition, we must have what I call advanced development prototypes. Our efforts in developing new technology in the past have provided the base for us to develop today's A–X, AWACS, F–15 and B–1 to meet the Soviet threat. But our technology efforts of today are developing new materials, structures, and techniques which open the door to the development of better, cheaper and more reliable aerospace systems in the future.

A–X AND CHEYENNE HELICOPTER PROGRAMS

Chairman ELLENDER. Mr. Secretary, I am disappointed that the budget for fiscal year 1973 is not based on continuing the development of only one of the close air support aircraft—the A–X or the Cheyenne. However, the Air Force is requesting $48.1 million to continue the A–X and the Army is requesting $53.5 million to continue R. & D. work on the Cheyenne. I discussed this with General Glasser the other day.

It seems to me that a decision should be made between these two aircraft in order to save the money that is being spent on the one that will not be produced.

Mr. HANSEN. Mr. Chairman, we in the Air Force believe that the A–X, which is in prototype stage now with competitive contractors, is a very fine, cost effective vehicle and that it can adequately do the close air support job. I think your question about the relationship of the A–X to the continuation of the Cheyenne program or the A–X program should properly be addressed to the Department of Defense witnesses.

I do not think the Air Force should make that judgment.

The close air support mission role is the assigned responsibility of the Air Force, and it is the Air Force's judgment that the A–X aircraft approach to the solution of the close air support mission program is a proper solution.

Chairman ELLENDER. You may proceed.

LOW-COST PROTOTYPE

Mr. HANSEN. What we need to do is build and flight test low-cost prototypes which provide us technology, demonstrated in hardware, from which we can develop options for selection of programs to proceed into engineering development in the future.

Chairman ELLENDER. You mentioned "low-cost prototypes." What do you mean?

Mr. HANSEN. I mean low cost in the sense that the total cost of prototypes represents something on the order of 1 or 2 percent of the total cost of a deployed system, prototypes are a lower cost in that we put in the prototypes only those things which are necessary to develop the information which we are trying to develop. The A–X prototypes, for instance, will not have the full developed landing gear, militarization and qualification of parts, but will be a machine which can demonstrate the ability to fly, to maneuver, to survive, to operate the guns, to deliver munitions, those things which we need to know to assure ourselves that it is a machine which will do the job and to develop enough data so that we can go into a production program with very high confidence on what the production cost will be.

A–X LANDING GEAR

Chairman ELLENDER. You mentioned landing gear. I presume you have already tested that and will probably use previously developed equipment; that is why you don't have to further develop it?

Mr. HANSEN. That is correct.

The key question in whether or not the A–X program concept makes sense is not a landing gear question. It is a question of the performance and survivability of an airborne platform for delivery of munitions to provide close air support.

A–X 30-MILLIMETER GUN

Chairman ELLENDER. How about the new gun for the A–X?

Mr. HANSEN. We are developing a 30-millimeter gun for the A–X. That is a competitive development. Our intention is to have what we call a shoot-off between the competitors, select the best gun, and put the winning gun in the winning airframe and conduct further prototype tests before committing the program to production.

DEVELOPMENT COSTS

Senator YOUNG. I believe it costs on the average approximately a billion dollars in research and development for our new aircraft?

Mr. HANSEN. That is a reasonable guesstimate as to the cost of development for a fairly modern, complex aircraft weapon system.

Senator YOUNG. How much will it cost to develop the A–X prototype that you are talking about?

Mr. HANSEN. The A–X approach is a simple one. It is costing us approximately $80 million to get two prototypes each from two manufacturers. These airplanes will be flown starting this summer.

We will have an evaluation of the flight tests in the fall. At that time, it will be necessary to do additional production engineering on the winning prototype. We don't know exactly what that will cost because we don't have a bid yet.

An approximate estimate would be $200 million.

Senator YOUNG. I am interested in the total cost of the prototype, including research and development. I am attempting to determine the difference in cost between the prototype, including research and development, and the aircraft when you go into production.

Mr. HANSEN. The relationship of the prototype cost to a full development cost, of course, depends on how much we are trying to incorporate in the prototype and how nearly we want to approach what could be an operational aircraft configuration.

In the case of the A–X, as I mentioned, we think that the prototype costs are on the order of a third of the full development cost.

In the case of the——

Senator YOUNG. How much have we spent on the A–X already, including research and development?

Mr. HANSEN. The total cost for the A–X prototype program is approximately $80 million.

Senator YOUNG. Including research and development?

Mr. HANSEN. Well, including research and development which is specifically assigned to the A–X program. Of course, it benefits from many past research and technology programs which fed over to it and have been paid for as part of the laboratory programs or part of the development of other aircraft. There is specifically assignable to the A–X approximately $80 million for four prototype aircraft from two manufacturers.

B–1 BOMBER PROTOTYPE COSTS

Senator YOUNG. You don't seem to get my point. Let me refer to the B–1. How much money have you spent on the B–1 including research and development?

Mr. HANSEN. The B–1 is a different type of prototype. What we will get in the B–1 is a preproduction prototype so at the completion of the prototype phase that airplane will be fully engineered for production. We have spent approximately $690 million on the B–1 so far. We estimate approximately $2.6 billion as the total R.D.T. & E. cost involved in the B–1 program.

PROTOTYPE APPROACH TO COMPONENT DEVELOPMENT

Senator YOUNG. Would we not be better off to use the prototype approach on some of the lesser components? I have in mind fuses.

Mr. HANSEN. That is correct, Senator Young. That is the point I am making in my statement. We feel that a greater use of the prototype concept will be of benefit to the country. We have been caught up in the problem that we were required to have all the answers before we can start and, therefore, of necessity, we get those answers on paper and as we proceed then on the full-scale program we run into too many surprises. We are saying that we think we should put more emphasis on prototyping hardware and reducing our uncertainties so that at the time we make the commitment to produce we will know both technically and economically much more about what is involved.

RUSSIAN FIGHTER PLANE DEVELOPMENT

Senator ALLOTT. On the same subject that the chairman and Senator Young have been covering, the Senator from Missouri, Mr. Symington, has asked many questions in this committee in the last week or so and two or three times he has alluded to the fact that the Russians have

developed 15 fighter planes. At one time he said he had pictures of them in his office.

Do you have any idea what age those fighter planes are? The Mig–21 is how old?

General GLASSER. The Mig–21?

Senator ALLOTT. Yes.

General GLASSER. I am guessing now, but it is around 5 or 6 years, as I remember.

Senator ALLOTT. The Mig–23 is the Foxbat?

General GLASSER. The Foxbat. It depends on what you mean by how old. When I am talking of the Mig-21, that is when it came into the operational inventory. It started some time before that. The Foxbat in prototype form was back in 1965. It is about that period of time.

Senator ALLOTT. What you are trying to do now is basically what the Russians have done, to avoid committing yourself to systems such as we did in the F–111 and the C–5A, and to develop a prototype instead. The Russians, if they have developed 15, as the Senator from Missouri says, would have had to develop prototypes. We don't have any record of 15 fighting planes being developed and produced in quantity for their systems in the last 10 or 15 years by the Russians, do we?

General GLASSER. Not in their system, but we are certainly aware of the prototypes having been produced. We have seen them.

PROTOTYPE AND CONTRACT DEFINITION APPROACHES

The difference in philosophy that you are describing is, one, the prototype approach says, I will only develop those things necessary to make the decision to go further or to terminate. The approach that was used in the United States for quite a period of time, until Mr. Packard revised it, was to work on paper and to study out what the program ought to be and to run a complete contract definition. All on paper, and then commit yourself totally to that.

My personal opinion is that that approach stands as a discredited approach. There are just too many unknown unknowns that creep up in the program that are not susceptible to determination on paper.

Senator ALLOTT. Taking your word, although the Cheyenne is the Army's version of the ground support role, the same thing would apply to what the chairman was discussing 15 or 20 minutes ago with respect to evaluation. It could well appear to the Defense Department that the A–X or the Cheyenne, before it reached full prototype production, was unsuited to the close ground support for which it is designed, but, on the other hand, assuming a logical development, the truth of the matter is that you can only really find out after each one has reached the prototype stage and has been tested, unless one of them developed terrible inefficiencies or inadequacies of some sort which certainly could not be foreseen at this time. Is that correct?

General GLASSER. That is correct. Moreover, the Air Force position as regards the Cheyenne and the A–X has always been that both should be developed through the prototype phase and then the decision should be made on the basis of real hardware in hand which could be evaluated. The Air Force has never recommended the termination of the development phase of the Cheyenne.

Senator ALLOTT. Thank you.

CL–1200 OR X–27 AIRCRAFT

Senator YOUNG. If my information is correct, Kelly Johnson designed a new fighter plane. He did this, as I understand it, working with other companies without extensive research and development cost. What is the Air Force evaluation of this aircraft?

General GLASSER. I believe you are referring to what Kelly called the CL–1200 which we call the X–27 in the Air Force. This was an extension of the F–104 aircraft. He did have several other companies who were willing to participate with him in hardware. A derivative of this is certainly one of the candidates and probably will appear in the lightweight fighter competition.

Senator YOUNG. There would be limited research and development involved.

General GLASSER. No. It uses a great deal of hardware that already exists and just adds some features to them.

Senator YOUNG. I am interested because he does have the reputation of being one of the best, if not the best, plane designers in the world.

General GLASSER. Indeed he is.

A–X DEVELOPMENT COSTS

Chairman ELLENDER. I am confused about the cost of the A–X prototype program. Earlier you referred to a cost of $84 million for the A–X. Is that the total cost of the program?

Mr. HANSEN. We say that by the time we complete the prototype, the competitive prototype phase of the A–X, we will have spent about $84 million. That is the amount that it will take us to the end of the program.

Chairman ELLENDER. Will this $84 million take you to the point where you can go into production on the A–X?

Mr. HANSEN. No.

Chairman ELLENDER. I think that what Senator Young has in mind and what I have in mind is how much will it cost to develop the A–X to the point where you can say that it is ready to go into production?

Mr. HANSEN. We do not have the contractors' bids for the additional full engineering required for production, full engineering and tooling required for production. Our own rough estimate is that that will be not more than, probably a little less than, $200 million. By the time we get to the point where we can say, we are now completely ready for production, we would have spent the $84 million for the competitive prototype phase which will tell us whether or not we want to move to the next step, which is full engineering, which would be, let us say, $200 million. So, we would have invested a total of $280 million, approximately.

Chairman ELLENDER. How did you come to the conclusion that the B–1 will cost a total of $2.6 billion when it is ready for production?

B–1 BOMBER DEVELOPMENT COSTS

Mr. HANSEN. That is an estimate, but the B–1 is a much larger, much higher performing, much greater capability vehicle.

Chairman ELLENDER. I understand that.

Mr. HANSEN. Therefore, the development involved in the B–1 is a much greater amount of effort.

Chairman ELLENDER. I understand that.

B–1 R. & D. COSTS

Now, as I understand last year when you asked for R. & D. money for the B–1, the question was put as to what the entire cost of R. & D. would be before you put it in full production. That estimate was $2.6 billion. Am I correct in that?

General GLASSER. That is correct; but may I amplify that a little bit? That is a total cost of the RDT&E throughout the life of the program. One does not spend all of that money before making a production decision because a great deal of that money is involved in the test and evaluation portion of the RDT&E.

The 3600 account includes research and development plus test and evaluation. All of these have to be funded from the same kind of money. The first phase of a program being the research and development phase of it, reduces a lot of the problems and presents the first problems of hardware.

On the basis of testing that hardware, you have a pretty good idea of what you have and what you are going to put into production, but there remains an awful lot of test and evaluation of the flying characteristics, the maintenance problems, all of the handling qualities, things of this sort, for which there is a great amount of testing required.

This requires that you buy a substantial number of test aircraft. They look exactly like the production aircraft, but they are used initially for test and later enter the active inventory. They are paid for out of the procurement account.

We have to do a lot of flying with those aircraft. The money to do that test flying is paid for out of R.D.T. & E. That is why you always see an overlap between the R.D.T. & E. account and the procurement account. There is a continuing expenditure of R.D.T. & E. funds long after you have decided to go into production.

RESEARCH, DEVELOPMENT, TEST, AND EVALUATION

Chairman ELLENDER. Do you mean that the amount of $2.6 billion will be necessary to make a decision on whether or not you are going to go into full production?

General GLASSER. No, sir; I expect we will be in a position to make that decision at a time when we have spent about $1.6 billion. The additional billion dollars will then be used in the test and evaluation phase that goes on after you have made the decision to go into procurement. The $2.6 billion is the total R.D.T. & E. requirement for the program throughout its life. But only $1.6 billion of that will be needed up to the point of making the decision to go into production.

Chairman ELLENDER. Then the billion dollars will be spent to do what?

General GLASSER. The billion dollars will be spent on necessary test and evaluation during the period that you are producing those aircraft. Remember that the aircraft don't actually arrive in the inven-

tory for like 2 years after you have made the decision to initiate production. During that interval, you are still spending R.D.T. & E. funds.

B–1 BOMBER ACQUISITION

Chairman ELLENDER. How many B–1's did you say you were going to order?

General GLASSER. We will be buying 244 total, including three R.D.T. & E. aircraft.

Chairman ELLENDER. When will you make that decision?

General GLASSER. The decision to go ahead with the production version will occur in April 1975.

Chairman ELLENDER. After you have spent——

General GLASSER. About $1.6 billion.

Chairman ELLENDER. The only contract we now have on the B–1 is for development, and that provides for three prototypes?

General GLASSER. That is correct, Mr. Chairman.

Chairman ELLENDER. When you make the production decision in April of 1975, will you contract for the production of 244 aircraft?

General GLASSER. We will not contract for the 244 aircraft at one time. We will only buy the first increment of those. Our contract will bind us for only those that are on contract at any one time.

Chairman ELLENDER. Then I take it that the B–1 contract is such that we will not have another C–5A on our hands.

General GLASSER. You are correct, Mr. Chairman. The C–5A was a totally different type of contract.

Chairman ELLENDER. Let us take the Navy's F–14 contract. This contract provides for the development of the aircraft and includes options for the production of the aircraft at a fixed price. Now the contractor takes the position that he cannot continue to produce the aircraft in accordance with the terms of the contract options. How does this differ from the B–1 contract structure?

B–1 BOMBER COMMITMENT

General GLASSER. That is a Navy program but the program they are on is again a total package program. The Air Force is not committed to the B–1 beyond the fiscal year that we are operating in at any one particular time. We will be completing these three aircraft and beyond that our next buy will be three aircraft in 1975. We will not be committed beyond that.

We propose to buy 23 in 1976. We will not be committed beyond that. Each year we will come to the Congress, we will demonstrate the progress we have made, we will indicate the number of aircraft we wish to buy in that fiscal year and the funds required for that fiscal year. We will not commit ourselves beyond the particular fiscal year.

PARAMETRIC ESTIMATING COST TECHNIQUE

Chairman ELLENDER. In the meantime, do you not approximate the cost?

General GLASSER. We have good estimates, because we have used the so-called parametric cost estimating technique to follow the design of the aircraft and what it is likely to cost us.

We work with the contractors involved on this to develop the numbers that we have indicated. We have high confidence they are very reasonable cost estimates and we should be able to perform within them.

B–1 BOMBER TOTAL COSTS

Chairman ELLENDER. What will 244 B–1 bombers cost to produce?

General GLASSER. $11,112 million is our estimate of what this will cost, including the research and development.

Chairman ELLENDER. For which you are now asking?

General GLASSER. Yes; including the whole $2.6 billion of research and development.

If you do it on a program acquisition basis, $45 million flyaway cost, the aircraft itself, $30 million.

Chairman ELLENDER. General, I conclude from this discussion that the Navy's F–14 contract is similar to the C–5A contract.

General GLASSER. Yes, sir.

Chairman ELLENDER. With respect to the B–1 you do not intend to use this "total-package" concept?

General GLASSER. No, Mr. Chairman. The B–1 contract will not be similar to the Navy's F–14 contract.

Senator YOUNG. The F–14 was the last major contract of the C–5A type, was it not?

General GLASSER. I think that is correct, sir. We have none of them in the Air Force any longer other than those that we are finishing up, the C–5 and the Maverick.

B–1 BOMBER PROGRAM: THREE DEVELOPMENTAL MODELS

Chairman ELLENDER. Let me completely understand this contract and the use of the funds.

When you spend the $1.6 billion, what will you have?

General GLASSER. We will have three aircraft flying and a lot of data from those aircraft.

Chairman ELLENDER. When you say three aircraft flying, you mean three prototypes?

General GLASSER. We will have the three developmental models of the B–1 flying.

In addition, there will be a lot of ground hardware that will be used for static and fatigue testing. We will have the evidence in hand on which to found a decision to initiate production.

Chairman ELLENDER. When you spend the additional billion dollars on R. & D., what will you have?

General GLASSER. Then you will have all the information needed for everything in the program, including all the handbooks, the maintenance data, everything.

Chairman ELLENDER. In other words, you will be in production then?

General GLASSER. We will be in production, we will be well into production by the time we finally spend the last of the $2.6 billion.

Chairman ELLENDER. Because, as you have stated, the R. & D. keeps on for some time. How long?

General GLASSER. It continues out through 1979. We will still have some R. & D. funding on the program.

Chairman ELLENDER. Proceed, Mr. Secretary.

1972 PROTOTYPE AIRCRAFT PROGRAMS

Mr. HANSEN. Last year, we proposed programs to develop prototypes for a lightweight fighter, a medium STOL transport, a quiet aircraft, and a very low radar cross-section test vehicle. The Congress approved the concept in principle, but provided funds for only the lightweight fighter and the medium STOL transport advanced development prototypes. Funding for continuation of these programs and related engine prototype developments is included in this year's budget request.

ADVANCED DEVELOPMENT

I believe we must continue to spend a modest sum each year for advanced development prototypes which are not geared to urgent, near term force structure requirements, but which will produce useful technology and hardware options for anticipated future military needs. This will assist us in retaining and improving the competence of industry design and engineering teams. We must be able to initiate a modest number of low-cost programs without all the formalized data that DOD, the OMB, and Congress have become accustomed to requiring, and receiving, before approving the design, construction, and testing of any aircraft at all.

General Glasser will define these three different prototypes more precisely in his statement.

PROTOTYPE TYPES

Chairman ELLENDER. What do you mean by that? Will you take a prototype and try to improve on it? Take the B–1 as an example

Mr. HANSEN. I think we need to put across the point that there are different types of prototypes. There is a production prototype like the B–1 where there is the anticipation that at the end of the prototype you move directly to production.

Chairman ELLENDER. I can understand that in connection with the construction of the B–1.

Mr. HANSEN. Right. What I am talking about is something different.

Chairman ELLENDER. You are drawing a distinction among prototypes?

ADVANCED DEVELOPMENT

Mr. HANSEN. Yes, sir. When I mention prototypes here, I mean advanced development prototypes such as we are talking about with the lightweight fighter and the transport, short takeoff and landing, where we do what we used to do in the 1950's and what the Russians are doing. We produce airframes that are aimed generally at future requirements but for which there is no commitment that if the prototype works out satisfactorily you will immediately move into production.

Maybe the next phase of an advanced development prototype is to change some features of it and fly it some more as a phase 2 advanced development prototype.

Chairman ELLENDER. Just what is your objective?

Mr. HANSEN. What we have in mind is looking to the more distant future needs, potential needs, and construct relatively low-cost operating prototypes which provide us options in hardware which can be applied to those future needs.

LIGHTWEIGHT FIGHTER PROTOTYPE

A good example is the lightweight fighter prototype which is out to the contractors for bids right now. We plan to select two contractors, each of whom would build prototypes. We will fly them and test them and there is no commitment that we will move ahead, no commitment with the contractors that we will move ahead to production.

But it will give us an option which we could move ahead with if we want to. There will also be an option to do nothing or an option to incorporate additional developmental features and conduct further prototype testing.

Chairman ELLENDER. You do intend to build a lightweight fighter, is that right?

Mr. HANSEN. That is correct.

Chairman ELLENDER. For what purpose? Do you build that—for us, or for other nations?

Mr. HANSEN. That is for us, Mr. Chairman.

Chairman ELLENDER. Why is that necessary?

Mr. HANSEN. Because we feel that there may be a need for an air superiority fighter of lesser capability, shorter range, day visual conditions which can be satisfied with a less expensive airplane than the F–15 or the F–14. We want to bring along the technology and the prototype flight experience with a lightweight fighter so that we will be making progress with an option to have such a program if we in the future choose to do so.

Chairman ELLENDER. Why don't you do that in connection with the high-priced ones such as the F–15?

Mr. HANSEN. Because we believe that the capabilities of the F–15, the range that is required, the systems for adverse weather operations and so on, are required and those requirements cannot be satisfied at lesser cost. The fighter which we think can be produced for significantly lower cost also has significantly lower capability, but could be applied in significant quantities in those situations where an airplane of lower capability would be adequate.

KELLY JOHNSON FIGHTER PLANE

Senator YOUNG. Is the so-called Kelly Johnson fighter plane one of the two lightweight fighters that you are considering?

Mr. HANSEN. Senator Young, we are getting bids, we think, from a half dozen or more different companies. We are sure that Kelly Johnson will be one of the bidders. We intend to select, from among those bids that are submitted, two contractors which we will fund to go ahead and build prototypes.

Senator YOUNG. The reason I ask is that apparently there will be minimum research and development cost.

Mr. HANSEN. That would be reflected in his proposal and we would take that into account in evaluating the various proposals that we get.

Senator YOUNG. When you are evaluating the various proposals, do you take into consideration the research and development cost for each one?

Mr. HANSEN. Yes, we do take that into account.

Senator ALLOTT. Mr. Chairman?

STOL TRANSPORT DEVELOPMENT

Chairman ELLENDER. Senator Allott.

Senator ALLOTT. On that whole general subject, and we have gone pretty well over the whole area, there has been a great deal of comment in this committee in the last year or two by various people, particularly by the Senator from Missouri, about STOL aircraft. Do you see a need in your appraisal of the world situation for the development of the STOL transport?

Mr. HANSEN. The simple answer, Senator Allott, is yes. We see a need in the military field for a tactical transport which has capability to operate on short fields. We also know, through our relationship with the Department of Transportation, that there is foreseen a future separate need for a civilian transport which operates on a short takeoff and landing basis, both from the point of view of minimization of the required runways and the point of view that that airplane has the characteristics of being able to operate into and out of the fields at high angles so as to minimize the annoyance to the surrounding community.

Senator ALLOTT. However, in developing a STOL, you are making a very, very important tradeoff. To obtain high lift characteristics, you have to give tremendous tradeoffs in power and ceiling and carrying ability, do you not?

Mr. HANSEN. That is correct.

General GLASSER. Not totally, sir. You have the opportunity, also, of course, to use longer rolls and maintain your payload capabilities.

Senator ALLOTT. Well, it depends on the configuration. You could not use a C–141 wing on a short takeoff and landing plane, could you?

General GLASSER. That is correct. Generally, the high lift is gained by powered lift devices, or by blowing over the wing and flaps, something of that sort, so that you don't end up with a dirty wing necessarily.

Senator ALLOTT. But these do add to the weight of the plane.

General GLASSER. That is correct.

CONCERN FOR SACRIFICE OF WEIGHT-CARRYING ABILITY AND SPEED

Senator ALLOTT. Where do you see in the world today a possible need for the United States to use a STOL transport, entailing as it does a sacrifice in the weight-carrying ability and the speed which we have in the C–141?

Mr. HANSEN I think wherever in the world that we want the capability to move cargo in and out of points which are close to where the action is. I recently returned from a trip over to Cam Ranh Bay in South Vietnam where we operate our tactical airlift, and talked to people there about the operations they have been performing. They are very enthusiastic about the benefit to them of having aircraft of

the C–130 size with short field operating characteristics. They want to be able to get in, offload cargo, load cargo, and get out in a big hurry. They have to be able to do that on fields which in some cases are prepared by the Army where the size of the field determines how long it takes to prepare the field.

Senator ALLOTT. I recognize the pressures and demands for possible use of this in the civilian field very well, but I think we may, in consideration of STOL, be overlooking something in connection with the Nixon doctrine, if it is pursued, that there may be no need for a STOL transport. I intend to get together with some people—I don't know where I will find them—who have a capability in this area. Sometime I hope to go into this with you on an extensive basis. The STOL captures the imagination. Certainly it does for civilian use in this country, where our airports and our navigational systems are overloaded, not only on the airplanes but the ground navigational systems. The New York area looks like a crazy quilt when you look at a navigational book. However, I have serious doubts if we are not overlooking the fact that we may not have any real military need for this in our future plans and progress. I would like some time to go into the actual tradeoffs that will be made in speed and in cargo capacity. I would like to determine what, for a given amount of dollars, you could buy in speed and capacity vis-a-vis a STOL with its reduced speed and capacity.

Mr. HANSEN. Senator, the concern you raise, I think, is a proper one. We will be happy to provide whatever information you ask. I might say that the STOL prototype is for the purpose of getting at the very point that you are making. We want to be able to compare an aircraft like the C–130, that does not have STOL characteristics, with a prototype airplane that we put together, to find out just how much you do give up, how much more it does cost for the airplane and what the additional productivity of the airplane might be in the kind of environment and routes that it would fly. We need the information so that the decision can be made, should we continue to procure C–130, C–141-type aircraft, or should we move ahead with a short takeoff and landing characteristics type aircraft.

STOL COORDINATION COUNCIL

Senator ALLOTT. How closely is this coordinated with the efforts of NASA on the civilian side?

Mr. HANSEN. We have very close coordination with NASA. We have a formally constituted STOL Coordination Council which is cochaired by myself for the DOD and Mr. Roy Jackson, who is the Associate Administrator of NASA for their advanced aeronautics.

CONCERN FOR REQUIREMENT FOR STOL

Senator ALLOTT. I don't want to be bellicose about it, but I keep getting the nagging, gnawing idea in the back of my head that maybe we are building something for which we have no use.

Senator YOUNG. I have the same concern as my friend from Colorado. I remember 10 or 15 years ago the Defense Department was preparing for nuclear war. All the emphasis was on nuclear war. Now, we are going all out for conventional-type warfare.

Chairman ELLENDER. That is right. That concerns me as does what the Senator from Colorado is talking about, the lightweight fighter plane. You don't have actual use for it now, but yet you are going to develop on it, spending a lot of money on something you may find out you don't need. It strikes me you should not go into the production of any hardware that you don't find an actual need for at the time that you are researching it.

Mr. HANSEN. We perceive that there is a need. What we are doing is what we have said we understand the Russians are doing. That is, to build prototype aircraft in the areas in which we perceive a need but not to commit ourselves to produce that airplane until we have the benefit of knowing from the prototype that the airplane is everything that it is supposed to be and that it is properly suited to be produced and satisfy the requirements. In case of both the lightweight fighter and the short takeoff and landing aircraft, we feel that there are significant potential needs for those aircraft.

Chairman ELLENDER. How do you come to that conclusion? Have these lighter aircraft been used anywhere else? How do you determine that there is a need for it? You are going to make substantial expenditures in order to find out whether or not you need this aircraft. That is what I can't understand.

Mr. HANSEN. We arrived at the belief that there is a potential need for such an aircraft by looking at the practical situation which we face and analyzing the circumstances in which we need a higher capability aircraft like the F-15 in applications where a lesser capability aircraft simply wouldn't do the job. There is another portion of the actual scenario in which we are up against less capable aircraft or we are operating over our own friendly areas where we have the benefit of ground control interception equipment, and in that environment we don't need as highly capable an airplane. So we think we can take advantage of our prototype theories. If they prove true in practice, we can take advantage of a lower-priced airplane to do the job instead of having a more expensive, more capable aircraft than is really absolutely essential for that mission.

Chairman ELLENDER. I won't argue any more about it, but I think you could spend money in a better way than you are now doing.

Proceed, sir.

FEDERAL CONTRACT RESEARCH CENTERS

Mr. HANSEN. Successful development and acquisition of new aircraft, electronic, or space systems requires four elements. First, we must develop an accurate definition of the system requirement for the operational mission to be accomplished. Second, we must have in hand the technology which enables the new system to meet the operational requirement. Third, we must have engineering capability in the quantity and quality required to design and build the system. Fourth, we must have the management to mold the engineering, the procurement, the testing, and the control of resources together to achieve a system successful against time, cost, and performance criteria. Each of these elements requires good people. I want to say something about where we get those people.

First, we have a body of competent professionals within the Air Force, both military and civilian. They are in our product divisions and system program offices, in our test centers, in our laboratories, and in our headquarters. We speak of these people collectively as in-house, and the responsibility of government for the development and acquisition of systems rests with them. Second, we have found it most effective to rely upon competitive industry, with the rewards and incentives present in a profit and loss system, for the actual design, fabrication, and production of our major and complex systems. Third, we have found it effective to rely on universities and not for profit organizations, independent of the direct administrative control of either the Air Force or industry, for some of the required new technology, planning, concept formulation, and engineering support required for our systems. We believe this arrangement, and the flexibility it provides, is superior to an all in-house or all-industrial alternative.

Included in the third category are the Federal Contract Research Centers, about whom the Congress has expressed concern repeatedly in the past. We have, with some difficulty, lived within the salary and ceiling constraints you have deemed necessary. Today I want to specifically comment about Project Rand.

Project Rand provides the Air Force with some of the planning and concept formulation effort I referred to earlier. Its scientists and engineers are top quality, and have extensive experience in disciplines vital to us. They are sufficiently independent of the existing structure of the Air Force to avoid any undue influence that may arise from command positions. They are independent of the vested interests an industrial corporation may have in a particular system or concept. They are restricted to programs formulated under the guidance of nine general officers who compose the Air Force Advisory Group for Project Rand.

I would like to give a few examples of how the Air Force is better today because of past studies and research conducted at Rand. Rand developed the ideas that led to our in-flight refueling techniques. Rand came up with the first solution of the nose cone reentry heating problem, which was critical to the success of our ballistic missile programs. Rand has carried out analyses of new ways to accomplish Air Force education and training, which is helping us to reduce the increasing cost of training and educating our personnel. Rand was one of the earliest promoters of the prototyping concept.

Rand, like many other contractors of the Department of Defense, has contributed and shared in the difficult and complex problems in our activities in Southeast Asia. As you know, some universities declined to participate but Rand management has always been willing to serve the Air Force in its need for assistance in providing solutions to difficult problems. Because of such capabilities as these, Rand's effort is sought aggressively and widely throughout the Air Force.

University Program

Senator Young. Mr. Secretary, on page 14 of last year's report of this committee accompanying the Defense Appropriations bill, is this statement:

It is the view of the Committee that the Department of Defense should take immediate action to reestablish a university program in order that many excellent institutions, many of which are small institutions, who have not been receiving any research and development funds from the Department of Defense, may be given an opportunity to compete for these funds. Furthermore, the Committee urges the Department to include adequate funds for a university program in its budget for fiscal year 1973.

I understand your request for research and development is $3.2 billion, but you only have $50 million for educational institutions. Apparently the Air Force did not pay attention to the request of this committee.

Mr. HANSEN. I think we have paid attention to the indicated desires of this committee, Senator Young. One factor is that there has been a significant increase in the budget for the National Science Foundation and some of the work which we have previously financed is now being financed by the National Science Foundation. Furthermore, we have a very broad gaged program of university participation. There are approximately 200 universities and colleges in the United States that grant Ph. D. degrees in the areas which are of interest to the research and development effort of the Department of Defense and there are approximately two-thirds of those universities which are actively participating in the program.

Senator YOUNG. Is it correct that there is $50 million in this budget request for universities?

Mr. HANSEN. I would have to verify that specific amount, but it sounds about right, Senator.

Senator YOUNG. Please provide the figure for the three previous fiscal years.

UNIVERSITY RESERVES

Mr. HANSEN. We will have to provide that for the record. Apparently I don't have those numbers with me, but they are approximately the same. However, the effort in the universities is larger by virtue of the increased support from the National Science Foundation. We also have the problem that the resource in the universities from which we can draw is not as large now as it has been previously because some of the people who were in the universities, who are interested in defense-oriented research, have found that the university environment is not a good place to do that and they have chosen to leave the universities and join organizations. Furthermore, some of the university-associated research activities such as the Stanford Research Institute and the Stark-Draper Laboratory at MIT have seen fit to separate themselves from the university.

Senator YOUNG. Mr. Secretary, you are talking about a few universities where the hippies have taken over, but there are still a lot of other universities. Will you put in the record which universities are involved in the Air Force program and which universities have been involved in the past 5 years in this type of program?

Mr. HANSEN. We will be happy to furnish that for the record.

Senator YOUNG. The Air Force has been assisting universities that have been plagued with trouble.

Chairman ELLENDER. You furnish that for the record.

Mr. HANSEN. Yes, sir.

Chairman ELLENDER. And the amount received by each.

(The information follows:)

UNIVERSITIES/AIR FORCE R. & D./PAST 5 YEARS

The amounts the Air Force has programmed for universities from the RDT&E appropriation for the past three fiscal years are as follows:

[In thousands]

	Fiscal year—		
	1970	1971	1972
Work performed by educational institutions	$70,084	$53,759	$50,911

Attached are lists of Air Force contractual obligations to academic institutions for Fiscal Years 1967 through 1971. While these lists exceed the amounts programmed by the Air Force, they do represent the total R&D obligations on contracts negotiated by the Air Force which includes:

1. Obligation of funds regardless of Agency. This represents funds provided by all agencies (i.e. Army, Navy, Air Force, ARPA, NASA, etc.) to the Air Force and placed on the Air Force negotiated contracts to satisfy requirements of that particular agency.
2. Obligations to nonprofits (FCRC's) which are a part of an educational institution, also regardless of agency.

FISCAL YEAR 1971 CONTRACTUAL OBLIGATIONS TO ACADEMIC INSTITUTIONS

(GRANTS AND CONTRACTS)

Academic institution	*Thousands*
Akron University	$41
Alabama University	240
Alaska University	404
Albuquerque University	24
Applied Research Laboratories, Inc	230
Arizona State University	291
Arizona, University of	2,814
Auburn University	178
Boston College	794
Boston University	96
Brandeis University	22
Brigham Young University	23
Brooklyn Polytechnical Institute	1,064
Brown University	174
California Institute of Technology	468
California, University of	5,260
Calvin College	24
Caribbean Research Institute	5
Carnegie Mellon University	2,005
Case Western Reserve University	302
Chicago University	436
Cincinnati, University of	528
City University of New York	64
City of New York Research Foundation	48
Clarkson College of Technology	8
Clemson University	26
Colorado State University	544
Colorado University	308
Columbia University	659
Connecticut, University of	213
Cornell University	728
Dartmouth College	98
Dayton, University of	3,813
Delaware, University of	88
Denver, University of	65

Academic institution	*Thousands*
Denver, University of	1,301
Drexel Institute Technology	200
Drexel, University of	62
Emmanuel College	482
Florida State University	295
Florida University	392
Franklin Institute of Pennsylvania	18
Geophysical Institute of America	13
George Washington University	95
Georgetown University	106
Georgia Institute Technology	591
Georgia Tech Research Institute	490
Georgia, University of	120
Harvard University	719
Hawaii, University of	209
Houston, University of	124
Illinois Institute Technology	200
Illinois, University of	10,081
Indiana, University of	62
Indiana University Research Foundation	172
Institute for Advanced Study	16
Iowa State University of Science and Technology	339
Iowa, University of	29
Johns Hopkins University	348
Kansas State University	45
Kent State University	200
Kentucky, University of	372
Langley Porter Neuropsychiatric Institute	10
Lehigh University	47
Louisiana, State University of	149
Lowell Tech Institute Research Foundation	72
Maryland, University of	378
Massachusetts General Hospital	20
Massachusetts Institute Technology	71,564
Massachusetts, University of	179
Mayo Foundation	127
Medical College of Virginia	11
Miami University	226
Miami, University of	174
Michigan State University	25
Michigan, University of	4,310
Minnesota, University of	362
Mississippi State University	25
Missouri, University of	222
Montana State University	69
Nebraska, University of	41
Nevada, University of	202
New Hampshire, University of	12
New Mexico Institute Mining and Technology	140
New Mexico State University	317
New Mexico, University of	1,385
New York State University Research Foundation	219
New York University	708
North Carolina State University	229
North Carolina, University of	463
Northeastern University	664
Northwestern University	194
Notre Dame, University of	108
Ohio State University, The	36
Ohio State University Research Foundation	1,379
Ohio University	50
Oklahoma, University of	32
Oklahoma University Research Institute	43
Oklahoma State, University of	985
Oregon Graduate Center for Study Research	20
Oregon State University	60

Academic institution	*Thousands*
Oregon, University of	203
Pennsylvania State University	438
Pennsylvania, University of	91
Pittsburgh, University of	127
Princeton University	892
Purdue Research Foundation	525
Purdue University	50
Regis University	169
Rensselaer Polytechnic Institute	316
Rhode Island, University of	75
Rice University	374
Rochester, University of	339
Rutgers University	133
St. Louis University	92
St. Lukes Hospital Center	59
San Diego State College	54
San Francisco, University of	29
Santa Clara, University of	21
Smithsonian Institution	81
South Carolina, University of	20
Southeastern Massachusetts, University of	10
Southern California, University of	1,172
Southern Methodist, University of	147
Stanford Research Institute	39
Stanford University	2,166
Stanislaus State College Foundation	24
Stevens Institute of Technology	184
Suffolk University	2
Syracuse University	764
Syracuse University Research Corp	125
Temple University	33
Tennessee, University of	259
Texas A&M Research Foundation	356
Texas Technological College	65
Texas, University of	1,814
Tufts University	180
Utah State University	13
Utah State University of Agriculture and Applied Science	891
Utah, University of	2,130
Vanderbilt University	26
Vermont, State Agriculture College, University of	209
Virginia Polytechnic Institute	167
Virginia, University of	246
Washington State University	153
Washington University	391
Washington University	445
Wayne State University	265
Wentworth Institute	992
Wesleyan University	20
Wichita State University	90
Wisconsin, University of	745
Wittenberg University	15
Worcester Polytechnical Institute	34
Wright State University	219
Yale University	620
Yeshiva University	182

FISCAL YEAR 1970—CONTRACTUAL OBLIGATIONS TO ACADEMIC INSTITUTIONS
CONTRACTS AND GRANTS

[In thousands of dollars]

Academic institution	*Contracts*
Akron, University of	42
Alabama, University of	200
Alaska, University of	218
Albuquerque, University of	14

Academic institution	*Thousands*
Antioch College	12
Arizona State University	200
Arizona, University of	2,210
Baylor University	103
Boston College	700
Boston University	83
Bowdoin College	12
Brandeis University	132
Brooklyn Polytechnic Institute	899
Brown University	32
California Institute of Technology	274
California, University of	4,227
Calvin College	20
Carnegie Mellon University	2,207
Case Western Reserve University	322
Catholic University of America	11
Chicago University	274
Cincinnati, University of	1,014
Clarkson College of Technology	10
Colorado State University	466
Colorado University	520
Columbia University	1,829
Connecticut, University of	235
Cornell University	672
Dartmouth College	300
Dayton, University of	3,865
Denver, University of	995
Drexel Institute of Technology	192
Emmanuel College	328
Florida Institute of Technology	21
Florida State University	47
Florida University	282
Franklin Institute of Pennsylvania	96
Franklin Pierce College	70
Geophysical Institute of Alaska	20
George Washington University	15
Georgetown University	202
Georgia Institute Tech	1,324
Georgia Tech Research Institute	669
Georgia, University of	3
Harvard University	501
Hawaii, University of	466
Illinois Institute Technology	310
Illinois, University of	9,504
Indiana University	269
Iowa State University Press	26
Iowa State University of Science—Technology	348
Iowa, University of	82
Johns Hopkins University	828
Kansas, University of	217
Kent State University	247
Kentucky, University of	460
Lowell Tech Institute	474
Marquette University	34
Massachusetts Institute of Technology	70,289
Massachusetts, University of	20
Medical College of Virginia	21
Miami University	186
Miami, University of	32
Michigan State University	30
Michigan, University of	3,932
Minnesota, University of	509
Mississippi State University	41
Mississippi, University of	99
Missouri, University of	243
Nebraska, University of	12

Academic institution	*Thousands*
New Hampshire, University of	42
New Mexico Institute Mining—Technology	35
New Mexico State University	189
New Mexico, University of	1,562
New York State, University of	25
New York University	387
North Carolina State University	343
North Carolina, University of	196
Northeastern University	874
Northwestern University	23
Notre Dame, University of	98
Ohio State University, the	198
Ohio State University Research Foundation	2,028
Oklahoma State, University of	455
Oklahoma, University of	11
Oregon State University	22
Oregon, University of	419
Pennsylvania State University	234
Pennsylvania, University of	148
Pittsburgh, University of	139
Princeton University	856
Purdue University	30
Regis College	185
Rensselaer Polytechnic Institute	190
Rhode Island, University of	140
Rice University	151
Rochester, University of	290
Rutgers University	50
St. Louis University	236
San Francisco, University of	23
South Dakota School of Mines and Technology	60
Southeastern Massachusetts Technological Institute	11
Southern California, University of	231
Southern Methodist University	364
Stanford University	3,488
Stanislaus State College Foundation	15
Stevens Institute of Technology	35
Syracuse University	1,046
Tennessee, University of	865
Texas A. & M. Research Foundation	79
Texas A. & M. University	24
Texas Technological College	20
Texas, University of	1,186
Tufts University	285
Tulane University of Louisiana	60
Utah State University of Agriculture-Applied Science	1,023
Utah, University of	2,075
Vermont, University of—State Agriculture College	257
Virgin Islands, College of	35
Virginia Polytechnic Institute	24
Virginia, University of	221
Washington State University	140
Washington University	440
Washington, University of	95
Wayne State University	118
Wentworth Institute	749
Wesleyan University	20
Wisconsin, University of	343
Worcester Polytechnic Institute	35
Wright State Campus	407
Yale University	260

Fiscal Year 1969 Contractual Obligations to Academic Institutions

CONTRACTS AND GRANTS, IN THOUSANDS

Academic institution	*Thousands*
Akron, University of	$63
Alabama, University of	405
Alaska, University of	227
Albuquerque, University of	16
Antioch College	62
Arizona State University	429
Arizona, University of	2,089
Baylor University	100
Boston College	547
Boston University	106
Bowdoin College	12
Brandeis University	152
Brigham Young University	19
Brooklyn Polytechnic Institute	1,003
Brown University	169
California Institute of Technology	551
California, University of	1,633
Carnegie-Mellon University	127
Case Western Reserve University	539
Chicago University	271
Cincinnati, University of	910
City University of New York	20
Clarkson College of Technology	17
Colorado School of Mines	20
Colorado University	56
Columbia University	609
Connecticut, University of	428
Cornell University	2,494
Dartmouth College	323
Dayton, University of	3,036
Denver, University of	1,265
Drexel Institute of Technology	437
Emory University	13
Florida Institute of Technology	18
Florida State University	200
Florida University	357
Franklin Pierce College	50
George Washington University	83
Georgia Tech Research Institute	271
Georgia, University of	15
Harvard University	489
Hawaii, University of	713
Houston, University of	20
Illinois, Institute Technology	456
Illinois, University of	7,072
Indiana University	360
Iowa State University Press	24
Iowa State University of Science-Technology	345
Iowa, University of	30
John Hopkins University	708
Kansas, University of	82
Kent State University	474
Kentucky, University of	893
Louisiana State, University of	156
Lowell Tech Institute	652
Loyola University	26
Marquette University	35
Maryland, University of	238
Massachusetts Institute of Technology	78,311
Massachusetts, University of	18
Miami University	20
Miami, University of	160

Academic institution	*Thousands*
Michigan State University	399
Michigan, University of	4,212
Minnesota, University of	367
Mississippi, University of	409
Missouri, University of	418
Nebraska, University of	52
Nevada, University of	199
New Hampshire, University of	41
New Mexico State University	145
New Mexico, University of	1,461
New York, University of	233
New York University	332
North Carolina State University	477
North Carolina, University of	120
Northeastern University	900
Notre Dame, University of	87
Ohio State University, The	54
Ohio State University Research Foundation	3,167
Oklahoma State, University of	352
Oklahoma, University of	15
Oregon State University	15
Oregon, University of	500
Pennsylvania State University	256
Pennsylvania, University of	140
Pittsburgh, University of	125
Princeton University	1,174
Purdue Research Foundation	574
Purdue University	125
Regis College	285
Rensselaer Polytechnic Institute	151
Rhode Island University	90
Rice University	342
Rochester, University of	360
Rutgers University	103
Southern Baptist College	30
Southern California, University of	46
Southern Methodist, University of	411
Stanford Research Institute	3,962
Stanford University	3,406
Stanislaus State College Fund	45
Stanislaus State College Foundation	45
Stevens Institute of Technology	30
Syrause University	784
Syracuse University Research Corp	786
Temple University	45
Texas A.M. Research Foundation	53
Texas A.M. University	20
Texas Technological College	20
Texas, University of	684
Trinity University	12
Tufts University	350
Tulane University of Louisiana	23
Utah State, University of Agriculture—Applied Science	395
Utah, University of	2,124
Vanderbilt University	13
Vermont, University of—State Agricultural College	407
Virginia, University of	450
Washington State University	220
Washington University	841
Washington, University of	161
Wesleyan University	50
Wisconsin, University of	94
Worcester Polytechnic Institute	40
Yale University	248

FISCAL YEAR 1968 CONTRACTUAL OBLIGATIONS TO ACADEMIC INSTITUTIONS
CONTRACTS AND GRANTS IN THOUSANDS

Academic institution	*Contracts*
Akron, University of	$53
Alabama, University of	17
Alaska, University of	165
Albany Medical College	221
Albuquerque, University of	15
Antioch College	70
Arizona State University	29
Arizona University	276
Auburn University	53
Baylor University	119
Boston College	445
Boston University	60
Brandeis University	99
Brooklyn Polytechnic Institute	927
Brown University	138
California Institute of Technology	206
California University	2,532
Calvin College	14
Carnegie Institute of Technology	1,892
Case Institute of Technology	139
Case Western Reserve University	33
Chicago University	553
Cincinnati University	1,130
Clarkson College of Technology	19
Colorado Seminary	1,052
Colorado State University	65
Colorado University	388
Columbia University	547
Connecticut, University of	21
Cornell University	2,201
Dartmouth College	606
Dayton University	3,589
Denver University	1,546
Drexel Institute of Technology	18
Duke University	40
Emmanuel College	299
Emory, University of	11
Florida Presbyterian College	43
Florida State University	111
Florida University	783
Franklin Institute of Pennsylvania	783
George Washington University	53
Georgetown University	590
Georgia Institute Tech	349
Georgia Tech Research Institute	987
Georgia, University of	53
Harvard University	894
Hawaii University of	235
Houston, University of	21
Illinois Institute Technology	777
Indiana University	934
Iowa State University of Science and Technology	559
Johns Hopkins University	878
Kansas State University of Agriculture	631
Kansas, University of	474
Kent State University	128
Kentucky, University of	118
Louisiana State University	918
Lowell Tech Institute	560
Loyola University	26
Marquette University	35
Maryland, University of	91

Academic institution	*Thousands*
Massachusetts Institute of Technology	98,322
Massachusetts, University of	18
Mellon Institute	382
Miami University	60
Miami, University of	458
Michigan State University	25
Michigan, University of	3,542
Minnesota, University of	479
Mississippi State University	45
Missouri, University of	27
Nevada, University of	399
New Hampshire, University of	133
New Mexico State University	109
New Mexico, University of	1,368
New York State, University of	593
New York, University of	390
North Carolina State College	65
North Carolina, University of	171
Northeastern University	769
Northwestern University	99
Notre Dame, University of	112
Ohio State, University of	59
Ohio State University Research Foundation	2,293
Oklahoma State, University of	658
Oklahoma, University of	12
Oregon State College	78
Oregon, University of	501
Pennsylvania State University	134
Pennsylvania, University of	686
Pittsburgh, University of	84
Princeton University	392
Purdue Research Foundation	856
Purdue University	20
Regis College	149
Rensselaer Polytechnic Institute	127
Rhode Island University	60
Rice University	111
Rochester University	86
Rutgers University	723
San Fernando Valley State College	20
South Carolina, University of	15
Southeastern Mass Tech Institute	15
Southern Baptist College	23
Southern California University	182
Southern Methodist University	720
Stanford Research Institute	3,620
Stanford University	3,562
Stanislaus State College Foundation	35
Stevens Institute of Technology	15
Syracuse University	696
Syracuse University Research Corp	1,145
Temple University	61
Tennessee University	167
Texas A–M Research Foundation	15
Texas Technological College	36
Texas, University of	1,055
Texas Western College	11
Tufts College	95
Tulane University	62
Utah, University of	332
Utica College of Syracuse University	3,685
Varian Associates	13
Virginia, University of	89
Washington State College	74
Washington, University of	83

Academic institution	*Thousands*
Wayne University	25
Wesleyan University	60
Western Reserve University	53
Wisconsin, University of	103
Worcester Polytechnic Institute	32
Wright State University	29
Yale University	97
Yeshiva University	55

FISCAL YEAR 1967 CONTRACTUAL OBLIGATIONS TO ACADEMIC INSTITUTIONS

CONTRACTS AND GRANTS, IN THOUSANDS

Academic institution	*Contracts*
Akron, University of	$58
Albany Medical College	106
Antioch College	266
Arizona State University	28
Baylor University	84
Boston College	626
Boston University	29
Brandeis University	165
Brooklyn Polytechnic Institute	1,107
Brown University	209
California Institute of Technology	917
California University	1,893
Calvin College	15
Carnegie Institute of Technology	1,825
Case Institute of Technology	180
Catholic University	62
Chicago University	118
Cincinnati University	1,088
Clarkson College of Technology	17
Colorado State University	11
Colorado University	548
Columbia University	6,126
Cornell University	2,498
Dartmouth College	23
Dayton University	3,762
Denver University	148
Emory, University of	10
Fairleigh Dickinson University	20
Florida Presbyterian College	38
Florida State University	84
Florida University	244
Franklin Institute of Pennsylvania	1,044
Georgetown University	89
Georgia Institute of Technology	349
Georgia Tech Research Institute	422
Graduate Research Center of Southwest	75
Hawaii University	221
Houston, University of	28
Illinois Institute Technology	420
Illinois, University of	5,062
Indiana University	88
Iowa State University Press	21
Iowa State University of Science and Technology	120
Johns Hopkins University	1,081
Kansas State University of Agriculture	25
Kansas, University of	147
Kent State University	109
Kentucky, University of	132
Lehigh University	43
Louisiana State University	28
Lowell Tech Institute	996
Loyola University	30

Academic institution	*Thousands*
Marquette University	18
Maryland, University of	138
Massachusetts Institute of Technology	70,542
Massachusetts, University of	42
Mellon Institute	204
Miami University	40
Miami, University of	97
Michigan State University	82
Minnesota, University of	716
Montana State College	15
New Hampshire, University of	165
New Mexico School of Mines	94
New Mexico State University	190
New Mexico, University of	1,096
New York State, University of	374
New York, University of	313
North Carolina, University of	80
Northeastern University	1,535
Northwestern University	96
Notre Dame, University of	118
Ohio State, University of	381
Ohio State University Research Foundation	3,205
Ohio University	121
Oklahoma, University of	64
Pennsylvania State University	605
Pennsylvania, University of	691
Pittsburgh, University of	205
Princeton University	2,244
Purdue Research Foundation	817
Regis College	309
Rensselaer Polytechnic Institute	108
Rhode Island University	115
Rice University	280
Rochester University	440
Rutgers University	118
Saint Louis University	262
San Diego State College Foundation	17
San Fernando Valley State College	20
San Jose State College	25
Seton Hall, College of	18
South Carolina, University of	25
Southern California University	352
Southern Methodist University	30
Stanford University	3,896
Stevens Institute of Technology	176
Syracuse University	585
Syracuse University Research Corp	1,501
Temple University	137
Tennessee University	377
Texas A. & M. Research Foundation	45
Texas, University of	947
Texas Western College	37
Tufts College	168
Utah State University	839
Utah, University of	1,183
Virginia, University of	15
Washington State College	257
Washington University	71
Washington, University of	116
Wayne University	20
Wentworth Institute	983
Wilkes College	97
Wisconsin, University of	101
Woman's Medical College of Penn	23
Yale University	226
Yeshiva University	61

MANSFIELD AMENDMENT

Senator ALLOTT. Mr. Chairman, while we are on this subject generally—and I have these questions which I had written down when I came in this morning—I believe the Mansfield amendment has been in effect now for 2 fiscal years or 3 fiscal years. Which is it?

Mr. HANSEN. I think this is the third year.

Senator ALLOTT. You speak of the programs being picked up by NSF. You probably dropped some in fiscal year 1971, but I presume you have dropped all research programs which come within the Mansfield amendment.

Mr. HANSEN. That is correct.

Senator ALLOTT. By the fiscal year 1972?

Mr. HANSEN. That is correct.

NATIONAL SCIENCE FOUNDATION RESEARCH

Senator ALLOTT. Do you have any records indicating what amount has been picked up by the National Science Foundation in those research projects for the 3 years that the Mansfield amendment has been in effect?

Mr. HANSEN. We can furnish that information. I can cite a couple of examples. We turned the National Magnet Laboratory over to the National Science Foundation. We turned the Nuclear Research Activity at Florida State University over to the National Science Foundation.

Senator ALLOTT. You also turned over the space object antenna at Aroceibo to NSF.

Mr. HANSEN. That is correct. However, this ARPA-sponsored facility was transferred to the NSF prior to the Mansfield amendment.

Senator ALLOTT. The point I want to make is that I don't know what Senator Mansfield had in mind when he developed the Mansfield amendment. I don't know whether it was for the purpose of saving money or whether it was dissatisfaction with the Defense research. But in the same period—I believe in the first year—the National Science Foundation picked up something like $17 million worth of defense research. I believe in the second year it had reached over $30 million, and I don't know what it is today. The point of it is that the amendment has not saved money, if this was the purpose of it, because most of those contracts have been picked up either by NSF or someone else. The NSF budget is now up to $530 million, give or take a few dollars.

Mr. HANSEN. I think what you have said is generally correct. We interpreted the intent of the Mansfield amendment to assure that the Department of Defense is not doing research which might more properly be done elsewhere in the Government or not at all and to make us very careful to assure that anything that we do sponsor has a close and obvious relationship to our defense needs. We have been following that guidance in the last few years.

Senator ALLOTT. Thank you.

FEDERAL CONTRACT RESEARCH CENTERS

Chairman ELLENDER. Proceed.

Mr. HANSEN. The Federal contract research centers provide a flexibility which cannot be achieved within the in-house personnel system. They provide outstandingly competent, objective people. Each of the FCRC's has a very dedicated and distinguished board of trustees who provide policy guidance and management independence. Without the services of the Air Force FCRC's, Project RAND, Aerospace Corp., Mitre Corp., Lincoln Laboratories, and ANSER Corp., the Air Force would be without needed capability which cannot be provided in-house or by industry.

Chairman ELLENDER. Are these nonprofit organizations?

Mr. HANSEN. That is correct; they are nonprofit organizations.

Chairman ELLENDER. Proceed, sir.

CONTRACTING TO NONPROFIT ORGANIZATIONS

Senator ALLOTT. Mr. Chairman, I would just like to make the remark that I think some time somebody should do an analysis to see how much money is actually paid in contracting R. & D. out to private corporations and that paid to these so-called nonprofit corporations. It has been my experience in watching these in this committee for the last 13 years that nonprofit corporations simply take their profits out by way of salaries. I don't think that there is necessarily a saving there, but it enables people to come in by way of memberships on boards of trustees, by way of special advisers, and so forth, under the cloak of this motherhood concept which is called nonprofit corporations. I don't think they are nonprofit in any sense. They simply take the profits out by way of salaries.

Mr. HANSEN. The nonprofit corporations do receive a fee for their services which is normally smaller than the profit would be and they are restricted in the usage to which it can be applied. We don't go to the Federal contract research centers because we view that as being a cost saving over private industry. We go to them because they have an objectivity which results from their not being in the hardware system advocacy business such as private industry would be. We think we get a type of thinking there which we can't get from the normal manufacturing industry people who will be in there pushing their systems. The nonprofit Federal contract research centers in all cases are nonhardware companies and, therefore, can give us the benefit of their thinking and analysis unencumbered by any desire to push any particular system.

Senator ALLOTT. That is all I have, Mr. Chairman.

MILITARY PERSONNEL USE IN RESEARCH CENTERS AND RESEARCH FUNDING

Chairman ELLENDER. I wish you would provide for the record a brief synopsis on each of the Air Force funded Federal contract research centers, and indicate the number of retired military personnel in the management of each. In connection with the four nonprofit corporations, I wonder if you could also give us what percentage of the money that you spend is used in-house, is used in universities and colleges, and in these outside corporations.

Chairman ELLENDER. Thank you.
(The information follows:)

IN-HOUSE/UNIVERSITIES/CORPORATION/PERCENT OF R&D SPENT

The percentages of Air Force actual and planned use of RDT&E funds for fiscal years 1971–1973 are as follows:

[In percent]

	Fiscal year—		
	1971	1972	1973
In house	17.0	15.7	14.1
Universities and colleges	1.9	1.7	1.6
Nonprofit corporations (FCRC's)	3.9	3.5	3.5
Other [1]	77.2	79.1	80.8
Total	100.0	100.0	100.0

[1] Includes other DOD activities, other Government agencies, industrial contractors, and other institutions.

SYNOPSIS OF PERSONNEL/FCRC'S

Analytical Services, Inc. (ANSER), Falls Church, Va.

ANSER performs systems analysis, operations research and development planning studies in support of the Directorate of Operational Requirements and Development Plans and the Directorate of Reconnaissance and Electronic Warfare, DCS/R&D, Headquarters USAF. Total Corporate manning averages 84 people, including 51 technical professionals, i.e., Members of the Technical Staff (MTS). This is a level of effort contract averaging approximately $1.6 million per year over recent years. The only DOD organization which contracts with ANSER is the Defense Intelligence Agency. They have had a small effort ($100 thousand or below) with ANSER for the past two years. Among the Board of Trustees and Corporate personnel in management positions, there is only one who has retired or resigned from the defense establishment since 1960. Mr. J. A. Englund left Civil Service in January 1963, to become an analyst at ANSER. He has since been promoted up to his present position of Manager of the Strategic Division.

Aerospace Corporation, El Segundo, Calif.

Aerospace Corporation provides technical support to the Space and Missile Systems Organization of Air Force Systems Command in the fields of missiles and space systems. The predominate work of the Corporation is in the area of Systems Engineering/Technical Direction (SE/TD) although efforts also include development and operational planning and analysis, research and experimentation, space and missile technology studies, and analysis of foreign missile and space systems. Total funding for Aerospace Corporation support to the Air Force has declined from $69.9 million in FY 68 to $61.5 million in FY 72. Total Corporate manning at the present time is approximately 3,280, including 1,624 Members of the Technical Staff. Total DOD funding for FY 72 for Aerospace Corporation support is $66.357 million, including: Air Force—$61.527 million; Army—$2,750 million; Navy—$0.820 million; and Defense Agencies—$1.260 million. There are no Corporate management personnel who are retired from military service or who have resigned from the defense establishment since 1960. Members of the Corporate Board of Trustees in this category are:

Maj. Gen. James McCormack, U.S. Air Force, Retired, October 1955, Chairman, Board of Trustees.

Gen. Earle Partridge, U.S. Air Force, Retired, July 1959, Member, Board of Trustees.

Gen. Edwin Rawlings, U.S. Air Force, Retired, February 1959, Member, Board of Trustees.

Dr. Herbert York, Director of Defense Research and Engineering until 1961, Member, Board of Trustees.

These individuals are not involved in the day by day operation of the corporation.

Lincoln Laboratory, Massachusetts Institute of Technology

The Lincoln Laboratory provides a technical base for the Air Force and other elements of DOD in advanced electronics from which scientific and military systems may be developed. Their work covers the evolution and demonstration of new concepts and technologies, including laboratory construction of initial models of equipment suitable for field demonstration and tests. Areas of expertise include radar and optical sensors, signal design and processing, analog and digital technology, communications, electro-mechanical control systems and solid state technology. Support from the Laboratory for all DOD elements is controlled by a Joint Advisory Committee with members from the Air Force, Army, and the Advanced Research Projects Agency. At the present time, there are approximately 1,683 people working at the Laboratory, including 602 Members of the Technical Staff and 519 technicians. Funding for Lincoln Laboratory for Air Force support has declined from $30.1 million in FY 69 to $25.0 million in FY 72. Total funding from the Department of Defense for FY 72 (excluding outside equipment purchase contracts) will be approximately $40.653 million, including: Air Force—$25.000 million; Army—$9.108 million; Navy—$1.072 million; and the defense agencies—$7.750 million. There are no Laboratory personnel in management positions that are retired from military service or that have resigned from the defense establishment since 1960.

MITRE Corp., Bedford, Mass.

The MITRE Corporation provides technical support to the Electronic Systems Division of Air Force Systems Command primarily by performing SE/TD functions in the fields of information, communications, and sensor systems. There are also efforts in the areas of Planning, Systems Integration, Technology Studies, and study and analysis of Foreign Information Systems. Funding for Air Force support work at MITRE Corporation has remained between $27 and $29 million per year from FY 68 to FY 72 although inflation has eroded the amount of support work provided during that period. Total manning at the present time is approximately 2,187, including 1,118 Members of the Technical Staff. Total DOD funding for FY 72 for MITRE Corporation support will be approximately $37.790 million, including: Air Force—$29.404 million; Army—$1.700 million; and the Defense agencies—$4.934 million. There are no Corporate management personnel who are retired from military service or who resigned from the defense establishment since 1960. The only member of the Board of Trustees in this category is Maj. General James McCormack, USAF, Retired 1955.

Rand Corp., Santa Monica, Calif.

The Rand Corporation is an independent, non-profit organization devoted to research in the interest of the national security and welfare of the United States. Rand conducts research of its own and under contract with various national and local government agencies. Project RAND is that portion of the corporate research effort which supports the Air Force. The effort in Project RAND consists of deriving information and independent objective findings on a tasking basis from research and analysis of a wide range of subjects of interest to the Air Force. This research encompasses the study of force postures, doctrines, strategies, and allocation of resources primarily in the strategic, tactical, logistics, manpower, and system acquisition areas. Total funding for Rand Corporation support to the Air Force has declined from $15.140 million in FY 68 to $9.6 million in FY 72. Total Corporate manning at the present time is approximately 972, including 422 Members of the Technical Staff. Total DOD funding for FY 72 for Rand Corporation support is $16.0 million (Air Force—$9.6 million; ARPA—$6.4 million). The only member of the Board of Trustees or the management staff who is retired from the military or who has resigned from the defense agencies since 1960 is Mr. Richard Fryklund, Assistant to the Vice President of the Rand Washington Office. Until June, 1969, Mr. Fryklund was a special advisor to the Deputy Secretary of Defense.

PROGRAM ELEMENT RESTRUCTURING

Mr. HANSEN. Last year I indicated to you that we had made a net reduction in the number of program elements used to describe the R.D.T. & E. budget, and stated that the process of minimizing and

clarifying program elements was a continuing one. We have continued the process this year, eliminating an additional 25 program elements from the 129 presented to you in fiscal year 1972. I believe that this restructuring is progress toward our objective of providing a better focus for decision without undue loss of the important detail. But in addition to combining, we have transferred efforts from program elements of the fiscal year 1972 budget request to more appropriate elements of our fiscal year 1973 request. This has resulted in what appear to be some disproportionately large increases in certain of the program elements, and I would like to alert you to this fact. For example, our advanced liquid rocket technology program of fiscal year 1972 has been eliminated and combined into our exploratory program rocket propulsion, where it accounts for the major portion of the increase in that element in fiscal year 1973. In a somewhat different vein, the Arnold Engineering Development Center line now includes in one program element all of the funding which had been disbursed among our systems and technology base lines last year under service funding concepts. These changes, which are changes in structure rather than in program, should be borne in mind as you review our budget request.

RESEARCH AND TECHNOLOGY HIGHLIGHTS

I have touched upon the importance of our efforts to maintain a technology base in order to have workable alternative options for future systems. I would like to highlight a few recent accomplishments which are illustrative of the impact our research and exploratory development efforts can have upon the Air Force, both immediate and longer term.

The Air Force has several high-powered, over-the-horizon radar systems which operate in the HF frequency band for which little or no biological data existed. Decisions relative to land acquisition, site layout, shielding requirements, boundary control measures, and operational and maintenance procedures all depend upon a knowledge of biological efforts. Our biotechnology program conducted studies at three specific frequencies in this band for OTH radars which showed that no reduction in present tolerance criteria was required. In addition, data on the effects of microwave radiation on cardiac pacemakers was provided to manufacturers who have implemented programs to reduce pacemaker sensitivity to electromagnetic radiation.

An analysis of just what is required in jobs carried out by various airmen has resulted in a redesign and shortening of the training courses without loss of effectiveness. As a result, 11 training courses have been shortened with a savings of over $4 million and over 43,000 man-days, and we project that this saving will approximately double in fiscal year 1972. Our Human Resources Laboratory performed this work.

Our flight dynamics laboratory has developed a unique ion probe which will predict imminent engine failure. During a recent J–57 engine test, this simple probe started turning out a wildly increased signal. We thought something had gone wrong with the probe, it had not. Twelve hours later the engine failed catastrophically. This phenomenon has been observed repeatedly, and each time the engine has failed within a few hours. We believe we now have a method to pre-

dict impending engine failures in flight, which will permit the pilot to land before disaster strikes. This will be applicable to all military and civilian jet engines.

Some of our research in optics at the California Institute of Technology has led to a scanning device which can automatically sort out sharp edges and repetitive patterns, both of which are characteristic of human activity. We believe this discovery, when combined with capabilities of our computers, will lead to the automated detection of targets in the miles of reconnaissance film which must be processed now by highly trained observers.

We lose many aircraft to ground fire because of hydraulic fluid fires. Our materials laboratory has developed a less flammable hydraulic fluid which is fully compatible with all existing systems. Flight test evaluation in F–4 aircraft is currently underway.

Our cluster bomblets, developed a few years ago, have proven to be a highly effective munition against personnel, radar installations, and other targets. One serious problem has been that because of their aerodynamic properties these bomblets have spread out to form a doughnut-shaped pattern when they strike the ground. But the target is in the center of the hole of the doughnut if our delivery is accurate. Our armament laboratory added a small nylon tuff about the size of your thumbnail to the bomblet which changed the aerodynamics and eliminated the hole in the doughnut pattern.

Peacetime Application of Developments

Some of our efforts have significant peacetime applications. We frequently have forest fires or brush fires on Air Force bases and ranges. We talked with people at the U.S. Forest Service, who have a great deal of experience in fighting these fires. With their consultation, we developed and tested a simple system of tanks that can quickly be loaded on a C–130 transport to convert it into an air tanker capable of laying down a swath of fire retardant 80 feet wide and a quarter of a mile long. We responded to their request for an operational test on a serious forest fire near Santa Barbara, Calif., last fall with an Air National Guard C–130 and crew. Because of the success of these tests, we are currently investigating the possibility of a mutual agreement whereby the Forest Service will provide sets of tanks and the Air Force will provide aircraft for a capability to fight disastrous forest fires on Air Force or civilian property. For about a million dollars invested in tanks, existing Air Force aircraft required for our military mission could provide a national reserve equaling the existing national capability.

These are seven examples chosen almost randomly from a host of accomplishments. I have not touched on those efforts which are promising but unproven, nor have I mentioned the many engineering fixes to current operational equipment that have been accomplished over the past year. I have emphasized the importance that I attach to our research and exploratory development in previous years, and I will only reaffirm that the importance is as great today as it has ever been.

CONCLUSION

In my statement I have tried to present a review of the past budget trends leading up to our present budget request, and dealt with the important issues of goldplating and prototyping. I have tried to explain the Air Force's need for Federal Contract Research Centers. I have pointed out some of the changes in structuring of our program elements submitted to you this year, and I have selected a few highlights from our research and technology program. General Glasser will now present his statement, and together we shall do our best to answer your questions on further details of the budget request.

Thank you.

Chairman ELLENDER. Thank you, Mr. Secretary.

BUDGET REQUEST

All right, General Glasser, you may proceed.

General GLASSER. Thank you, Mr. Chairman, and members of the committee. I appreciate this opportunity to appear before you once again to discuss our research and development programs. As Secretary Hansen stated, the Air Force R.D.T. & E. budget request for fiscal year 1973 is $3.193 billion. In addition to continuing major development programs started in prior years, this budget will allow us to initiate engineering development of an advanced airborne command post and A–X; continue protoype development of a lightweight fighter and an advanced medium STOL transport; and initiate or continue several promising new development programs which can significantly increase Air Force capabilities. Included in those new initiatives are a high performance self-contained adverse weather and night attack prototype aircraft subsystem, and a stall/spin inhibitor program.

INCREMENTAL FUNDING

Before I get into a more detailed discussion of some of our programs, I would like to quickly cover several other items of interest. I will start with incremental funding of RDT&E efforts, a subject which is of great interest to the Air Force as well as the Congress. In the past, we have attempted to comply with the expressed intent of Congress that funds requested for a given fiscal year will be only for work to be performed in that year. Again, this year, in preparing the fiscal year 1973 request, a thorough review was conducted to insure that incremental funding principles were being used to determine fiscal year 1973 requirements.

Budget preparation is only one part of the process by which incremental funding is achieved, however. In order to comply with congressional intent during the execution phase of the process, we have decentralized financial management responsibility to allow field units to respond quickly to the changes which occur in a dynamic RDT&E program.

PROGRAM INITIATION, ABANDONMENT AND REPROGRAMING

Chairman ELLENDER. General, the amount of reprograming in the RDT&E appropriation concerns me. It seems to me that you ask for funds for specific projects knowing that you will not obligate the full amount for the project in order to have funds available to reprogram.

General GLASSER. I would not have said it that way, Senator. There are occasions when monies do become available on programs with which it is prudent to proceed no further and since we do have needs unfulfilled on occasion we do request reprograming.

Chairman ELLENDER. Is there any case in which you return money to the Treasury? I don't know of any.

General GLASSER. We do not, however, program monies for the purpose of having them available for reprograming. Our needs are always so much greater than our available funds that that is the consequence.

Chairman ELLENDER. Proceed.

DELAYS AND CHANGED REQUIREMENTS

General GLASSER. We have placed increased emphasis on the need for early identification and reporting of program delays and changed requirements which result in excess funding for that program in the current fiscal year. This earlier identification of excess funds permits us to divert them quickly to other high priority efforts, and thereby reduce end-of-year unobligated balances.

PROTOTYPING AND PROTOTYPE CONCEPTS

Another subject of major interest right now is prototyping and prototype concepts. I am concerned that we may not all have the same idea as to what these concepts mean and how they are to be applied to our research and development efforts. It may serve to clarify matters if I describe the various types of prototyping.

ADVANCED DEVELOPMENT PROTOTYPING

Advanced development prototyping. This approach is designed to find new ways of using existing technologies to produce more economical systems for possible future requirements. For example, the lightweight fighter prototype program being started this year is expected to yield a new lost cost, high performance, lightweight, easily maintained fighter design using existing technology. Our goal is low cost and better use of available technology. Any future decision to develop aircraft based on these prototypes naturally would come only after satisfactory demonstration of the technologies involved and the operational utility that may be realized.

PREPRODUCTION PROTOTYPES

Preproduction prototypes: In programs such as the B–1, a limited number of aircraft are being built to verify the design and insure that the aircraft meets the operational requirement. This is the fly-before-buy approach which allows us to find problems, if any, and assess their expected effects before we make the decision to produce an expensive item.

In another application, we use technologies and components which have been developed through previous R & D efforts. These are then assembled into a working model which is tested to insure that it can perform the intended mission. The SCAD program is an example in which the electronic countermeasures package and the engine components were developed as technology items.

Competitive Prototyping

Competitive prototyping: This technique can be used with either of the above types of prototyping to decrease the management risks and increase the product performance. In this case, industry is asked for proposals to meet a certain requirement. Two or more contractors are selected and asked to build prototypes of their proposals. Finally, a competitive test is conducted to select the item that best meets our needs. Then, the decision is made whether to enter full scale development. Examples of programs using this approach are the A–X program and the 30 mm (GAU–8/A) gun program.

Each of the above methods has its own advantages and disadvantages. As a new program develops, the management approach followed is the one which decreases the risks and minimizes the costs involved. The Air Force has great confidence in prototyping as a management tool. We feel it is a method which will provide more and better hardware for each R. & D. dollar.

Air Force New Initiatives Office

Related to the advanced development prototype program is the Air Force New Initiatives Office. We are actively seeking new ideas from industry, educational institutions, the public, and other sources which may provide a more economical or better way to do our job. The New Initiatives Office has been established under my director of operational requirements and development plans in the Pentagon. This office provides anyone with new ideas or concepts a forum in the Air Force Headquarters where he can air his ideas, obtain clarification of Air Force requirements, and receive guidance and those which show promise will be forwarded to the Air Force Systems Command for further review and possible future funding within the technology programs.

Operational Test and Evaluation

Another item of special interest and a method of increasing the value received from our R. & D. dollar is improved operational test and evaluation (O.T. & E.). We have, perhaps, not done as much in this area in the past as we should. As a result of criticism by the Congress, the GAO, the Blue Ribbon Defense Panel, and other of the services testing of weapons systems, we have made changes to Air Force management, organization, and policies in order to enhance O.T. & E. capabilities. Procedures now require early operational test and evaluation of a system to assess its expected operational effectiveness and suitability, and logistical supportability prior to production decisions. This function has been designated as initial operational test and evaluation (I.O.T. & E.). Under this concept, the operating supporting com-

mands, separate and distinct agencies from the developer, are charged with the responsibility for I.O.T. & E. They make independent evaluations which are forwarded through O.T. & E. channels to the Chief of Staff. These reports, as well as reports on the results of development test and evaluation (D.T. & E.), which is performed by the developer, are used by the Air Force and OSD to make production decisions. We are also programing for improved test resources to make our future operational tests more realistic.

CONTINENTAL OPERATIONS RANGE

The Air Force strongly supports the Continental Operations Range (COR) being planned by the Department of Defense for tri-service uses, primarily for O.T. & E. purposes. This year we are asking for $3.5 million for items that have been identified specifically to improve our O.T. & E. capabilities.

Chairman ELLENDER. Could you elaborate on this new Continental Operations Range? This is brand new, is it?

General GLASSER. Yes, sir. Although it unquestionably will be expanded upon in an existing facility. It is primarily the equipping of a facility where the services can take new equipment very early in its development and put it in the hands of the intended eventual user and have these initial operational tests and evaluations conducted as I have described so that the operator will be able to have his input fed into the program long before the program proceeds too far.

Chairman ELLENDER. Who will operate this center, and at what cost?

General GLASSER. I do not have the details of that with me, Senator. Perhaps it would be well if I were to include a brief description of the facility and the proposed mode of operation. It will be tri-service operated. Each of the services will participate in the operation and use of this. What the funding requirements are, I do not know at this time.

Chairman ELLENDER. I wish you would furnish it for the record.

General GLASSER. I will do so.

Chairman ELLENDER. You say that this is going to use existing facilities?

General GLASSER. I am sure it will be built on an existing facility, by equipment added to an existing facility. It will not be a totally new facility.

(The information follows:)

CONTINENTAL OPERATIONS RANGE

The Continental Operations Range (COR) is a title given by OSD DDR&E to what has been known previously as HAVE EDGE or Integrated Offensive/Defensive Test Environment. The concept involves a large range facility specifically designed to perform operational testing and training in mock but realistic combat conditions. It will permit the exercise of strike-sized strategic and tactical forces against a realistic multi-defended area. The range area would be configured with replicas of enemy threat systems including anti-aircraft artillery, surface-to-air missiles, command and control, and communications. The range would be instrumented and equipped with sufficient data processing capability to provide rapid event analysis and accurate decision making information. Threat simulations and instrumentations would be mobile or transportable for maximum economy and flexibility. Operationally, independent "Red" and "Blue" forces would engage within the test arena monitored for safety and test data by a "White" umpire force. The concept includes provision for multiple, simultaneous small tests or engagements as well as full scale exercises.

The cost, operational concept, and location for the range are still under careful consideration; but the location study has centered on a large triangular area in Nevada and western Utah as the most suitable operating area. Existing ranges near Nellis AFB are under examination as a potential area where a smaller scale model of the large range can be developed and evaluated before making a formal decision on this complex project. This small scale model will take advantage of existing test facilities and equipment already in existence to reduce initial development costs.

FEDERAL CONTRACT RESEARCH CENTERS (FCRC'S)

General GLASSER. A final matter of congressional interest I would like to comment on has to do with the Federal Contract Research Centers (FCRC's). As you know, these have been the subject of continuing studies over the past several years. The basic requirement for the objectivity and expertise which FCRC's provide still exists. The two major objections to federalizing the FCRC's are loss of objectivity and technical excellence in the long term and the lack of flexibility to provide specialized expertise for limited duration studies. We will continue to review our requirements for support by the FCRC's; however, I believe that holding separate congressional hearings on this subject is the most practical means for the Congress to thoroughly review the need for and use of FCRC's. I believe such hearings should be held before any recommendations are made for further cuts in these valuable assets.

Now, I will discuss the various budget activities and some of the major systems and programs contained in our fiscal year 1973 request.

PROGRAM SUMMARY

Chairman ELLENDER. General, table 1 attached to your statement giving a breakdown of the request by budget activities will be included in the record at this point.

(The table follows:)

TABLE I.—DEPARTMENT OF THE AIR FORCE, FISCAL YEAR 1973 R.D.T. & E. BUDGET ESTIMATES

[In millions of dollars]

	Fiscal year 1972	Fiscal year 1973
R.D.T. & E. program by budget activity:		
Military sciences	142.7	146.3
Aircraft and related equipment	1,197.3	1,327.1
Missiles and related equipment	418.1	387.4
Military astronautics and related equipment	341.1	345.7
Ordnance, combat vehicles, and related equipment	92.5	100.6
Other equipment	419.4	50.2
Programwide management and support	349.3	384.1
Total, direct program	2,960.4	3,193.2

MILITARY SCIENCES

Chairman ELLENDER. The first budget activity is "military sciences," for which $146.3 million is requested. Table II attached to General Glasser's statement will be included in the record at this point.

(The table follows:)

TABLE II.—DEPARTMENT OF THE AIR FORCE, FISCAL YEAR 1973 R.D.T. & E. BUDGET ESTIMATES

[In millions of dollars]

	Fiscal year 1972	Fiscal year 1973
Military sciences:		
Defense research sciences	97.5	82.8
Environment	9.1	9.5
Materials	25.2	26.1
Preliminary design and development	5.3	3.1
Innovations in training and education	6.1	5.3
Air Force Project Rand	8.0	8.0
Analytic Services, Incorporated (Anser)	1.5	1.5
Total	142.7	146.3

BUDGET REQUEST

General GLASSER. In "military sciences," the request for fiscal year 1973 is $146.3 million, an increase of $3.6 million over last year's appropriation. Within this budget activity are our basic research programs and many of our basic technology programs. Rather than discuss these programs individually, I would like to expand the discussion here to include the entire technology base.

In this budget request, special emphasis has been placed on maintaining the technology base. This is an area which has been funded at a dangerously low level in past years. In fiscal year 1972, the funds programed for technology efforts were raised by 8 percent over the fiscal year 1971 program, and the funds proposed for fiscal year 1973 will increase this to 12 percent. Although there are many technology projects we would like to pursue that are not proposed in this budget request, we have at least reversed the downward trend of preceding years.

These programs are the heart of our research and development effort and form the basis of the weapon systems of the future. During our annual program reviews, we assess the progress being made on each development effort and the possibilities of future improvements. We eliminate those efforts in which the progress is either unusually slow, expensive, or the technical risks appear to be excessive.

Senator YOUNG. The technology you are talking about is related to the space program?

General GLASSER. Yes, sir; portions of it are.

RUSSIAN CAPABILITY

Senator YOUNG. For example, at the present time, according to testimony we have received, the Russians have the capability of [deleted] and we have no such capability ourselves. I understand that through the space shuttle program you could easily develop the capability of [deleted]. Is this true?

General GLASSER. Well, Senator Young, first of all, the reports that I have heard do not credit the Russians with a capability of [deleted].

Senator YOUNG. The [deleted] ones are the ones that are used for [deleted]?

U.S. CAPABILITY

General GLASSER. That is correct, some portions, yes. It is correct that the United States has at this time only a very, very limited capability for [deleted]. This is a topic which has been studied extensively and continues right now to be studied further under the aegis of the White House. There are a number of responses that will be made to this threat, not necessarily reciprocal [deleted]. There may be other approaches.

SPACE SHUTTLE PROGRAM

Senator YOUNG. In a brief discussion I had with the space people sponsoring the space shuttle program, I raised this question, would the space shuttle have the capability of [deleted]? They said the military has no program of that kind now but one could be provided with a comparatively small amount of money.

General GLASSER. We do have some study efforts in the budget along those lines, not using the space shuttle per se which I would consider to be a relatively expensive way.

Senator YOUNG. If the space shuttle is only used for that purpose, of course, it would be, but if the space shuttle program went ahead, and you had a space shuttle program, it would not take much to utilize that as a means of [deleted], would it?

General GLASSER. That certainly could be looked at.

Senator ALLOTT. Mr. Chairman, may I underscore something that the Senator has said? I am afraid when I hear you say that, this may be pursuing the wrong thing. To pursue the use of the shuttle for this purpose would be a very, very expensive proposition.

Senator YOUNG. You misunderstood me. I said if we had a space shuttle program, it could easily be used as a means of [deleted]. To put it into operation for the sole purpose of [deleted] would be expensive.

General GLASSER. It would provide a lot more payload than you require, therefore it would be expensive.

Senator YOUNG. You misunderstood me, too.

I am not advocating it as a means of [deleted]. But if you had a satellite program, it could be used for that.

Mr. HANSEN. If you had a space shuttle in existence, operational, such that its operating cost was not greater than the operating cost of the kind of systems we have now to get to and from lower orbits, a very important application of it would be to [deleted]. It would not have the capability to [deleted].

Chairman ELLENDER. Proceed.

TECHNOLOGY EXPLOITATION RISKS AND COSTS

General GLASSER. In the early 1950's and early 1960's so much new knowledge was available that system development was a process of choosing and exploiting new technology in its initial stage. One of the principal reasons we need to emphasize research now is that we are approaching the limits of much of that earlier technical knowledge. The costs associated with developing the first 50 percent of a technology are usually very reasonable because there are many engi-

neering options available. However, to exploit the final 50 percent carries higher risks and increased costs because only the expensive options or those that were previously discarded as containing high risk remain.

Today, we find ourselves in the position, in such areas as turbojet engines and weapon system structures, of approaching the limits of the technology. Therefore, we are pursuing a dual course, that of developing new technologies while exploiting the limits of the older knowledge in those cases in which the risks appear acceptable.

Laser Development

An example of exploring new technologies is our laser development effort. Currently, lasers are used in applications ranging from surgery to communications and have [deleted]. Presently, we have development programs to increase the power of lasers, to improve the beam quality, and to investigate new types of laser generating media.

Lightweight Fighter and Medium STOL Transport Developments

Our new advanced development prototyping program is an effort to exploit available technology. We have chosen the lightweight fighter and the advanced medium STOL transport to initiate this program. We expect to be on contract for both prototypes in the near future.

The lightweight fighter prototype program will provide two aircraft from each of two contractors. The design and performance goals include a weight of approximately 20,000 pounds with internal fuel, ammunition and two Sidewinder missiles, and performance and maneuverability optimized for the mach 0.8 to 1.6 air combat arena.

The advanced medium STOL transport is also a competitive effort with two aircraft from each of two contractors. As a portion of this program, we are developing an advanced engine. Our design and performance goals for the airframe include: 2,000-foot takeoff and landings, 15-ton payload, a 500-nautical-mile radius and capability to land on a surface with the consistency of a plowed field. The engine is to be an advanced turbofan in the 25,000-pound thrust class.

Continued advanced development prototyping such as this will help us get maximum operational capability from existing technology at minimum cost.

AIRCRAFT AND RELATED EQUIPMENT

Chairman Ellender. The next activity is aircraft and related equipment, for which $1,327,100,000 is requested. Table III attached to General Glasser's statement will be included in the record at this point.

(The table follows:)

TABLE III.—DEPARTMENT OF THE AIR FORCE, FISCAL YEAR 1973 R.D.T. & E. BUDGET ESTIMATES

[In millions of dollars]

	Fiscal year 1972	Fiscal year 1973
Aircraft and related equipment:		
International fighter aircraft (F-5E)	42.5	17.7
F-111 squadrons	19.2	5.0
C-5A airlift squadrons	22.4	
Aerospace flight dynamics	33.7	31.5
Aerospace biotechnology	20.5	20.9
Aerospace propulsion	28.6	29.1
Aerospace avionics	46.9	47.2
Advanced aircraft propulsion	21.9	15.8
Advanced avionics for aircraft	20.0	21.9
Flight vehicle subsystem concepts	20.0	15.0
Aerospace structural materials	13.9	12.0
Subsonic cruise armed decoy	10.0	48.6
Advanced aerial target technology	4.8	4.7
A-X aircraft	47.0	48.1
Lightweight fighter prototype	6.0	46.0
Advanced STOL transport	11.8	46.0
Stall/spin inhibitors		1.0
F-4 avionics	9.5	5.6
F-15A	419.9	454.5
Aircraft equipment development	18.2	12.0
B-1	370.3	444.5
EF-111A	10.2	
Total	1,197.3	1,327.1

1972 APPROPRIATION AND 1973 BUDGET REQUEST

General GLASSER. Funding for these prototypes is in the aircraft and related equipment budget activity. Total funding in this activity for fiscal year 1973 is $1.327 billion versus $1.197 billion in fiscal year 1972. The increases are primarily in the prototype programs I just discussed and the B–1, SCAD, and F–15 programs.

I will cover a few of the systems in this account in more detail starting with the F–5E international fighter aircraft. This aircraft has greater thrust, higher top speed and altitude, and better maneuverability than the F–5A. The aircraft is primarily an air superiority fighter; however, it does have a secondary ground attack capability.

In 1971, flight testing of the prototype engines and transonic wind tunnel tests of the airframe and stores were completed. Flight testing of the avionics package began in October 1971. Planned fiscal year 1973 efforts include: engineering and fabrication of a test aircraft, structural testing, and additional munitions certifications and modifications related to the AIM–9 B/E missile. This program requested $17.7 million for fiscal year 1973.

SUBSONIC CRUISE ARMED DECOY (SCAD)

One of the systems being developed to improve the defense penetration capability of our B–52's is subsonic cruise armed decoy (SCAD). This is an air-launched, turbofan-powered, decoy missile designed to duplicate the appearance of the B–52 on enemy radars, thereby saturating his area air defenses. The SCAD will be a replacement for the current Quail decoy, which has less range at the low altitudes where bomber penetration is most likely. Inadequacies of the Quail necessitate replacement by SCAD at the earliest possible date.

The Air Force attaches a very high priority to the development of the SCAD. In keeping with the urgency of the requirement to retain a high level of penetration effectiveness for the B–52 in the mid-1970's, the initial vehicle will be a decoy. However, the SCAD is being designed as a modular vehicle that can be adapted to provide increased range, improved accuracy, and a warhead. Its design will also accommodate later modification for use on the B–1.

Design of the SCAD vehicle is constrained by a requirement for compatibility with both the B–52 performance and SRAM carriage provisions. These requirements essentially eliminate the usual latitude in design afforded competing prime system contractors. In addition, substantial prototyping has already been accomplished in advanced development with the demonstration of a critical decoy package and engine components. As a result of these considerations, we believe the current in-house associate contractor approach will provide credible cost and schedule estimates prior to the production decision. The engine will be developed on a competitive basis, and there will be substantial additional hardware demonstration. Testing will include initial operational testing and evaluation by the Strategic Air Command. We are requesting $48.6 million for development in fiscal year 1973 for detailed engineering, component fabrication, and testing.

A–X Program

The A–X program is a competitive prototype effort (A–9 and A–10) leading to a single-place, twin-turbofan-powered fixed-wing, subsonic aircraft designed specifically for the close air support mission. It will be capable of carrying up to 16,000 pounds of external payload and will be armed with an internally mounted 30 mm, rapid-fire, high muzzle velocity gun.

The A–9 is being built by the Northrop Corporation, and the A–10 is being built by the Republic Division of Fairchild Industries. Fabrication of both prototypes has been initiated, and first flights are scheduled for June 1972. The Air Force competitive fly-off is scheduled to begin in October 1972. The winning design will be selected on the basis of mission effectiveness, maintainability, and survivability demonstrated by the prototype, and on the proposal for full-scale development and production.

The $47 million approved in fiscal year 1972 is being used to complete the engineering development and fabrication of the prototype aircraft and will initiate the flight test portion of the competitive prototype phase.

We are requesting a total of $48.1 million in fiscal year 1973. $7.6 million is needed to complete the competitive prototype phase. The remaining $40.5 million will be used to initiate full-scale development of the selected design. Selection of the winner is scheduled for February 1973.

F–15 Program

The F–15 is one of the highest priority programs for our tactical forces. It is being developed to counter new and modified Soviet fighter aircraft which now possess counter-air capability superior to the F–4E. The F–15 is designed specifically for the air superiority mission.

It will be a twin-engine, single-place, fixed-wing aircraft characterized by high thrust to weight ratio and low wing loading for maximum maneuverability and acceleration. The first four major milestones—preliminary design review, radar contractor selection, critical design review of the engine and airframe, and avionics equipment development review—were successfully completed either prior to or on schedule. Static and fatigue test aircraft will begin tests in March and April, respectively.

Chairman ELLENDER. General, your R. & D. request includes $454.5 million for the F–15, and as we discussed last week you are requesting over $400 million for the production of the first 30 operational F–15's. As I recall, you indicated that you feel by the time you execute the production contract your R. & D. will be far enough along to justify moving into operation production.

General GLASSER. That is correct, sir. We are requesting in this year in the procurement account we spoke of the other day funds to initiate 30 aircraft in fiscal year 1973.

Chairman ELLENDER. When will you execute the production contract?

INITIATION OF PRODUCTION FOR OPERATIONAL FORCES

General GLASSER. We will be proposing to initiate the production of those aircraft a year from now, in February of 1973.

Chairman ELLENDER. Will these aircraft go into your active forces?

General GLASSER. Yes, sir. These are the initiation of aircraft to go to the operational forces.

Chairman ELLENDER. What will be your final contract number?

General GLASSER. [Deleted.]

CONTRACT FOR PURCHASE

Chairman ELLENDER. What is the nature of this production contract?

General GLASSER. The contract that we have for this aircraft is that we are on contract with a cost-plus-incentive price for the development program, and on the airframes themselves we have a series of options to buy the first wing with 30 aircraft to be bought the first year, 77 to be bought the second year. In each case we have the option through a formula contained within the contract to increase or decrease those quantities by 50 percent.

Chairman ELLENDER. Without additional cost?

General GLASSER. With costs that are in the formula in the contract. In other words, the contract contains a formula for pricing based on the numbers you buy. That formula was generated during the competitive phase of the program, while we were still in competition. The contractors proposed and negotiated those features.

Chairman ELLENDER. Does your contract price take into consideration the inflation factor?

General GLASSER. Yes, sir. These costs that we have in here include inflation.

Chairman ELLENDER. All that is written into your contract?

General GLASSER. Yes, sir.

INITIATION OF PRODUCTION COST

Chairman ELLENDER. How much do you figure that the first 30 will cost apiece, exclusive of the R.D.T. & E?

General GLASSER. The procurement funds that we require to initiate those are $421 million. However, that is not only to buy the aircraft but also the tooling and so forth that go along with it.

Chairman ELLENDER. How much will each aircraft cost you?

General GLASSER. Throughout the life of the program——

Chairman ELLENDER. I am talking about the 30.

General GLASSER. Well, I don't have that here at the moment. I can get it dug out here in a second. The weapon system cost on that is $14 million a copy for those in fiscal year 1973, of which the aircraft itself is $11.7 million apiece.

Chairman ELLENDER. What is the additional amount used for?

GROUND SUPPORT EQUIPMENT

General GLASSER. The additional is in the peculiar ground support equipment, training, things of that sort.

Chairman ELLENDER. That is not a cost of the aircraft, is it?

General GLASSER. No; but it is in what we call the weapon system cost, because in order to operate the aircraft you need to have the ground support equipment, the training equipment, and so forth. So we always add that in to tell you what the total cost is.

Chairman ELLENDER. Will that obtain for the others that you are going to buy?

General GLASSER. Yes, sir. Of course, you need less of it as you get out into later years, because it is spread over more aircraft. The early aircraft are always more expensive.

Chairman ELLENDER. The ground equipment you speak of consists of what?

General GLASSER. Primarily test equipment, special fixtures, tools, handling equipment, all things like that that are required for the operation and maintenance of an aircraft.

AIRCRAFT AND GROUND EQUIPMENT COSTS

Chairman ELLENDER. The actual cost of the aircraft itself is $11.7 million?

General GLASSER. That is right.

Chairman ELLENDER. Does that additional amount for ground equipment decrease as you go along?

General GLASSER. Yes, sir. As we move out into later years, we get down to where the individual aircraft costs you about $5.8 million, and there is only about $500,000 additional on that for the rest of the weapon system.

Chairman ELLENDER. Thank you.

F–100 ENGINE FLIGHT TESTS

General GLASSER. I am in the lower portion of page 13, sir.

Preliminary flight rating tests of the F–100 engine are scheduled to be completed in February 1972, and first flight is scheduled for

July 1972. The initial operational capability of the F–15 will be in the mid-1970's.

Program emphasis during fiscal year 1973 will be directed toward acquiring actual flight test experience on seven of the first test vehicles to be delivered. Aircraft No. 2 will be used as the primary propulsion/performance test vehicle. Following first flight, two milestones must be accomplished prior to the release of long lead funds in November, including initial aircraft performance demonstration. Prior to obtaining authorization for release of funds for the first wing in February 1973, three other milestones must be accomplished.

The F–100 engine development program will complete military qualification testing in February 1973. These tests will qualify the first production engines for use in the F–15 flight test program. R.D.T. & E. funds requested for the fiscal year 1973 effort are $454.5 million.

Navy Decision to Drop Option for Production Engines

The major concern in the F–15 program involves the joint F–14B/F–15 advanced technology engine development. Changes in the F–14B program have caused the Navy to drop its option for production engines. The Navy will continue to share the costs of the development program, but does not now have any definite plans to buy production engines. The impact of this Navy decision is about a $26 million increase in development costs to the Air Force. Negotiations are now under way to determine the total added cost to the Air Force of the F–100 engine as a result of the Navy decision. These are not all additive costs to the Government, of course, because much of the costs would have been paid by the Navy on its F–14B program, had it continued.

Senator Young. Is the F–100 engine the same engine that was to be used in the F–14?

General Glasser. No, sir. They have a common core. The fan is different, and the nozzle is different. However, the core is the same.

Senator Young. Do you have an estimate of the extra cost required for the Navy to use the same engine?

General Glasser. Well, for the size aircraft that they have, they need the greater thrust. For the performance that they want out of it, they need a different bypass ratio than we have in the F–15 engine. The F–15 engine would not be suitable for their aircraft. But it will use the same central core of the engine.

Senator Young. It will help in the development program?

General Glasser. It will be a great deal of help in the development program, and later in the logistics support.

Fly-Before-You-Buy Formula

Chairman Ellender. In respect to the F–15, you said that you had two milestones before you buy. I did not quite follow you there. Does that not violate the fly-before-you-buy formula?

General Glasser. No, sir. As a matter of fact, it fulfills that requirement. What we have done on the F–15 is something relatively new in the programs of this sort. In the past, there has been a tendency to schedule events by the calendar, that I will do this by this date, that by some succeeding date.

MILESTONES OF PROGRESS

But in the F–15, we were required by the Defense Department to write down in advance so-called meaningful milestones that show certain levels of progress in the program. Until you have passed those milestones, successfully demonstrated that, you do not move further in the program.

The contract is written with the contractor so that unless he passes those milestones, it is at no increased cost to the Government.

So we have these particular milestones, such as you have to have, preliminary design review, critical design review, that the engine has to pass.

Chairman ELLENDER. What if they don't comply with these milestones, and something else has to be done to reach those milestones, at whose expense is that done?

General GLASSER. It is very complex to answer that question, but there is a substantial sharing of the expense by the contractor.

The most important part is that you don't go beyond that point until you do pass the milestone, thereby avoiding the problem of getting in over your head and starting into production, for example, before you are really ready to go.

So when we indicate to you dates by which we propose to do things, those dates are on the assumption that we will satisfactorily meet the milestones. If we don't meet the milestones, the Defense Department will not authorize us to go ahead.

B–1 BOMBER

The B–1, being developed to counter the expected threat in the 1980's and beyond, is on schedule and within cost estimates. The development program includes the design of the aircraft as well as the fabrication and test of three flight vehicles and one fatigue airframe. The first flight of the B–1 is planned for April 1974. This will be followed by a full year of testing before a production decision is made. Our initial operational capability is planned for November 1979, based on receipt of production approval in April 1975.

Since July 1971, we have completed the preliminary design review and the mockup review, which were the first two major milestones. Full scale component testing of the F–101 engine is in progress. Current effort indicates that tests of the full scale engine will be initiated on or ahead of schedule.

DESIGN VALIDATION AND CRITICAL DESIGN REVIEW

In fiscal year 1973, effort will be concentrated on the next two major milestones: Design validation and critical design review. Aircraft No. 1 will be in final assembly and should be 75 percent complete by the end of next fiscal year. Aircraft No. 2 will be 33 percent complete and the first four of the XF–101 engines will be delivered. We are requesting $444.5 million for these efforts in fiscal year 1973.

Chairman ELLENDER. You are still talking about the B–1?

General GLASSER. Yes.

Chairman ELLENDER. XF101 is the designation of the engines?

General GLASSER. Those are the engines used in the B–1; yes, sir.

B–52 Aircraft Improvements

Until we receive approval to produce and deploy the B–1, efforts such as SCAD, which I discussed earlier, will be continued to improve the effectiveness of the B–52 aircraft. Another current effort is the development of a warning system to complement the improved self-protection electronic countermeasure jamming equipment which is now being installed in the B–52's. This warning system will automatically notify the aircrew whenever an enemy fighter or missile is approaching the aircraft.

Chairman Ellender. When was that developed, or are you working on it now?

General Glasser. The tail warning system was developed under a quick reaction capability, QRC 418.

Chairman Ellender. Have you tested it?

General Glasser. Yes, sir; it was flight tested from May to September 1971. Flight tests were satisfactory and a preproduction prototype contract is being negotiated.

Chairman Ellender. You expect to utilize that on the B–52's?

General Glasser. That is correct, sir.

Chairman Ellender. That is to warn when an attacking plane is approaching?

General Glasser. That he is under attack; yes, sir.

Chairman Ellender. That, of course, is operated from the plane itself, without any ground control?

General Glasser. That is correct.

Chairman Ellender. Proceed.

Stall/Spin Inhibitor

General Glasser. One of the new initiatives I mentioned in my introduction is the stall spin inhibitor. This program is designed to improve the handling characteristics of modern aircraft in high angle of attack modes. In the period from 1966 to 1970, we lost 226 aircraft worth $367 million through accidents attributable to stalls or spins. With this program, we hope to develop design criteria, equipment, and techniques to prevent future losses due to loss of control near or at stall angles of attack.

Chairman Ellender. What do you mean by "stalls?"

General Glasser. When the wing ceases to function as an aerodynamic wing, and the air just separates from it, it no longer has the lift and control that it requires.

Chairman Ellender. Just what is this new effort?

General Glasser. What we are developing here, sir, are techniques that will be used to either modify existing aircraft or will be used in the initial design of our new aircraft.

Chairman Ellender. No matter the size of the aircraft?

General Glasser. That is right, sir. It primarily involves the fighter aircraft which characteristically get into these very steep angles of attack conditions.

Chairman Ellender. In regard to what you discussed just previously in which warning is provided of the presence of other aircraft, do you do that by sight only?

General GLASSER. That is correct, or through ground warning. Whenever we are able to, we try to do it through the ground.

Chairman ELLENDER. You mean by personnel on the ground?

General GLASSER. Yes, sir. One of the functions of the AWACS type aircraft is to see other aircraft coming in, and to warn a man that he is about to be attacked.

Senator YOUNG. Do we have a plane now that can climb straight up without stalling?

General GLASSER. The F–15 will be such an aircraft. It has a thrust-to-weight ratio of greater than one. It will be able to accelerate while going straight up.

Senator YOUNG. If one of the engines falters, you could get into a stall situation?

General GLASSER. You could, indeed, sir.

MISSILES AND RELATED EQUIPMENT

Chairman ELLENDER. If there are no further questions at this time on the aircraft activity, we will proceed with the consideration of the request for $387,400,000 for the budget activity entitled "missiles and related equipment." Table IV of General Glasser's statement will be included in the record at this point.

(The table follows:)

TABLE IV.—DEPARTMENT OF THE AIR FORCE—FISCAL YEAR 1973 R.D.T. & E. BUDGET ESTIMATES

[In millions of dollars]

	Fiscal year—	
	1972	1973
Missiles and related equipment:		
Short range attack missile (SRAM) squadrons	12.0	
Minuteman squadrons	181.6	154.7
Tactical air interceptor missiles	7.8	2.7
Tactical drone support squadrons		.7
Rocket propulsion	20.3	24.5
Advanced ICBM technology	8.4	8.4
Advanced ballistic reentry system (ABRES)	103.8	104.0
Strategic bomber penetration	1.3	1.5
Tactical air-to-ground missile (Maverick)	7.5	8.3
Hound Dog II	5.1	15.0
Western test range	65.4	62.7
Western test range—communications	4.9	4.9
Total	418.1	387.4

1972 APPROPRIATION AND 1973 BUDGET REQUEST

General GLASSER. In missiles and related equipment, our fiscal year 1973 request of $387.4 million is substantially less than our fiscal year 1972 program of $418 million. R.D.T. & E. on SRAM has been completed, and the R. & D. effort on Minuteman and tactical air interceptor missiles is being greatly reduced. I will discuss three of our more important programs in this activity in more detail.

Minuteman Program

In the Minuteman program we are requesting $154.7 million to continue development and flight demonstration of the Minuteman III dust hardening modifications, for upgrade silo modifications, and for command data buffer for wing [deleted] for Minuteman III. As you may recall, the ground system at wing [deleted] differs substantially from the basic force modernized system and thus requires additional development efforts. We will also continue tests to verify the capability of Minuteman to withstand the inflight effects of nuclear radiation and electromagnetic pulse.

Chairman Ellender. All this is merely to research possible courses of action?

General Glasser. And to do the design.

Chairman Ellender. It is not actually to harden the system?

General Glasser. No, sir. That is in the procurement accounts.

Chairman Ellender. Proceed.

Missile Performance Measurement System

General Glasser. Another development effort, the missile performance measurement system, will provide a nonoperational adjunct to Minuteman III. This is an onboard instrumentation system that will provide precision measurements of Minuteman III performance in test launches on the Western Test Range. These development efforts provide for the required near-term modernization of our ICBM forces.

Maverick

The Maverick is a small air-to-surface missile equipped with automatic television homing guidance for worldwide use by the F–4D/E, A–7D, and A–X tactical aircraft against moving or fixed small hard targets, such as tanks, armored vehicles, artillery, and field fortifications. It will achieve a low cost per kill by increasing launch aircraft survivability due to the launch-and-leave nature of the missile, multiple carriage on launch aircraft, and high probability of hit.

We are requesting $8.3 million in fiscal year 1973 for completion of the R.D.T. & E. phase of the Maverick program.

Hound Dog II

The Hound Dog II is another program to aid our B–52's in penetrating improved Soviet defenses. The program is designed to develop a radar seeker and associated components to give the Hound Dog an alternate [deleted] capability in addition to its present [deleted] capability. The [deleted] Hound Dog II will be used to attack the [deleted]. By launching the Hound Dog II immediately upon [deleted]. The fiscal year 1973 requested funding of $15 million will permit continuation of contractor analysis and design efforts and initiation of fabrication and ground testing of development hardware. Subsequent to completion of the development effort, we plan to modify [deleted] B–52's and [deleted] Hound Dog missiles for the Strategic Air Command's operational inventory.

Chairman ELLENDER. The Hound Dog I is now operational on the B–52's?

General GLASSER. Yes, sir; they are on the B–52's today.

Chairman ELLENDER. How do they identify the target?

General GLASSER. When they are modified, we will have equipment on board the B–52 which detects the radar signals [deleted]. At that time, the pilot will launch the missile [deleted].

The missile then has on board its radar seeker, the capability of pressing right on in close enough to destroy the [deleted].

Chairman ELLENDER. This is [deleted]?

General GLASSER. That is correct.

Chairman ELLENDER. It is not intended to attack the [deleted] whatever is there to [deleted]?

General GLASSER. No, sir. The Hound Dog is an [deleted] missile, normally. What we are doing is putting a modification in it to allow it to proceed to attack [deleted].

This is a modification to an existing missile.

Chairman ELLENDER. You are doing it so that [deleted]. Is that correct?

General GLASSER. That is correct.

Senator ALLOTT. What is the number of these [deleted]?

General GLASSER. I don't recall at the moment.

Senator ALLOTT. Is it a hundred, or 50?

General GLASSER. No, sir [deleted] of them.

Senator ALLOTT. It is relatively small?

General GLASSER. Yes, sir. You don't need a great number of these for a purpose, because there is a [deleted].

Senator ALLOTT. I thought there would be relatively few of them. I wondered how many [deleted] we were preparing this Hound Dog for.

General GLASSER. My memory is that it is in the low or middle [deleted].

Senator ALLOTT. Thank you.

MILITARY ASTRONAUTICS AND RELATED EQUIPMENT

Chairman ELLENDER. All right, the next item is the request of $345,700,000 for the budget activity entitled, "Military Astronautics and Related Equipment." Table V attached to General Glasser's statement will be included in the record at this point.

(The table follows:)

TABLE V.—DEPARTMENT OF THE AIR FORCE—FISCAL YEAR 1973 RDT&E BUDGET ESTIMATES

[In millions of dollars]

	Fiscal year—	
	1972	1973
Military astronautics and related equipment:		
Defense support program	31.6	21.7
Defense systems applications program	3.3	5.0
Military satellite communications system	19.7	24.8
Special activities	154.6	188.5
Satellite control facility	31.6	3.6
Space boosters	3.4	1.8
Satellite data system	17.8	23.0
Space vehicle subsystems	7.2	4.9
Space test program	18.7	12.8
Advanced liquid rocket technology	1.6	----
Advanced space delivery systems	3.0	----
Satellite system for precise navigation	2.7	3.0
Advanced surveillance technology	23.4	24.9
Missile and space defense concepts	2.1	8.1
Space defense system	5.4	10.1
Aerospace	15.0	13.5
Total	341.1	345.7

1972 APPROPRIATION AND 1973 BUDGET REQUEST

General GLASSER. Our request in the military astronautics areas is $345.7 million, only slightly higher than the fiscal year 1972 program. As I am sure most of you know, over half the planned expenditures in this activity are for classified special activities. One of the programs just removed from this special category is the defense support program, formerly program [deleted]. This system consists of [deleted.] We plan to place [deleted.] Our fiscal year 1973 R.D.T. & E. request of $21.7 million will be used for phase II spacecraft design and development, sensor corrections resulting from on-orbit analysis, and follow-on spacecraft sensor studies.

Military space systems continue to play key roles in our overall defense structure. In addition to the defense support program, we are developing communications satellites and plan in the near future to proceed with the development of a navigation satellite system.

COMMUNICATIONS SATELLITE PROGRAM

Our communications satellite program includes a system for command and control of our strategic nuclear strike forces and a relay satellite system to communicate data directly from mission satellites that are out of view of the CONUS to CONUS ground stations without dependence on intermediate overseas ground stations. The Air Force will use the Navy Fleet Satellite Communications System for communications with our aircraft in the lower latitudes and supplement this capability with a family of piggy-back communications packages placed on appropriate mission satellites to provide communications in the north polar region. This system will increase the availability of vital communications with our strategic forces prior to and during hostilities.

OMEGA NAVIGATIONAL SYSTEM

Senator YOUNG. Is there funds in this budget to equip Air Force aircraft with the Omega Navigational System?

General GLASSER. I will have to check to be sure. Mr. Murray tells me there is some for the AWACS aircraft.

Senator YOUNG. I understand a receiver is required for each aircraft?

General GLASSER. That is correct. We do not generally use Omega in very many Air Force cases.

Senator YOUNG. Of course, it is a new system?

General GLASSER. It is a relatively low-quality system insofar as its accuracy is concerned.

Senator YOUNG. The Navy disagrees with you, General. They claim Omega is more accurate than anything we have now. There are now only two temporary stations, which will be torn down. Ultimately, there will be eight of these around the world.

Mr. MURRAY. It is attractive in high latitudes where normal radio will not work. This does.

Senator YOUNG. The Navy claims that a ship at sea will be able to save 200 to 300 miles crossing the ocean.

The navigational systems in the C–5A cost about $300,000 each. Northrop is producing Navy receiving sets which cost approximately $3,500, and are far more accurate.

General GLASSER. You are speaking of replacing the inertial system with this?

Senator YOUNG. Yes.

General GLASSER. I don't think we would want to replace the inertial systems in any event. What Omega replaces is Loran.

Mr. MURRAY. It permits the updating of the inertial system. The inertial system drifts, and Omega gives it a fix every few miles periodically, which is better than the inertial system, if it goes 10 hours or so.

Senator YOUNG. Why are we helping build eight of these stations around the world if it is not a more accurate system?

General GLASSER. It is a very expensive system to put on commercial aircraft or private aircraft.

Senator YOUNG. The C–5A could have two units costing approximately $7,000, according to the manufacturer.

General GLASSER. For shipping, it will be a great system.

Senator YOUNG. For smaller planes it would be too expensive. making of them.

Mr. MURRAY. In AWACS for high latitude use, particularly.

Senator YOUNG. Eventually more aircraft will be equipped with Omega because of its accuracy and dependability.

ORDNANCE, COMBAT VEHICLES, AND RELATED EQUIPMENT

Chairman ELLENDER. The next major activity is "Ordnance, combat vehicles, and related equipment," for which $100,600,000 is requested. Table VI attached to General Glasser's statement will be included in the record.

(The table follows:)

TABLE VI.—DEPARTMENT OF THE AIR FORCE—FISCAL YEAR 1973 R.D.T. & E. BUDGET ESTIMATES

[In millions of dollars]

	Fiscal year—	
	1972	1973
Ordnance, combat vehicles, and related equipment:		
Advanced weapons	15.0	24.6
Conventional munitions	12.2	13.2
Conventional weapons	8.7	11.1
Advanced radiation technology	28.1	21.8
Chemical-biological defense equipment	.5	.5
Armament/ordnance development	7.7	7.6
Improved aircraft gun systems	20.3	21.8
Total	92.5	100.6

IMPROVED AIRCRAFT GUN SYSTEMS

General GLASSER. In the ordnance, combat vehicles, and related equipment activity we are requesting $100.6 million. The program of primary interest in this activity is the improved aircraft gun systems. This program includes both the 25 and 30 mm. guns under development.

The improved 25 mm. aircraft gun system, GAU–7A, firing a caseless round and optimized for air-to-air combat, is being developed to replace, in later F–15's, the current 20 mm. M–61 Gatling gun planned for the first operational wing. The 25 mm. gun systems provided by two competing prime contractors, General Electric Co. of Burlington, Vt., and Aeronautronic Division of the Philco-Ford Corp., Newport Beach, Calif., were subjected to a competitive shootoff which was completed in October 1971. Source selection was accomplished in December. We are now on contract with the Philco-Ford Corp. for the full-scale engineering development program. In fiscal year 1973, the contractor will continue with development of the gun system and ammunition. High reliability, uniform ballistic performance, and low production cost are some of the objectives of this program. Interface considerations to insure compatibility of the gun system and the F–15 will be addressed. Guns and ammunition will be built for test and evaluation purposes.

Chairman ELLENDER. When you go into the phase of engineering, that means you have made your selection as between two companies?

General GLASSER. That is correct.

Chairman ELLENDER. When does the test come?

DEVELOPMENT AND TESTING

General GLASSER. These guns by both contractors were tested and compared one with the other, and we selected the Philco-Ford version. Now, that will go through to full-scale development and testing before being installed in the F–15 aircraft.

Chairman ELLENDER. When you reach that point, have you sufficient data to indicate that the one you chose is the best one?

General GLASSER. Yes, sir. We are no longer proceeding with the other gun because the Philco-Ford did demonstrate to be a better gun in a shootoff of actual hardware.

A–X AND CHEYENNE HELICOPTERS

Chairman ELLENDER. Applying the same formula to the A–X and the Cheyenne, when will the time come when you can make a decision?

General GLASSER. I would anticipate that that time ought to arrive within this calendar year, because we will be flying and evaluating the A–X this summer and fall.

Chairman ELLENDER. That is what I expected. As I said last week, my information was that the funds that we provided last year for fiscal year 1972 would be sufficient to make this determination. That is what I want to watch closely. Proceed.

AIR SUPPORT GUN SYSTEM

General GLASSER. The 30 mm. close-air-support gun system, GAU–8/A, is a [deleted] shot-per-minute gun system optimized for high effectiveness against ground targets such as personnel, trucks, armored personnel carriers, guns, and armor. It will be effective against the Russian T–55 tank at ranges of [deleted] feet or more. The 30 mm. gun will be installed internally in the A–9 or A–10, and is being considered for carriage in pods by the A–7D and F–4D/E.

The first phase of the development program has been on contract since June 1971, with the General Electric Co. and the Philco-Ford Corp. as the competing prime contractors. A competitive shootoff is scheduled for the period January through April 1973, to select a gun for full-scale development and production. We are requesting $21.8 million in R. D. T. & E. funds for these two programs in fiscal year 1973.

OTHER EQUIPMENT

Chairman ELLENDER. General, before you proceed with your discussion of the $502 million requested for the "Other equipment" activity, I want to include table VII of your statement in the record.

(The table follows:)

TABLE VII.—DEPARTMENT OF THE AIR FORCE—FISCAL YEAR 1973 R.D.T. & E. BUDGET ESTIMATES

[In millions of dollars]

	Fiscal year—	
	1972	1973
Other equipment:		
Strategic Air Command communications	4.1	4.4
CONUS over-the-horizon (OTH) radar system	2.6	4.4
Over-the-horizon (OTH) radar system	1.3	
Tactical air control system	4.3	2.8
Joint tactical communications program (TRI-TAC)	.5	2.9
[deleted]	8.2	3.8
Intelligence data handling system	1.2	
Special reconnaissance vehicles	6.4	9.0
Air Force communications (Def. Comm. Supt.)	1.4	3.9
Communications security (COMSEC)	1.2	1.2
Traffic control, approach and landing system (TRACALS)	2.6	11.8
Ground electronics	39.3	40.8
Human resources	5.1	7.4
Over-the-horizon radar technology	1.2	2.2
Advanced command and control capability	2.8	
Reconnaissance/intelligence	4.3	4.2
Reconnaissance/electronic warfare	17.8	15.2
Simulator for air-to-air combat	4.2	3.2

TABLE VII.—DEPARTMENT OF THE AIR FORCE—FISCAL YEAR 1973 R.D.T. & E. BUDGET ESTIMATES—Continued

[In millions of dollars]

	Fiscal year—	
	1972	1973
Aerospace facilities technology	2.6	2.6
Integrated communications-navigation identification	1.5	.5
Advanced computer technology	1 9	1.0
Advanced detection systems development	7.4	5.6
Reconnaissance drones	2.4	----------
Ground sensors surveillance/reaction technology	2.7	3.6
Defense suppression	16.1	11.0
Tactical information processing and interpretation	10.4	13.4
Air traffic control radar beacon system/air identification Mark XII system	.3	----------
Life support systems	5.5	5.3
Other operational equipment	8.4	6.3
Improved tactical bombing	5.3	8.5
Intelligence/reconnaissance equipment	11.7	10.1
Systems survivability	12.1	13.5
Cobra Mist	8.7	.5
Advanced airborne command post (AABNCP)	6.0	26.0
Tactical Loran	2.0	3.0
Ground sensors surveillance/reaction equipment	2.8	2.6
Surface defense suppression	----------	8.0
Improved capability for operational test and evaluation	2.7	3.5
Protective systems	29.5	30.0
Side looking radar	----------	1.8
Precision emitter location system	----------	12.0
Tactical support jamming	----------	25.0
Airborne warning and control system (AWACS)	139.3	160.0
Electromagnetic compatibility analysis center (ECAC)	5.1	4.5
Lincoln Laboratory	18.0	18.0
MITRE	8.5	8.5
Total	419.4	502.0

1972 APPROPRIATION AND 1973 BUDGET REQUEST

General GLASSER. Turning now to the other equipment activity, our fiscal year 1973 request of $502 million is some $83 million higher than the fiscal year 1972 program. As you know, this activity includes a multitude of both large and small programs.

CONUS OVER-THE-HORIZON (OTH) RADAR SYSTEM

One of our comparatively small, but highly significant, programs is the CONUS over-the-horizon (OTH) radar system, which is a part of the modernized air defense system now in development. This system will provide early warning of the approach of aircraft from [deleted] to [deleted] miles from the radar site. We plan to install CONUS OTH radars in the Northeast and Northwest sections of the United States to cover the high threat corridors. If our Polar Cap III experiment demonstrates the feasibility of an additional OTH radar looking north within the aurora zone, we may later build a north-looking site.

Chairman ELLENDER. Suppose this program you are talking about now proved to do what you think it will do, what will be the use of building the AWACS?

General GLASSER. They are complementary systems, sir.

Chairman ELLENDER. How do they complement each other?

General GLASSER. The ground-based over-the-horizon radars would be there 24 hours a day, looking out, seeing incoming aircraft, whatever they may be, and surveilling the whole region. Now, this would allow you to keep the AWACS essentially on the ground. They would not

have to be up flying all the time. They would be simply on the alert, ready to go if necessary.

Chairman ELLENDER. If this over-the-horizon radar is successfully constructed, I don't see why you need to continue the work on the AWACS, which is a very expensive method of detection. This is about the fifth or sixth program that you have constructed or are considering for the same purpose.

General GLASSER. Let me see if I can clarify this for you, sir. We anticipate that the prime target of any surprise attack would be the over-the-horizon radars, because they are soft. There is no way of making them hard. There are only two of them, or at the most, three. So that any enemy would want to knock those out immedately. But they will pay for themselves because of the ability to keep the AWACS on the ground throughout this longer period of time. Once those are attacked, then you will have launched the AWACS, so that you are now taken care of.

Moreover, the installation of these few over-the-horizon radars will allow you then to disassemble the remainder of the DEW line, and so forth, which is a very expensive operation and maintenance charge that we have to keep up at this time for lack of something better. So I think when we are all done, rather than having his proliferation of systems that you described, which is quite correct, we will be down to the total being——

Chairman ELLENDER. It seems as though there is no end to it. You are going to get something next week or next month or maybe 2 years from now to supersede all of this. It is just a continuous expenditure of money.

I wonder where you get those ideas. Where did you get the idea for the proposal you are now talking about?

General GLASSER. This is one of the things that was recognized through some of the technology-based efforts, that here was a way of making a radar that would work over the horizon, something we had never been able to do before.

AWACS CONTROL OF TACTICAL FORCES

Chairman ELLENDER. What about AWACS, where did you get that?

General GLASSER. There, again, the modern digital computer allowed us to do data processing that was not possible in years gone by, so that we were able to make the radar looking down on the land.

It is just the nature of technology. It is ever advancing, and it has been that way for the last century.

Chairman ELLENDER. I can well understand that, but it strikes me that here you are in the process of developing something that will in no time make AWACS almost obsolete.

General GLASSER. I don't think so, sir. I think we will want both AWACS and this for continental defense.

Moreover, I continue to stress that we need AWACS for the control of tactical forces, as well.

Chairman ELLENDER. That is something else which has come into the picture lately to be used in Europe?

General GLASSER. Yes, sir.

POLAR CAP III

Chairman ELLENDER. Proceed.

General GLASSER. In fiscal year 1973 we are requesting $4.4 million to continue the Polar Cap III experiment, to provide program engineering support and to perform support studies.

IMPROVED TACTICAL BOMBING PROGRAM

In the improved tactical bombing program we have another of our new prototype systems. This is the self-contained adverse weather and night attack (SCANA) aircraft subsystem. In this program, we are developing a capability to search, detect, recognize, identify, and strike fixed and mobile targets in medium and high threat areas. This subsystem will be prototyped using an F–111 as the airframe.

ADVANCED AIRBORNE COMMAND POST (AABNCP)

In the area of command and control of strategic forces, we are developing an advanced airborne command post (AABNCP) to replace the outmoded EC–135 airborne command posts of the National Military Command System and the Strategic Air Command.

EC–135 NATIONAL EMERGENCY AIRBORNE COMMAND POSTS

EC–135 national emergency airborne command posts have reached their payload and floor space limits. The inability to add automatic data processing equipment limits information processing to manual methods.

The current small battle staff of 18 personnel, using manual information processing methods, is saturated with incoming information during exercises. Therefore, the staff would be capable of supporting only the highest priority functions associated with execution of its mission during general war or national emergencies.

ADVANCED AIRBORNE COMMAND POST

In conjunction with continuing improvements in surveillance, warning, intelligence, and communications systems, the advanced airborne command post will provide an improved capability to assess the source size, and pattern of attack, to establish the forces that have survived, and provide to the National Command Authorities more complete information from which to select a response option appropriate to the provocation.

Chairman ELLENDER. Just how old is the equipment that this system will replace?

General GLASSER. I do not know the date when this commenced, sir, but it goes back about 10 years.

Chairman ELLENDER. I well remember that we provided a large amount of money to construct facilities where your command post could operate. Then you decided to make it an airborne. Now you want to better that, at a cost of about a half billion dollars.

Senator ALLOTT. Actually, were not the first airborne command posts in Electras?

General GLASSER. I do not know, sir.
Senator ALLOTT. I think they were.
Senator YOUNG. Mr. Chairman.

AWAC SYSTEM WITH OTH

I am not at all clear as to what the AWAC system will displace. I understand the BUIC system will be discontinued. Will all the radar site installations be discontinued when AWACS is in full operation?

General GLASSER. AWACS with the OTH would allow you further reduction of the ground radar equipment, yes, sir.

Senator YOUNG. When will that be? How long in the future?

General GLASSER. It is a conceivable time in the future by the time we would be able to get the over-the-horizon radars installed.

Senator YOUNG. Some of these radar stations will remain until you have both the new systems?

General GLASSER. You will have to keep them until you get the new system installed, and that will be the end of the decade.

Senator YOUNG. They will not all be eliminated when the AWACS system is operational?

General GLASSER. No, sir.

Senator YOUNG. Having a part of all three systems in operation will cost more, not less, money, until AWACS is completed?

General GLASSER. That is correct. But there has been a very major phasedown, as you know, in the ground system over the past 5 years.

BOEING 747 AIRCRAFT PURCHASES

Chairman ELLENDER. Proceed.

General GLASSER. We plan to buy seven Boeing 747 aircraft to fill our force requirements. The first three aircraft will be outfitted with the equipment currently installed on our present EC–135 airborne command posts. This will permit us to put the larger command posts in operation early, with an expanded battle staff, to handle an increased volume of manually processed information. The fourth aircraft will be the test bed for the improved communications and data processing equipment and will eventually be reconfigured for operational use. After completing the last three 747s in the new configuration, we will retrofit the first three aircraft with this improved equipment.

DEVELOPMENT AND INTEGRATION OF AIRBORNE COMMAND POST

We are requesting $26 million in fiscal year 1973 to initiate development and integration of the communications equipment, computers, software, and support equipment for the advanced versions of the new airborne command post.

SENSOR DEVELOPMENT

One of the fundamental requirements of our tactical forces is to locate the enemy and assess his actions prior to initiation of our strike operations. To achieve this capability, efforts are continuing to develop better sensors such as the high resolution side looking airborne radar which provides wide area surveillance at safe standoff distances under all weather conditions, and the very high resolution infrared imaging sensor which functions covertly at night.

Tactical Image Processing and Interpretation (TIPI)

We will also develop systems to relay the collected information from air to ground for rapid processing. The information collected will be fed into the Tactical Image Processing and Interpretation (TIPI) System now under development, which will acquire raw data from these and other sources and convert it rapidly to a finished intelligence product.

E–3A Airborne Warning and Control System (AWACS)

Our major program in the modernized air defense system is the E–3A Airborne Warning and Control System, AWACS, which also has a tactical application. This system is being developed to provide airborne surveillance, command, control, and communications. Its radar will have the capability to detect and track low altitude aircraft and cruise missiles against a ground or water background. The AWACS will be used in the air defense role to provide early warning and surveillance of enemy aircraft and battle management of interceptors. Tactical commanders will use the AWACS as a surveillance, command control, and communications platform throughout the spectrum of tactical air operations.

Radar Systems Development

As you are aware, the present ground-based radars used for aircraft defense are limited by line of sight, and are costly to operate. We are continuing to phase down these older radars and to apply the savings to development of the modernized air defense system, including AWACS and the CONUS OTH Radar system I discussed a moment ago.

The two AWACS radar contractors—Westinghouse Electric Corp. and Hughes Aircraft Corp.—have completed fabrication of their radars and have delivered them to the Boeing Aircraft Co. for airborne testing.

Radar Installation in Boeing 707 Aircraft

Two commercial Boeing 707 aircraft, modified to accept the new radars, are beginning airworthiness tests. The radars will be installed in the 707 aircraft in March of this year in preparation for the competitive flight test program.

In fiscal year 1973 we expect to complete the brassboard phase of the AWACS development, select one of the two competing radars, and enter full scale engineering development in November.

Avionics System Development

We will begin design and engineering development of the full avionics system, including the central data processor, displays, navigation equipment, communications systems, and radar. We are requesting $160 million in fiscal year 1973 to support continued development of the AWACS. Mr. Chairman, that completes my discussion of some of the major programs.

PROGRAM-WIDE MANAGEMENT AND SUPPORT

Chairman ELLENDER. The last budget activity is "Programwide Management and Support", for which $384.1 million is requested. Table VIII of General Glasser's statement will be included in the record.

(The table follows:)

TABLE VIII.—DEPARTMENT OF THE AIR FORCE FISCAL YEAR 1973 R.D.T. & E. BUDGET ESTIMATES
PROGRAMWIDE MANAGEMENT AND SUPPORT

[In millions of dollars]

	Fiscal year—	
	1972	1973
International research and development	2.4	4.1
Arnold engineering development center base costs	12.6	53.7
Development and test support, flight test center, missile development center, special weapons center, armament development center	140.3	138.7
Acquisition and command support, aeronautical systems division, electronic systems division, space and missile systems organization, aeromedical division, headquarters, Air Force Systems Command	194.0	187.6
Total	349.3	384.1

BUDGET REQUEST

General GLASSER. Program-wide management and support provides primarily for the costs of operating our R. & D. installations and for pay of our civilian personnel. Our budget for fiscal year 1973 for this support activity is $384 million, which brings us to the total fiscal year 1973 R.D.T. & E. budget request of $3.193 billion.

SUMMARY

In summary, I believe the Air Force R.D.T. & E. budget for fiscal year 1973 that we have presented today is consistent with national priorities. While many projects could be funded at higher levels, and other promising programs are not funded at all, due to their relative priority, I believe this budget will provide the essential research and development to meet future weapon system requirements.

We will be happy to answer any questions you may have.

MILITARY SCIENCES

Chairman ELLENDER. The request includes $146,280,000 for the budget activity entitled, "Military Sciences." How much was made available for this budget activity for fiscal years 1971 and 1972?

General GLASSER. For prior years, the amounts made available for this budget activity, restructured for comparability with fiscal year 1973, were $141,909,000 for fiscal year 1971 and $142,715,000 for fiscal year 1972.

Chairman ELLENDER. Have there been any substantial increases in the fiscal 1972 program approved by the Congress by reprograming or emergency fund transfers, and if so comment on these increases?

General GLASSER. There have been no substantial increases in the fiscal 1972 program for the budget activity "Military Sciences."

Chairman ELLENDER. $92.8 million is requested for the "Defense Research Sciences" program element. Selected paragraphs from the descriptive summary will be included in the record.

(The information follows:)

Sub-Element 01, Physics: FY 71, $9.9M; FY 72, $9.9M; FY 73, $10.4M

Description: The purpose of research in General Physics is to gain an increased understanding of matter, energies, and forces to assure continued improvement in Air Force operations through application of this knowledge to new systems. The contributions of physics to improve military systems lie in gathering fundamental knowledge for exploitation by the engineering sciences, particularly Electronics, Materials, Energy Conversion, and Environment. General Physics gives particular attention to five scientific areas. The collection of experimental evidence and the refinement of physical concepts in each area are directed toward phenomena of highest probability of application to Air Force problems. These areas are:

(1) *Solid State Physics.*—seeks new sources of semiconductors, detectors and other electronics.

(2) *Plasma Physics.*—which studies ionized gases in an approach to solution of communication and fuzing problems associated with reentry and a multitude of other military system needs interlocked with the physics of flames and explosions.

(3) *Nuclear Effects.*—to provide specific measurements needed to assess the militarily significant effects of nuclear detonations.

(4) *Wave Phenomena.*—which studies collective effects of waves and fields such as laser action.

(5) *Particle Physics.*—which studies individual and group phenomena associated with discrete particles such as atoms and molecules and seeks knowledge useful in laser effects and the propagation of microcracks at the atomic level.

It is the intention and design of work in General Physics to investigate those phenomena which will improve the sensitivity, efficiency, precision and survivability of electronic subsystems, to improve detectors used for surveillance, control and guidance, to increase the variety of luminescents available for information displays, to help find processes exploitable for propulsion and power vehicles. In-house and contractual research programs in General Physics are selected on the basis of merit among those subjects where better understanding of physical processes are necessary to improve the future performance of the Air Force in its mission assignment. It is expected that new knowledge from this research in matter, energies, and forces will improve the future ability of the Air Force to detect, report, select and destroy its targets.

Sub-Element 03, Chemistry: FY 71, $4.8M; FY 72, $5.2M; FY 73, $5.4M

Description: This program conducts basic research that seeks improved materials, instrumentation, processes and energy sources for ultimate Air Force use. Specific fields include: (1) the synthesis of inorganic, organic and organometallic compounds aimed at meeting Air Force requirements for new structural, electronic and protective materials; (2) the investigation of energy transfer processes in photochemistry, radiation chemistry, and electro-chemistry that have application to chemical lasers, radiation damage control, novel photographic processes, fuel cells and batteries, corrosion and improved performance of fuels and propellants; (3) the development of chemical instrumentation applicable to detection and (4) the study of the chemical structure of compounds that find important use in composites, glasses, and boron compounds in order that improvements might be made in those materials for use in inflight vehicles.

Sub-Element 04, Mathematics: FY 71, $5.7M; FY 72, $5.8M; FY 73, $6.3M

Description: Research in mathematics is performed to support research and development in the other basic and engineering sciences as well as provide improved techniques in Air Force operations and logistics. Applications for mathematics are found in aircraft and missile design, communications, intelligence systems and to problems associated with reconnaissance, tactical and strategic missions.

Sub-Element 05, Electronics: FY 71, $8.5M; FY 72, $8.5M; FY 73, $8.8M

Description: The ability of the Air Force to find and incorporate new electronic techniques to better perform the functions of sensing, guiding, and tracking; for the communication, processing, and display of command and control information; for military weapon systems; and for surveillance and interdiction of enemy forces depends largely on advances in electronics research and technology. Toward these ends, a comprehensive research program to discover knowledge of new electronic techniques and their underlying physical processes will be pursued in solid state device phenomena; microwave ultra-sonics and electro-acoustics; quantum electronics and modern optics; plasma electrodynamics; electromagnetic-wave techniques in all frequency ranges; information processing and communication theory. The Joint Services Electronics Program (JSEP) is also a part of this subelement and is a tri-service research program involving all facets of modern electronics. It provides the DOD with a hard core research capability at selected academic institutions emphasizing those aspects of electronic and related phenomena that are most relevant to the defense mission.

Sub-Element 06, Materials: FY 71, $8.8M; FY 72, $9.1M; FY 73, $9.9M

Description: The materials research program is based on the recognition that future advances in the design of weapons systems and electronics subsystems are dependent upon the availability and effective utilization of superior materials. Thus, the goals are to obtain a better understanding of the fundamental behavior of materials in order to facilitate the development of new materials with improved capabilities (such as higher strength with lower weight), and to evaluate significant properties of specific materials to optimize their selection and use in Air Force applications. This program is carried out in metallurgy, ceramics, polymers, composites, materials physics and electromagnetic materials. Other efforts include work performed on mechanical, thermal and interface phenomena, structural behavior of materials in various environments, superconducting, electronic and optical properties of materials. The ultimate goal is to achieve the design or "tailoring" of materials for specific advanced applications leading to lighter weight and more reliable aerospace structures than are presently in use, and more efficient, reliable and lower cost materials for electronic applications.

Sub-Element 07, Mechanics: FY 71, $8.6M; FY 72, $8.5M; FY 73, $9.1M

Description: The purpose of mechanics research is to obtain knowledge of the physical principles and mechanisms involved in the interaction of vehicles and their environments at all speeds and altitudes which are of interest to the Air Force. This knowledge is being obtained through combined theoretical and experimental efforts in the fields of fluid mechanics, solid mechanics, thermomechanics, flight dynamics, and simulation. The ultimate goal of this effort is to provide an understanding of the physical phenomena involved with vehicles in flight so that the systems designers can optimize the efficiency and reliability of vehicle shape, structure, and subsystems as well as visualize configurations and attain performance not presently available.

Sub-Element 08, Energy Conversion: FY 71, $6.2M; FY 72, $7.1M; FY 73, $8.0M

Description: Air Force research in energy conversion is concerned with the study of chemical and physical energy sources and processes by which energy is released from such sources and transformed into useful forms of energy. This fundamental research is designed to provide an understanding of these energy sources and processes applicable to propulsion and power generation, to improve energy conversion technology, and to find new concepts for future Air Force applications. The program includes three areas: research related to propulsion, electrical and other power-generation-related research, and general energetics.

The long range plan for research in energy conversion stresses high-energy high-density plasma studies leading to weapons-effects and controlled-fusion applications; low energy plasma dynamics and high-pressure detonation studies for possible magnetohydrodynamic and electromagnetic radiation and application; glow-discharge synthesis of organic photovoltaic materials leading to new inexpensive and harder solar cells, sensors, and computer memories; electrochemistry for high energy density batteries for space; subsonic and supersonic combustion for more efficient airbreathing propulsion units; electro-fluid dynamics studies leading to a new low-maintenance power generator which gives very high voltage powers for lasers, and electron beam uses; studies of two fluid systems and charged colloids for colloidal core reactor rocket for space use.

Sub-Element 09, Terrestrial Sciences: FY 71, $2.2M; FY 72, $2.2M; FY 73, $2.3M

Description: Research in the Terrestrial Sciences includes the scientific disciplines of geodesy, gravity, geology, and seismology. The research supports Air Force functions and requirements in missile system guidance, control, delivery, advanced component testing, and silo siting; nuclear explosion-source discrimination; and reconnaissance and surveillance. The approach involves theoretical and laboratory investigations in addition to actual measurements of the geophysical parameters.

Sub-Element 10, Atmospheric Sciences: FY 71, $18.8 M; FY 72, $19.0M; FY 73, $19.7M

Description: Research in the atmospheric sciences involves the study of the earth's atmospheric environment from the surface boundary layer to orbital altitudes. It encompasses the scientific areas of meteorology, atmospheric optics, aeronomy, and ionospheric physics. The theoretical and observational results are applicable to the design and operation of aircraft and orbiting aerospace systems affected by atmospheric density, optical transmission properties, winds, temperature variations, and precipitation. In addition, the results can be applied to the prediction and modification of weather, optical transmissivity, and ionospheric properties for enhancing ground and air operations and reconnaissance and communications capabilities worldwide.

Sub-Element 11, Astronomy and Astrophysics: FY 71, $3.6M; FY 72, $3.7M; FY 73, $3.9M

Description: Research in Astronomy and Astrophysics deals with the study of the solar-terrestrial relationship. Observational and theoretical techniques are used to study: (1) the origins and causes of solar activity; (2) solar particle emissions and their propagation to the earth; (3) the distribution of energetic particles in the earth's magnetosphere; and (4) magnetic variations and disturbances in the magnetosphere. Emphasis is placed on studying the energetic emissions from the sun which create magnetospheric and ionospheric disturbances which, in turn, degrade or disrupt communications, introduce false alarms into detection systems, impact on satellite navigation errors, and cause variations in density at low satellite altitudes affecting orbital parameters. In addition to providing knowledge of the space environment necessary for the design of advanced systems, the research also supports Air Weather Service by improving observing and forecasting techniques, thereby assisting them in their mission of predicting space environmental effects on operational military systems.

Sub-Element 12, Biological and Medical Sciences: FY 71, $1.7M; FY 72, $1.8M; FY 73, $1.8M

Description: This program is directed to provide the fundamental knowledge needed to solve Air Force problems which limit man's capability to operate effectively in the military aerospace environment. The research in biological and medical sciences seeks to obtain a basic understanding of primary principles underlying a range of scientific disciplines related to the Air Force mission. Human performance capabilities must be improved under a variety of environmental conditions, both in the air and the ground. This requires new knowledge of human physiology, primarily of the cardiovascular, nervous and fluid regulation mechanisms of the body. Since the human body is not a discrete series of "black boxes" but an integrated whole, this primary emphasis in physiology needs studies of other speciality areas, as well as the physiology of the whole man. Air Force personnel must be prepared to operate on short notice from a "bare base" in remote or hostile environments and they create the need for information concerning diseases and human adjustment to climatic extremes. In closed space cabin environments, additional research is needed to define basic body mechanisms and effects on the body associated with excess carbon dioxide accumulation and pulmonary swelling produced by artificial or rarefied atmospheric conditions. Research is in process in order to understand the basic mechanisms of certain toxic materials, such as rocket fuels which are used frequently or in large quantity to pose safety or public health problems under operational conditions. The toxicological data thus obtained will be uniquely valuable in the potential use of developmental applications of protection, prophylaxis, and definitive treatment.

Sub-Element 13. Human Resources: FY 71, $1.4M; FY 72, $1.4M; FY 73, $1.5M

Description: This basic research program is directed toward advancing our fundamental knowledge in the human resources areas pertinent to Air Force needs. New knowledge is constantly needed which will relate to the preparation of the Air Force man to adapt and perform within the broad range of cultural and physical environment and/or types and methods of warfare now employed or just over the horizon in the future. The research focuses on such problem areas as performance under stress, personnel selection and classification, training and education, leadership, organizational effectiveness, decision making, and human limitations to system effectiveness. Research is needed to enhance our ability to select personnel for highly stressful environments and to minimize performance deterioration under stress. Large savings and increased efficiency can also be realized through research which improves the classification, selection and training of Air Force personnel. Information about human performance capabilities, how man's senses work and how he processes and retains information is essential to the design and arrangements of crew stations in advanced aerospace systems. Studies of the way man functions in groups will provide data necessary to the design of more efficient organizations and communications channels.

Sub-Elment 15. In-House Laboratory Independent Research: FY 71, $5.0M; FY 72, $5.3M; FY 73, $5.7M

Description: This program provides discretionary authority to Directors of the Air Force Systems Command for new research work judged to be of high promise or importance. In recognition of the need to strengthen in-house Defense Department laboratories, the Secretary of Defense, on 14 October 1961, issued a directive which stated that a fraction of the annual laboratory budget would be used for work judged by the Laboratory Director to be of promise or importance without need for prior approval or review at higher levels. The Air Force has set up and administered this program in strict complaince with the intent that it be unencumbered by restrictive reviews and procedures or justifications and documentation prior to beginning work. Laboratory Directors meet annually with the Assistant Secretary of the Air Force for Research and Development to account for their research projects. Prior to FY 1973 this effort was a separate program element (P.E. 61101F).

DEFENSE RESEARCH SCIENCES

Senator YOUNG. I note that the request for "Defense research sciences" includes funds for the in-house independent research program. In previous years this has been a separate program element. Just why was this changed?

General GLASSER. This was done as a part of the fiscal year 1973 R.D.T. & E. budget formulation process and was aimed at minimizing and clarifying our R.D.T. & E. program elements. In this particular case, these two program elements were related and were therefore restructured into one program element. This aforementioned restructuring along with others resulted in progress toward our objective to provide better focus for decisionmaking without undue loss of important detail.

Chairman ELLENDER. Please provide a tabulation for the record listing each of the projects funded under "Defense research sciences" and the amounts for fiscal years 1971–73.

General GLASSER. Yes, sir.

(The information follows:)

[In millions of dollars]

Sub-element	Title	Fiscal year— 1971	1972	1973
01	Physics	9.9	9.9	10.4
03	Chemistry	4.8	5.2	5.4
04	Mathematics	5.7	5.8	6.3
05	Electronics	8.5	8.5	8.8
06	Materials	8.8	9.1	9.9
07	Mechanics	8.6	8.5	9.1
08	Energy conversion	6.2	7.1	8.0
09	Terrestrial sciences	2.2	2.2	2.3
10	Atmospheric sciences	18.8	19.0	19.7
11	Astronomy and astrophysics	3.6	3.7	3.9
12	Biological and medical	1.7	1.8	1.8
13	Human resources	1.4	1.4	1.5
15	In-house laboratory, independent research	5.0	5.3	5.7
	Total	85.2	87.5	92.8

Chairman ELLENDER. Does your planned program for fiscal year 1973 include funds for any projects that were not funded during fiscal 1972?

General GLASSER. There are no new projects planned for "Defense research sciences" during fiscal year 1973. It should be noted however, that changes take place within the on-going projects as the program evolves and new ideas, concepts, and techniques are uncovered.

Chairman ELLENDER. Of the total requested, I note that $10.4 million is for the project entitled "Physics." Please comment on this request.

General GLASSER. The purpose of research in the area of physics is to gain an increased understanding of matter, energies, and forces to assure continued improvement in Air Force operations through application of this knowledge to new systems. The Air Force program in physics gives particular attention to four major scientific areas: (1) Solid state physics, (2) plasma physics, (3) wave physics, and (4) particle physics. A coordinated program of contractual and in-house research in these areas is conducted at the Aerospace Research Laboratories at Wright-Patterson AFB, Dayton, Ohio; Air Force Cambridge Research Laboratories at L. G. Hanscom Field, Bedford, Mass.; and the Air Force Office of Scientific Research in Arlington, Va. Our fiscal year 1973 plans include an increased emphasis in optical and plasma physics relating to the generation, analysis, and control of laser radiation, statistical mechanics, transient effects in sensors and the physics of fluids.

Senator YOUNG. Please comment on the request for $19.7 million for the project entitled "Atmospheric Sciences."

General GLASSER. Research in the atmospheric sciences involves the study of the earth's atmospheric environment from the surface of the earth to satellite orbital altitudes. It includes the scientific areas of

meteorology, atmospheric optics, aeronomy, and ionospheric physics. The results obtained from research efforts in these areas are applicable to the design and operation of aircraft and orbiting aerospace systems affected by atmospheric density, optical transmission, properties, winds, temperature variations, and precipitation. In addition, the results are applied to the prediction and modification of weather, optical transmissivity, and ionospheric properties for enhancing ground and air operations and reconnaissance and communications capabilities. Funds from this subelement are also used for the operation of the Air Force Cambridge Research Laboratories at L. G. Hanscom Field, Bedford, Mass.

Chairman ELLENDER. Just what is the need for the requested increase of $5.3 million for Defense Research Sciences?

General GLASSER. Although some of the projects will have an expanded level of effort, for the most part this is a continuing program and, in order to sustain a level-of-effort, a small increase is necessary to offset inflationary trends.

ENVIRONMENT

Chairman ELLENDER. $9.5 million is requested for the program element entitled "Environment." Selected paragraphs from the Descriptive Summary will be included in the record at this point.

(The information follows:)

TITLE: ENVIRONMENT

CATEGORY: EXPLORATORY DEVELOPMENT

Description.—This program covers the acquisition of geophysical and astrophysical information and the development of related techniques for application of this information to Air Force engineering and operational problems of areospace systems. The instrumentation and techniques developed lead to the observation, description, predictions, and modification of the terrestrial, atmospheric, and aerospace environments. Emphasis is placed on gravity anomaly measurement, geodesy, meteorological forecasting techniques, determination of severe storm parameters and effects, meteorological instrumentation development, as well as the space environment including charged particle, X-ray and ultraviolet radiation intensities and their effects on the ionsphere and subsequently upon Air Force systems. In addition, efforts are pursued in the propagation of electromagnetic waves at all wave lengths, and to space physics and solar physics as they affect military systems. The Satellite, Balloon and Rocket Program (SABAR—P.E. 63404F) will be transferred into this program element in FY 1973. SABAR directly supports the environment program by providing the necessary "transportation" which is required to measure important environmental parameters in the atmosphere and near earth environment. This "transportation" is in the form of satellites and probe rockets procured as platforms for experiments and measuring devices developed under the Environment program.

The combination of the SABAR platforms and the Environment program devices provides required information to pursue an understanding of environmental effects on Air Force systems and operations. Results are applied broadly to Air Force planning and specifically to particular system design and operation. In the area of ballistic and space systems, the results of this exploratory development effort apply directly to booster and vehicle design; system basing, deployment, guidance, and launch; hazard protection; control; telemetry and reentry. In functional areas, this effort is directed toward problems in communications, weapons delivery and effects, nuclear event monitoring and detection, discrimination and surveillance. Areas which have benefited from this exploratory development program include: System 440L (Over-the-Horizon Radar), Advanced Ballistic Reentry Systems, a variety of satellite systems, Air Weather Service's Southeast Asia weather forecasting function, cold fog dispersal operations, Air

Force operations, reconnaissance operations, as well as a multitude of systems requiring environmental information for systems design. The data obtained from the SABAR Program satisfies the needs of Air Force Systems Command, Air Force Special Projects, Military Airlift Command (Air Weather Service), Aerospace Defense Command and other agencies.

Work performed by.—Work performed under this line item is monitored by the Air Force Cambridge Research Laboratories and is solely contractual in nature. Ten major contractors engaged by funds from this line item follow. These contracts vary in scope as indicated: Boston College, Chestnut Hill, Massachusetts—$80,000, "Collection and Analysis of Microseismic Data"; Canadian Commercial Corp., Washington, D.C.—$210,000, "Production of Sounding Rockets"; Northeastern University, Boston, Massachusetts—$145,000, "Research Directed Toward the Study, Design, Development and Fabrication of Instrumentation Systems"; Oklahoma State University, Stillwater, Oklahoma—$300,000, "Research leading to develop instruments for research rockets support and install instruments at launch sites"; St. Louis University, St. Louis, Missouri—$66,000, "Climatological Presentations for Military Operations"; EG&G Inc., Newton, Massachusetts—$90,000, "Atmospheric Forward Scattering Measuring Visibility Instrument"; Raytheon Co., Wayland, Massachusetts—$95,700, "Digital Radar Remote Sensing System"; Barkley and Dexter Inc., Fitchburg, Massachusetts—$69,761, "Study of reflection properties of lower ionosphere"; Comstock Wescott, Inc., Cambridge, Massachusetts—$99,869, "Instrumentation for Studies of Solar XUV Radiation"; Bell Aerospace Corp., Buffalo, New York—$99,900, "Satellite Density Accelerometers."

Fiscal Year 1972 program.—Efforts include: (1) Start sophisticated testing of advanced inertial subsystems for the evaluation of geophysical and environmental effects in order to reduce missile CEP. (2) Analyze the density data from Cannonball II (a low altitude density satellite) that was launched in August 1971, which provided near-real-time density data in the 70 to 200 nm range in support of Air Defense Command and the Satellite Control Facility, for inclusion in new and improved density models. (3) Commerce real-time terminal weather forecasting experiments at Hanscom Field to assess the benefit derived from an automated network of mesoscale observations and computerized radar data in support of Air Weather Service (AWS) requirements. (4) Began operating the ionospheric observatory at Goose Bay, Labrador, in support of Over-the-Horizon (OTH) systems. (5) Develop techniques for mapping the electron density profile of the ionosphere for real-time applications in support of the AWS mission in radio propagation forecasting. (6) Continue investigations of the transverse electric (TE) mode of wave propagation in support of survival communications requirements. (7) Continue investigations of Infrared Radiation (IR) suppression techniques. (8) Complete exploratory development of the automatic astronomic positioning device and transfer to engineering development.

Fiscal year 1973 planned program.—Plans include: (1) Initiate a geophysical motion study of an entire operational guidance system at a missile site in support of missile Circular Error Probability (CEP) reductions. (2) Conduct a full-scale test of the *airborne* hygroscopic particle seeding technique to disperse warm fog at an Air Force base on an operations basis. (3) Automate the vector magnetograph at the Sacramento Peak Observatory in order to provide real-time presentation of the solar magnetic field for applications in support of the AWS mission in solar forecasting. (4) Investigate the use of chemical additives to modify the wakes of ballistic missiles for reducing their radar signature. (5) Develop data processing programs needed for the reduction of SOLRAD HI data in support of AWS mission in solar forecasting. (6) Resume the effort in advanced balloon development which supports requirements for stable observing platforms. (7) Procure 48 rocket probes and associated equipment for flight test support.

Program to completion.—This is a continuing program.

RESOURCES

[In millions of dollars]

	Fiscal year—			Additional to completion	Total estimated cost
	1971	1972	1973		
R.D.T. &E. funds	9.1	9.1	9.5	Continuing	NA

Chairman ELLENDER. Please provide a tabulation for the record listing each of the projects funded under this program, the amounts for fiscal year 1971 and 1972 and the request for fiscal year 1973.

General GLASSER. Yes, sir.

(The information follows:)

[In thousands of dollars]

Title		Fiscal year— 1971	1972	1973
P.E. No. 62101F: Environment		9,111	9,100	9,500
Project No.:				
4603	Generation and propagation of low-frequency radio waves.	117	158	208
4642	Alleviation techniques for reentry plasmas	335	345	345
4643	Aerospace radio progagation	275	285	285
6665 [1]	High altitude balloon development			126
6670	Atmospheric sensing techniques	227	300	250
6672	Weather radar techniques	235	265	265
6687	Aerospace composition	303	475	475
6688	Solar ultraviolet radiation	557	460	460
6690	Aerospace density	419	500	475
6698	Satellite meteorology	115	115	115
7043 [1]	Rocket probes and satellites			1,474
7600	Geodesy for naviguidance	207	200	255
7601	Electric and magnetic fields	370	380	380
7605	Weather modification	219	220	220
7621	Atmospheric optics	415	485	435
7628	Terrestrial geology	125	110	110
7635	Upper atomosphere chemical processes	410	435	435
7639	Wave propagation studies	90	190	195
7649	Solar environmental effects	350	425	400
7655	Micrometeorology	72	125	125
7659	Aerospace research instrumentation	523	520	520
7661	Polar atmospheric processes	105	120	120
7663	Ionospheric characteristics	117	142	392
7670	IR properties of the environment	355	380	380
8624	Variability of meteorological elements	110	110	110
8628	Upper air circulations	184	210	360
8666	Space environment observing and forecasting techniques.	250	280	345
8682	Millimeter wave propagation research	240	265	240
XXXX	Project chaser	386		
P.E. No. 63404F: [1] Satellites, balloons, and rockets		2,000	1,600	

[1] P.E. 63404F is being transferred into P.E. 62110F as 2 projects, 6665 and 7043, for fiscal year 1973.

Chairman ELLENDER. I note that you are requesting $126,000 for a project entitled "High Altitude Balloon Development" for which no funds were requested in fiscal years 1971 and 1972. Would you provide for us a brief description of this new project and indicate the need for the $126,000 you are requesting?

General GLASSER. The "High Altitude Balloon Development" project is one of two projects that is being added to the environment program as a result of consolidation of program elements. The balloon technology effort from the satellite, balloons, and rockets program is being transferred into this project. The work in this project will provide technological, feasible and economical approaches for achieving stationary atmospheric platforms and free balloon test platforms for altitudes above 120,000 feet. The platforms are unique in their application to reconnaissance, communications, and research functions of the Air Force. The funds which are requested will be used to evaluate, test and develop improved balloon materials and designs, launching techniques, and captive and power balloon aerodynamics.

Senator YOUNG. I note that you are requesting $1.5 million for a project entitled "Rocket Probes and Satellites" which also seems to be a new project. Would you provide a brief description of this project and indicate the need for the $1.5 million requested?

General GLASSER. As is the case with the "High Altitude Balloon Development" project, the "Rocket Probes and Satellites" project is the other part of the satellites, balloons, and rockets program which is being transferred into the environment program in order to consolidate related programs. The purpose of this project is to provide sounding rockets and fabricate satellites which are necessary to transport sensors, instruments, hardware, and development items for near earth measurements and tests. The funds which are being requested are to procure 48 rocket probes and associated equipment for flight test support.

Chairman ELLENDER. On page 46 of the descriptive summary, it is indicated that the satellites, balloons, and rockets program is being transferred to the environment program element in fiscal year 1973. However, according to the tabulation on page 14 of the justifications, no funds are being requested for this program for fiscal year 1973. Would you please explain to us the reason for this transfer, and tell us why you have not requested any funds for this program for fiscal year 1973?

General GLASSER. The effort associated with the satellites, balloons, and rockets program is being transferred into the environment program as two projects—"High Altitude Balloon Development" and "Rocket Probes and Satellites"—in response to results of a review to reduce the number of program elements. Funds are being requested for these two new environment projects to carry on the satellites, balloons, and rockets program effort in fiscal year 1973.

Senator YOUNG. Who performs the work on the environment projects for which you are requesting $9.5 million for fiscal year 1973?

General GLASSER. The work on the environment projects is done both in-house and on contracts monitored by the Air Force Cambridge Research Laboratories. The $9.5 million which you reference is for the contractual effort.

Chairman ELLENDER. Just what is the need for the increase of $400,000 requested for environment?

General GLASSER. The additional funds requested for the environment program in the fiscal year 1973 over the fiscal year 1972 amount largely apply to inflation consideration to maintain the previous level of effort. However, additional emphasis will be given to certain areas as follows:

Increasing the geophysical motion study effort on an entire operational guidance system at a missile site with the goal of reducing the missile circular error probability (CEP).

Starting real-time observations from the 25 remote weather observing stations of the mesoscale network. This project is directed toward developing techniques to improve short-term aviation terminal forecasting methods.

Accelerating the completion of the first model of the ionosphere which is specifically oriented to operational use in high-frequency radio propagation and over-the-horizon radar operations.

Initiating a program to define a technique for reducing radar cross-sections of reentry vehicles.

Developing techniques for real-time observation of the earth's geomagnetic field to improve air weather service operational forecasts.

MATERIALS

Chairman ELLENDER. $26.1 million is being requested for the program element entitled "Materials." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

TITLE: MATERIALS

CATEGORY: EXPLORATORY DEVELOPMENT

Description.—The objective of this program is to develop new or improved aerospace materials, provide reliable design and applications data, discover new ways to use materials to better advantage, provide a central Air Force agency knowledgeable in all materials areas, and provide a quick reaction capability to solve operational problems involving materials technology application. This program pursues the development of materials in the areas of structural, propulsion, thermal protection, fluids, lubricants, seals, protective coatings, and electromagnetic materials. This program also includes the cost of operation and managing the Air Force Materials Laboratory (AFML), Wright-Patterson Air Force Base, Ohio.

Work performed by.—This program is managed by the Air Force Materials Laboratory (AFML), Wright-Patterson Air Force Base, Ohio. Work performed under contract totals $16.2M. Contract length varies from six months to three years with an average of little over two years. The largest contractors are: University of Dayton, Dayton, Ohio, ($2.0M); Avco Corporation, Lowell, Mass., ($0.8M); Battelle Memorial Institute, Columbus, Ohio, ($0.5M); Midwest Research Institute, Kansas City, Missouri ($0.3M); Boeing Company, Seattle, Washington, ($0.3M); Southern Research Institute, Birmingham, Alabama, ($0.3M); University of Cincinnati, Cincinnati, Ohio, ($0.3M); Monsanto Corporation, Dayton, Ohio, ($0.3M); Westinghouse Corporation, Pittsburgh, Pennsylvania, ($0.3M); and Whittaker Corporation, San Diego, California, ($0.3M).

Program Accomplishments and Future Plans

Fiscal year 1971 and prior accomplishments.—Many significant advances have been made in the six technical areas which describe the overall program; structural materials, propulsion material, protective coatings, fluids, lubricants and seals, thermal protective materials, and electromagnetic materials. Examples of these accomplishments are: confirmation of previous theories that titanium-aluminum alloys with gallium additions result in a marked improvement in oxidation resistance at the 90° F + temperature regime. This work will result in raising the useful temperature limitation for titanium by several hundred degrees; propulsion materials—refactory diboride alloys have been developed for use at very high temperature (up to 4,000° F) engineering materials. These materials are based upon zirconium diboride and hafnium diboride alloys and have application in jet engine turbines and rocket propulsion nozzles; protective coatings—an oxidation resistant coating for columbium alloys has been demonstrated to a reliability level ten times greater than previous coatings. This achievement is significant to the proposed use of columbium in a reusable space transportation vehicle, as well as increasing the temperature limitations and life of columbium jet engine components; fluids, lubricants and seals—a less flammable hydraulic fluid has been developed and successfully tested. This fluid, which is now ready for operational use, will significantly reduce aircraft losses due to hydraulic fires; thermal protective materials—characterization and simulated reentry testing has demonstrated the potential of a three dimensional reinforced carbon/carbon material for future reentry vehicle nose tips. This material is one of a class of reinforced composites being developed to meet future, severe reentry conditions and increased nuclear hardness requirements; electromagnetic materials—large single crystals of yttrium orthoaluminate were grown for the first time in 1967–1968. The crystal, during the last year, has been shown to be as

good as the currently used yttrium-aluminum-garnet laser material. The growing process for the new crystal is such that the cost of yttrium-orthoaluminate will be significantly lower than yttrium-aluminum-garnet.

Fiscal year 1972 program.—Emphasis continues on the upgrading and development of structural materials specifications and engineering data compilation. A new concept of "fundamental inspectability" is being applied to the materials development process. Carbon/carbon and pyrolyzed plastic ablatives and porous materials are being developed for low and symmetrical recession, rain/dust erosion resistance and increased nuclear hardness for use in future reentry vehicles. Propulsion material development is concentrating on the complex oxidation environment of 3,000° F for hot sections of jet engines. Hydraulic fluids capable of operating at 550° F–650° F are being pursued. Sensor materials development is emphasizing mercury cadmium tellurides and lead tin tellurides.

Fiscal year 1973 planned program.—Development of higher performance heat-shield concepts for reentry vehicles will continue with major emphasis on control of erosion and observables, hardening, analysis techniques and data collection through simulated and underground tests. Solutions to standing problems of fracture toughness, corrosion, joining and raising strength/temperature/life capability of structural materials will continue to be pursued. Efforts will also continue to higher temperature (400° F) fire suppression and explosion retardants for self-sealing fuel systems. Efforts to develop Radar Absorbing Materials (RAM) for 600 to 1,000° F structural applications will be undertaken. Design data will be developed for 400° F RAM materials.

Program to completion.—Continuing program.

RESOURCES

[Dollars in millions]

	Fiscal year—			Additional to completion	Total estimated cost
	1971	1972	1973		
R.D.T. & E funds	23.5	25.2	26.1	Continuing	NA

MATERIALS

Chairman ELLENDER. Please provide a tabulation for the record listing each of the projects funded under this program, the amounts for fiscal years 1971 and 1972, and the request for fiscal year 1973.

General GLASSER. Yes, sir; I will.

(The information follows:)

[In thousands of dollars]

Project number and title	1971	1972	1973
P.E. No. 62102F—Materials	$23,540	$25,240	$26,080
06DS Air Force materials laboratory operations	8,900	9,390	9,880
7312 Surface finishes	585	500	300
7320 Fibrous materials	812	775	800
7340 Nonmetallic materials	4,000	4,400	4,400
7343 Aerospace lubricants	495	400	400
7350 Ceramics and graphite	782	725	700
7351 Metallic materials	3,200	3,800	4,100
7360 Chemistry and physics of materials	925	800	900
7371 Research in electrical materials	941	1,050	1,100
7381 Materials applications	2,900	3,400	3,500

Chairman ELLENDER. Does your request for fiscal year 1973 include funds for any projects which were not funded in fiscal year 1972?

General GLASSER. All of the projects funded in the fiscal year 1973 request were funded in fiscal year 1972. There are no new projects in fiscal year 1973.

Chairman ELLENDER. I note that your request includes $9.9 million for the support of the Air Force Materials Laboratory operation. What is the function of this Laboratory?

General GLASSER. The purpose of the Air Force Materials Laboratory is to develop new or improved materials for use in our systems, provide the necessary data so that new materials can be applied with confidence, perform a quick reaction failure analysis capability to help solve operational problems associated with materials, and to provide a central Air Force agency knowledgeable in all facts of materials development. As our center of materials expertise, this laboratory executes programs ranging from basic research to advanced development, as well as improving manufacturing methods and providing technical assistance to our systems acquisition organizations.

Senator YOUNG. How many civilians are employed at the Materials Laboratory, and how much of the $9.9 million requested is for their pay and compensation?

General GLASSER. There are 335 civilians employed at the Air Force Materials Laboratory. Civilian pay and compensation account for $7.7 million of the $9.9 million requested.

Chairman ELLENDER. How many military personnel are assigned to this laboratory?

General GLASSER. There are 52 military personnel assigned to this laboratory.

Senator YOUNG. With as many civilians as you have at the laboratory, why is it necessary to have military personnel there also?

General GLASSER. The military personnel assigned to the laboratory help to insure a source of new ideas in our development programs. They bring to the laboratory a varied background including valuable operational experience in the use of our weapon systems. The civilian scientists and engineers help provide the continuity necessary for successful long-range development programs. Duty in the laboratory is valuable experience for those military personnel who will progress in their research and development careers to higher levels of management.

Chairman ELLENDER. Just why do you need the increase of $840,000 you have requested for materials programs for fiscal year 1973?

General GLASSER. The $840,000 is needed to fund pay raises previously approved by the Congress and increased efforts in our structural materials developments. We are emphasizing data generation in the newer structural alloys of aluminum, steel, and titanium. Fracture mechanics data and nondestructive inspection techniques are of prime interest in view of problems we have had in these areas in the past.

PRELIMINARY DESIGN AND DEVELOPMENT

Chairman ELLENDER. $3.1 million is requested for the advanced development program entitled "Preliminary Design and Development." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

TITLE: PRELIMINARY DESIGN AND DEVELOPMENT

CATEGORY: ADVANCED DEVELOPMENT

Description.—This program element consists of analyses and investigations which need to be accomplished prior to the development of various weapons systems (such as aeronautical, electronic, space or ballistic missile systems and/or equipment). The program objective is to define conceptual systems, evaluate their economical and technical feasibility, identify new technology needed, determine operational problems that could be encountered if the systems were to be employed, and compare the effectiveness of the proposed systems against those already in existence. The data is generated primarily by industry and is used in the preparation of Development Concept Papers, to justify establishing new Advanced Development programs. This is done as part of our continuing examination of the major Air Force mission areas, and for analyses of the suitability and applicability of technology developments to Air Force systems. The results of these efforts are applied to current and proposed technology programs as well as helping to establish and clarify future Air Force system requirements.

Work performed by.—Air Force Systems Command is the program manager. Efforts by Air Force planning organizations will be supplemented by contracts with many aerospace, missile, and electronic firms: United Aircraft, Connecticut; Bel Aerosystems Company, New York; The Vertol Division of Boeing Airplane Company, Pennsylvania; Ling-Temco-Vought, Texas; North American Rockwell, California; TRW Systems, California, General Electric, Pennsylvania; AVCO, Massachusetts; Grumman, New York; Westinghouse Electric Corp., Maryland; and Philco-Ford, California.

Fiscal year 1972 program.—The following are representative programs in FY 1972: (a) Mission Analysis on Electronic Warfare (EW) Goals to identify the enemy threat environment for the 1975–80 time period, provide a comprehensive planning structure for long-range EW goals, and identify promising systems and equipment necessary to increase EW capabilities; (b) An in-depth study of communications network planning and control problems which will be encountered in a combat theater in the late 1970's. Results will be used as an input when developing future tactical communications capabilities; (c) Analysis of the impact new airborne equipment will have on tactical command and control, especially the impact of new concepts of operation for unmanned air vehicles; (d) Analysis to define the necessary characteristics and performance of Remotely Piloted Vehicles to deliver weapons and accomplish reconnaissance with emphasis on the man-machine interface problems; (e) An Air Force Weather–85 Mission Analysis will examine methods to integrate environmental information into the employment of operational forces and will also define the total environmental support system requirements through 1985; (f) A mission analysis to assess the USAF capability to fulfill its collateral Anti-submarine Warfare mission; (g) A study to analyze and evaluate the feasibility of directing electronic countermeasures against current and future [deleted] aeronautical systems; (h) Preliminary study to analyze system alternatives for a survivable nuclear burst reporting system; (i) A preliminary study to investigate using sensor, communication, and data processing/display systems to provide a credible tactical warning and attack assessment; (j) A study to investigate the technical approach for combing boost track and midcourse surveillance systems data, and to initiate the simulation of data processing algorithms applicable to an electro-optical surveillance system; (k) An effort which will help define an A–X aircraft configuration with night/adverse weather operational capability using a variety of avionics packages.

Fiscal year 1973 planned program.—New systems concepts and analytical investigations will be proposed as the need for them is generated. Mission analyses recently completed, those underway, and new efforts will be the source of new concepts of operational systems and equipment. Some examples of work that may be accomplished in FY 1973 are: (a) Investigate software required for a Midcourse Surveillance System (MSS); (b) Develop concepts for integration and correlation of the sensor data generated by strategic surveillance and warning systems; (c) A multi-contractor preliminary design effort to develop data for

a Communication Navigation and Identification system; (d) Conduct a design study of a survivable satellite communications system; (e) Some follow-on efforts from the Weather-85 mission analysis which could involve such areas as improved meteorological information to tactical operations, interactive computer tools for improved terminal forecasts, and tactical weather modification; (f) Study the feasibility of destroying Surface-to-Air Missiles in flight with an air-to-air missile that is launched from fighter-type aircraft; (g) Conduct a follow-on Advanced Tactical Fighter Study to develop an optimum aircraft design based on the performance criteria and system characteristics selected from the current Advanced Tactical Fighter study; and (h) Examine improvements to the Tactical Air Control System (TACS) to include integration of ground sensors into the TACS, the Command and Control required for multiple unmanned air vehicles in the tactical environment and needed communications capabilities.

Program to completion.—This is a continuing program.

RESOURCES

[Dollars in millions]

	Fiscal year—			Additional to completion	Total estimated cost
	1971	1972	1973		
R.D.T. & E. funds	6.5	5.3	3.1	Continuing	NA

PRELIMINARY DESIGN AND DEVELOPMENT

Chairman ELLENDER. I note that the request for fiscal year 1973 is $2.2 million less than the amount requested for fiscal year 1972 for this program and $3.4 million less than the amount for fiscal year 1971. What accounts for this rather sizable decrease in the funds requested for this program since fiscal year 1971?

General GLASSER. The reduction below the nominal level of effort was imposed as a result of a desire to curtail forward financing. The program has had a slow obligation of funds resulting in some efforts being forward financed. I anticipate a significant improvement in the obligation rate since the rate for fiscal year 1972 has dramatically increased when compared with the obligation rate of fiscal year 1971 and earlier. Unfortunately, the tight budget for fiscal year 1973 has forced a $3.1 million selection of studies out of $21 million submitted by Air Force System Command's field units.

Chairman ELLENDER. Please comment briefly on some of the major programs to which this program has contributed.

General GLASSER. This program has investigated the initial concepts on programs such as subsonic cruise armed decoy, defense navigation satellite and A–X. Analytical and program design in support of the lightweight fighter has permitted the Air Force to have a better understanding of aircraft design parameters than ever before. The study efforts have aided in defining the system and subsystem needs for the advanced short takeoff and landing transport thus providing the needed data for effective decisions. The advanced airborne command post was supported with analytical studies and system design activities.

INNOVATIONS IN TRAINING AND EDUCATION

Chairman ELLENDER. $5.3 million is being requested for the advanced development program entitled "Innovations in Training and Education." Selected paragraphs from the Descriptive Summary will be included in the record at this point.

(The information follows:)

TITLE: INNOVATIONS IN TRAINING AND EDUCATION

CATEGORY: ADVANCED DEVELOPMENT

Description.—There are four approved units under this program element: Advanced Simulation in Undergraduate Pilot Training to investigate the most cost effective role of simulation in Undergraduate Pilot Training (UPT), optimum mix of aircraft and simulators in UPT; The Advanced Instructional System (AIS) to demonstrate the feasibility of using different instructional media on an individualized basis in technical training, to reduce training time, number of instructors required and improve the quality of student performance; Non-Decision Job Performance Aids to test a simplified approach to maintenance training and operations at reduced cost and greater efficiency; Project Volunteer (VOL) to provide techniques to assist personnel managers in meeting personnel problems anticipated in the zero-draft environment. The program is carried out in cooperation with potential users, such as Air Training Command (ATC), Air University (AN), Tactical Air Command (TAC), and Military Air Command (MAC).

Work performed by.—The program is managed by the Air Force Human Resources Laboratory (AFHRL), Brooks AFB, Texas. Most contract efforts extend over a two year period. Typical contractors are: Applied Science Associates, Valencia, Pennsylvania—$73,000 for preparation of a job-oriented training program for use with job performance aids; Westinghouse Learning Corporation, Bladensburg, Maryland—$90,000 for study on instructional systems for use with the Advanced Instructional System; Singer General Precision—Link Division, Binghamton, New York—for the simulator for the Advanced Simulation in Undergraduate Pilot Training—$4,656,000; and Peat, Marwick, Livingston and Company, Boston, Massachusetts, for development of Defense Weapons Systems Management Simulation Exercises—$50,000.

Fiscal year 1972 program.—Acquisition of hardware and software for the Advanced Simulation in Undergraduate Pilot Training simulators and displays will continue, a contract for acquisition of the visual system hardware and software will be negotiated and initial acquisitions will begin; specifications for the Advanced Instructional System have been completed, the three initial courses for the system completed, instructional carrels designed, adaptive models formulated, and management and system software development will be initiated. A controlled experiment for determining relative effectiveness of Job Performance Aids in maintenance application will be initiated.

Fiscal year 1973 planned program.—Hardware and software for the Advanced Simulation for Undergraduate Pilot Training will be delivered, initial checkout program will begin and acquisition of the visual system will continue. Contractual requirements for simulated exercises for the Defense Weapons Total Cycle Simulation Program will be completed.

Program to completion.—Continuing Program.

RESOURCES

[Dollars in millions]

	Fiscal year—			Additional to completion	Total estimated cost
	1971	1972	1973		
R.D.T. & E. funds	5.0	6.1	5.3	Continuing	NA

INNOVATIONS IN TRAINING AND EDUCATION

Chairman ELLENDER. The entire $5.3 million requested for Innovations in Training and Education seems to be for a project entitled "Advanced Simulation in Undergraduate Pilot Training." Would you please comment on the objective and status of this project.

General GLASSER. The objectives of the program are to investigate the most cost effective use of simulation in pilot training, the proper

mix of aircraft and simulators, and to determine the design characteristics of future simulators, what the Air Force needs in simulators for training.

The funds for this project are providing the simulators needed to carry on these investigations. The basic simulator is being built and the contract for the visual portion of the simulators was signed on February 15, 1972.

Air Force Project RAND

Chairman Ellender. $8 million is requested for the support of Air Force Project Rand. The Rand Corp. is one of the think-tank Federal Contract Research Centers funded by the Air Force. Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

TITLE: AIR FORCE PROJECT RAND

CATEGORY: MANAGEMENT AND SUPPORT

Description.—Project RAND provides the Air Force a program of study and research for the development and employment of aerospace power under the guidance of the Air Force Advisory Group (AFAG). It contributes to the USAF mission in the areas of force structure planning and the application of new technology to weapons system development. The project is conducted by the RAND Corporation. The AFAG consists of nine General officers, representing all functional areas of responsibility, that meet periodically to plan the course of Project RAND. Specific guidance on top priority research subjects and project reviews are effected at regular joint meetings of the AFAG and RAND management. On these projects, the Air Force encourages independent and objective research; however, close working contacts are maintained between RAND researchers and the various project monitors of the Air Force.

Work performed by.—The Director of Operational Requirements and Development Plans, DCS/Research and Development, HQ USAF, is the Executive Agent and is responsible for the administration of Project RAND as approved by the AFAG. All work is performed by the RAND Corporation.

Fiscal year 1972 programs.—Summarized briefly are examples of studies in the current Project RAND program: (1) Costs and Capabilities of Alternative Strategic Force Postures. This study includes use of the "X-Ray Force Planning Cost Model" to allow consideration of the interrelationships between force postures, doctrines, capabilities, and costs. (2) Allocation of Tactical Resources among Ground Forces and the major Tactical Air Missions. The study includes analysis of the strategy, tactics and system characteristics appropriate to the major combat missions and aims at providing the Air Force with information fundamental to decisions on broad questions of structure, posture and employment of tactical airpower. (3) Material Management. War Reserve Materiel (WRM) munitions account for a large portion of total tactical air funding. This analysis is to determine the proper level and mix of non-nuclear munitions needed for war reserve purposes. (4) Analysis of Systems for Air Force Education and Training. This study is to assist the Air Force in solving problems related to the efficiency of the instructional process. (5) Performance Measurement of Military Computer Systems. With computers and software so complex, this analysis is to reduce costs, lead times, and risk on development of computers and operational computer centers.

Fiscal year 1973 planned program.—Much of the program is expected to be a continuation of effort initiated in FY 1972. Additions and adjustments to the program will occur during subsequent close discussion between RAND representatives and AFAG members, and Air Force offices having primary interest in each subject area. The reduced FY 72 funding from $11M to $8M directed by Congress has caused some program restructuring and stretch outs in study efforts. In accordance with the direction of Congress, the Air Force has consistently, over the years, reduced the support received through Project RAND.

Program to completion.—This is a continuing program.

Resources

[In millions]

R.D.T. & E. funds:	
Fiscal year 1971	$11.0
Fiscal year 1972	8.0
Fiscal year 1973	8.0
Addition to completion	(1)
Total estimated cost	(2)

[1] Continuing.
[2] Not available.

PROJECT RAND

Senator YOUNG. Comment briefly on the nature of the studies that are made by the Rand Corp., for the Air Force, and tell us why the Air Force does not have the capability in-house to make these studies.

Secretary HANSEN. Project Rand provides long-range research related to broad Air Force issues specified by the Air Force Advisory Group. Rand gives knowledgeable critiques of existing policies and procedures, proposes alternatives for the future and, in general, acts as an informed skeptic and devil's advocate. The Air Force, of course, can accept or reject the Project Rand findings, but in practice, the analyses have proven to be valuable inputs to our own decision process. The Air Force does study such issues in-house; however, Project Rand is used for the special purpose of providing independent, outside analyses. The objectivity, flexibility and, to some extent, the expertise provided by Rand cannot be duplicated in-house.

Chairman ELLENDER. On page 70 of the descriptive summary, I note the statement that "In accordance with the direction of Congress, the Air Force has consistently, over the years, reduced the support received through Project Rand." Yet the request for fiscal year 1973 for Project Rand is the same amount received for fiscal year 1972—that is, $8 million. Can you explain this apparent inconsistency?

General GLASSER. Congressional action as a result of last year's budget consideration placed a $17.360 million ceiling on DOD expenditures at the Rand Corp., and reduced the Air Force line from $11 million requested to $8 million for fiscal year 1972. The total ceiling was further reduced to $16 million by the Department of Defense and $9.6 million of that was allocated to the Air Force for Project Rand support. The formal Air Force budget submission for fiscal year 1973 was made before completion of congressional and OSD action on fiscal year 1972 Project Rand funds. The fiscal year 1973 request was held to $8 million by the Air Force pending a study of the problem. It has been subsequently proposed by DOD that the studies and analysis FCRCs in fiscal year 1973 be held at a level of manning equal to their reduced operating levels planned for June 30, 1972. We started fiscal year 1972 at an $11 million annual rate and have phased down the Project Rand support during the last half of the year to stay within our total ceiling of $9.6 million. To stay within this ceiling, we will finish fiscal year 1972 at a $9.1 million per year rate. We now hope to be able to fund Project Rand at this $9.1 million level for fiscal year 1973 rather than the $8 million level requested in the budget submission.

Chairman ELLENDER. On pages 689, 690, and 691 of part 4 of the hearings for fiscal year 1972, there appears a listing you furnished of each of the efforts performed by the Rand Corp. under the basic

program for fiscal year 1970. Will you provide us with an updated listing showing the program for fiscal years 1971 and 1972, please?

General GLASSER. Yes, sir.

(The information follows:)

FISCAL YEAR 1971 PROJECT RAND RESEARCH PROGRAM

STRATEGIC STUDIES

Strategic Force Policy Analysis
Costs of Alternative Strategic Force Postures
Implications of Soviet and Chinese Military Policy and Strategy for Air Force Planning
Contributions of Forces to Deterrence
Technology for New Strategic Capabilities
New Doctrine and Strategies for Strategic Forces
Strategic Missiles and Missile Systems
Bomber Study
Dynamic Direction, Control and Employment of U.S. Strategic Forces
Future Role of Sea-Based Forces
Strategic Analysis and Methodology
Environmental Problems in Strategic Planning
Guidance and Control for Strategic Systems
Mobile Strategic Aerospace Defense
Command and Control for Nuclear War
NU–OPTS Participation and Support

TACTICAL STUDIES

Allocations of Tactical Resources
Close Air Support
Strategy and Tactics of Aerial Interdiction
Support Demand in Tactical Operations (Est. 1971)
Remotely Manned Systems
Military Environment
USAF Uses of Emplaced Fields of Sensors
Wartime Cost Analysis of Tactical Systems
Intratheater Air Transport (Canc. 1970)
Forward Air Strike Evaluation—FAST VAL
Intelligence—Reconnaissance Studies
High Survivability Aircraft

LOGISTICS STUDIES

Levels of Maintenance
Material Management and Maintenance
Early Military Logistics Support Planning
Assistance to Advanced Logistics Systems (ALS) Center
Military Air Terminal Facilities and Operations
Reliability of Strategic Systems
Logistics Planning
Force Capability Reporting Systems
Combat Aircrew Requirements
Support Manpower Requirements
Scheduled Maintenance Inspection Policies
Maintenance Concepts for Inertial Navigation Systems

WEAPONS SYSTEM ACQUISITION

System Development Techniques
Quantification of the U.S.–SU Technology Programs
Research and Development Planning in the Military
U.S.–SU Technology Comparison
Technical Difficulty Analysis for AF Development Programs

MANPOWER PERSONNEL AND TRAINING

Analysis of Systems for AF Education and Training
Air Reserve Forces Personnel Study
Cost and Utilization of Air Force Human Resources
Total Air Force Human Resources: Post SEA
The Military Pilot Career and Training

SUPPORTING RESEARCH

Probability and Statistics—Applications to Military Problems
Computer-Based Aids to Military Analysts
Engineering Mechanics of Aerospace Weapon Systems
Impact and Blast Phenomena
Joint JSAF–FRG Aerospace Vehicle Studies
Cost Estimating Methods for Air Force Systems
Fluid Mechanics Problems in Air Force Systems
Propulsion for Military Application
Weapon System Mechanics and Structures
Guidance and Control Technology
Air Force Applications of Physical and Quantum Electronics
Nuclear Weapons Effects
Aerospace Environment
Military Flight Mechanics
Military Aircraft Design
Space Vehicle Design
Radar, ECM, and Signal Processing
Communications and Propagation
Electromagnetic Compatibility Constraints on Military Systems
Reconnaissance Technology: U.S. and Soviet
Effects of Atmospheric Scattering on Electromagnetic Propagation
Aerospace Vehicle Design and Performance
Electronics and Communication Technology in Aerospace Systems—Information Coding
Phenomenology and Physics of Air Force Systems—Airborne Laser Systems
Mathematics and Operations Research for Military Operations
Economics of Defense Resource Allocation
Pilots' Physiological Response to Severe Stress
Alternative Planning/Programming Systems Methodology
Space Transportation Systems
Space-Based Missile Defense
Surveillance Capability Study
Intratheater Air Transport
Evaluation of Cost Models for Air Staff Use
Basing and Deployment Options for Air Force Missions in Europe and the Mediterranean
Decisionmaking Processes in Military Organizations
Asian Security Issues
Natural Computer Language for Automated Command Systems
Command and Control Information—Processing Mission Analysis Study
Computer Graphics for Air Force Use
Performance Measurement of Military Computer Systems
Survey of Soviet Cybernetics Technology
Computer-Stereo Display of Trajectories
Computational and Numerical Methods Research for the Analysis of Air Force Problems
Air Force Applications of Synthetic Color Displays
Air Force Planning and Control

Fiscal Year 1972 Current Project Rand Research Program

STRATEGIC STUDIES

Strategic Force Posture Analysis
Sea-Based Strategic Forces
Costs of Alternative Strategic Force Postures

Implication of Soviet and Chinese Military Policy and Strategy for Air Force Planning
Contributions of Forces to Deterrence
NATO Conventional War Capabilities and Deterrence
Technology for New Strategic Capabilities

TACTICAL STUDIES

Allocation of Tactical Resource
Close Air Support
Strategy and Tactics of Aerial Interdiction
The Counter-Air Mission
Support Demand in Tactical Operations
Remotely Manned Systems
Information, Command, and Control in Tactical Operations

DEVELOPMENT, ACQUISITION AND LOGISTICS STUDIES

Levels of Maintenance
Avionics Procurement/Support
Logistic Support of Wartime Operations
Maintenance of AF CEM Equipment
Logistics Consulting Services
System Acquisition Policy
Quantification of U.S./SU Technology Programs
Weapon Life Cycle Analysis

MANPOWER, PERSONNEL, AND TRAINING STUDIES

Analyses of Systems for Air Force Education and Training
Air Reserve Forces Personnel Study
Cost and Utilization of Air Force Human Resources
Total Air Force Human Resources: Post SEA
Supply and Retention of Air Force Officers

SUPPORTING RESEARCH

Science and Technology
Analytic Methodology Research
Operational Concepts Research
Information Sciences Research

ANALYTIC SERVICES INC.

Chairman ELLENDER. $1.5 million is requested for the support of Analytic Services, Inc., one of the Air Force-funded Federal Contract Research Centers. Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

TITLE: ANALYTIC SERVICES INCORPORATED (ANSER)

CATEGORY: MANAGEMENT AND SUPPORT

Description.—Analytic Services Inc. (ANSER) is an independent, nonprofit research corporation established in 1958. The Corporation provides systems analysis, operations research and development planning studies for the Director of Operational Requirements and Development Plans (AF/RDQ), Deputy Chief of Staff, Research and Development, Headquarters USAF. Its principle mission is to satisfy the continuing need of the Air Force for objective and timely research studies of advanced weapon systems. AF/RDQ uses ANSER's work in planning the development of USAF weapon systems to meet operational requirements. ANSER's responsiveness, flexibility, low cost of operations and quality of research have made it particularly successful in accomplishing its mission. The Corporation employs a total of approximately 83 personnel (50 professional).

The direction and content of the programs and studies which ANSER undertakes are assigned and monitored by the Air Force to insure their relevancy. The ANSER research program is reviewed at several levels including: daily interface with Air Force project officers; monthly management reviews by the Director of Operational Requirements and Development plans with ANSER; bimonthly ANSER Project Status Reports; and semi-annual meetings between the ANSER Board of Trustees and senior Air Force officials.

Work performed by.—The Director of Operational Requirements and Development Plans, AF/RDQ, is the responsible Air Force agency. The contractor is Analytic Services Inc. (ANSER), 5613 Leesburg Pike, Falls Church, Virginia 22041.

Fiscal year 1972 program.—Approximately one-third of the FY 1972 research effort is devoted to the preparation of Capabilities Master Plans (CMPs). These are Air Force planning tools which develop time-phased roadmaps for obtaining specific operational capabilities in a major system or functional area and which are expected to result in improved management of current and future programs. CMPs currently being prepared include: F–111 A/E/D/F, FB–111, Advanced ICBM, Airborne Command Post, and Communication-Navigation-Identification systems. In addition to its CMP work, ANSER will continue to work on the following kinds of projects in FY 1972: *Missile/Space Surveillance and Defense*—an evaluation of requirements and system capabilities including an analysis of surveillance system options; *Electronic Warfare*—development planning of penetration and avionics systems, specifically sensors and electronic countermeasures techniques; *Strategic Aircraft Pre-Launch Survival*—a study of interactions between strategic offensive systems and potential enemy threats; *Strategic Ballistic Missile Force Assessment*—participation in an Air Staff effort to determine the utility and budget impact of improvements to or replacement of Minuteman II; *Laser Weapons*—an analysis of present and future performance of lasers in order to assess their use in weapons systems; *Loran Systems Capability*—a study of the possible application of the combination of existing Loran and Omega navigation systems into a new combined Loran-Omega system for Air Force worldwide and tactical area navigation; and *Tactical Fighters: Air Interdiction*—an identification and evaluation of factors affecting interdiction of enemy forces.

Fiscal year 1973 planned programs.—ANSER will continue to be tasked for scientific and technical assistance in concept formulation and cost effectiveness studies. A considerable effort will continue to be focused on the preparation of Capabilities Master Plans in FY 1973. Other anticipated major study areas will be: a study to enhance the joint survivability of strategic forces (bombers and land-based missiles) subject to a simultaneous, coordinated enemy attack; studies of possible improvements in surveillance, electronic countermeasures, and avionics systems; development of an attrition model to be used in defining the requirements for a 1980 advanced tactical fighter; and continued analysis of the application of lasers and other new technologies to weapons systems. ANSER will also continue to develop new analysis methodology and associated computer models.

Programs to completion.—This is a continuing program.

RESOURCES

[Dollars in millions]

	Fiscal year—			Addition to completion	Estimated cost
	1971	1972	1973		
R.D.T. & E. funds	1.6	1.5	1.5	Continuing	NA.

ANALYTIC SERVICES, INC.

Chairman ELLENDER. Please indicate the nature of studies being carried out by this organization.

General GLASSER. ANSER provides timely and objective systems analyses and operations research for concept formulation, cost effectiveness studies, technical evaluation, and development planning of Air Force weapons systems in all mission areas.

Senator YOUNG. Can these studies be performed by the Air Force in an Air Force facility?

General GLASSER. ANSER serves as an adjunct to the Air Force, supplementing our inhouse capability. Before ANSER was formed, we had already tried other alternatives, including inhouse groups, a series of ad hoc contracts with profitmaking and nonprofit research organizations for studies on individual development problems, and a continuing contract with a profitmaking organization. All of these had proved unsatisfactory because of institutional bias, limited access to sensitive and proprietary information, or the inefficiency of educating each of a succession of study groups. ANSER's independence provides flexibility in organization and personnel management that is not found inhouse. The same independence enables ANSER to maintain perspective and objectivity which directly adds to the value of their products. The level of professional expertise and depth of experience in the ANSER staff would be difficult to duplicate. Thus, the creation of an inhouse capability would not effectively substitute for the support which ANSER now provides.

Senator YOUNG. I note that the amount being requested for fiscal year 1973 is the same as that requested for fiscal year 1972. Does this mean that the level of activity for the Air Force at Analytic Services, Inc., has it remained the same, or has it decreased?

General GLASSER. The total level of activity for the Air Force has remained approximately the same. However, the support contracted for in the basic program has decreased due to inflation.

Chairman ELLENDER. Last year you provided for the committee a tabulation listing each of the studies performed by this organization under the basic program for fiscal year 1970. This tabulation appears on page 693 of part 4 of the hearings. Would you please provide an updated tabulation showing the studies performed by this organization under the basic program for fiscal years 1971 and 1972.

General GLASSER. Yes, sir.

(The information follows:)

Basic program efforts by Analytic Services, Inc. for fiscal year 1971 are as follows:

Strategic Defense Studies:
- Atmospheric Defense
- Electronic Warfare
- Missile/Space Surveillance Defense Studies

Strategic Offense Studies
- Long Range Strategic Planning:
  - Strategic Offense Mission Area
  - ICBM Capabilities Master Plan
  - B–52 Capabilities Master Plan
- Strategic Aircraft:
  - Prelaunch Survival
  - Range/Payload
  - Bomber Penetration Analysis
  - B–1 Support
- Strategic Ballistic Missile
  - Survivability
  - Preferential Strategies

Support System Studies:
- Communication Navigation Development Plan
- Loran Systems Capability
- Tactical Airlift Modernization—STOL

Tactical Studies:
- Advanced Modular Air-to-Surface Guided Weapons
- Advanced Tactical Fighters
- Aircraft Shelters
- F–4C/D/E Capabilities Master Plan
- Delivery Accuracy
- Guided Dispenser Analysis
- Tactical Aircraft Attrition
- Tactical Air-to-Air Missile Comparison

Basic program efforts by Analytic Services, Inc., for fiscal year 1972 are as follows:

Strategic Defense Studies:
- Atmospheric Defense
- Missile/Space Surveillance and Defense
- Electronic Warfare
- Strategic Command and Control
- Systems Survivability
- Command, Control, Communications, and Surveillance Requirements Analysis

Strategic Offense Studies:
- Strategic Aircraft:
  - Capabilities Master Plans (B–52, FB–111, KC–135)
  - Prelaunch Survival
  - Penetration
  - Range/Payload
  - Weapon Delivery
- Strategic Ballistic Missile
  - Minuteman Capabilities Master Plan
  - Advanced ICMB Capabilities Master Plan
  - Force Assessment
  - Survivability

Support Systems Studies:
- Collision Avoidance Systems
- Communication Navigation Development Plan
- Loran-aided Weapon Delivery
- Loran Systems Capability
- Tactical Air Control System
- Weather Support
- Tactical Airlift Modernization
- Tactical Navigation and Positioning
- Tacan Modernization

Tactical Studies:
- Advanced Tactical Fighter: Survivability
- Tactical Requirements Planning:
  - Air Intercept Missile Capabilities Master Plan
  - Air-to-Surface Guided Weapons Capabilities Master Plan
  - F–111A/E/D/F Capabilities Master Plan
  - A–7D Capabilities Master Plan
  - Tactical Overview
- Tactical Fighters: Air Interdiction
- Laser Weapons
- Heavy Lift Helicopter Utilization
- Anti-Missile Missile

AIRCRAFT AND RELATED EQUIPMENT

Chairman ELLENDER. The total requested includes $1,327.1 million for the programs funded under the budget activity entitled "Aircraft and Related Equipment." How much was provided for this budget activity in fiscal years 1971 and 1972?

General GLASSER. For prior years, the amounts made available for this budget activity, restructured for comparability with fiscal year

1973, were $767,082,000 for fiscal year 1971 and $1,197,332,000 for fiscal year 1972.

Chairman ELLENDER. Comment generally on the types of projects that are funded under this budget activity.

General GLASSER. The types of projects funded under this budget activity include Research, Development, Test, and Evaluation associated with the acquisition of new aircraft systems such as F–111, Subsonic Cruise Armed Decoy (SCAD), A–X, F–15, and B–1. The Light Weight Fighter and Medium STOL Transport prototypes which will demonstrate the technology required to provide low cost future options are funded in this budget activity. Similar efforts required for adding new capabilities to existing operational aircraft such as the F4E leading edge slat, F–4D Wild Weasel, and sensors for weather reconnaissance aircraft. In addition, funds are provided for exploratory and advanced development efforts in propulsion, avionics, navigation, guidance, weapons delivery, biotechnology, and materials related to aircraft.

Chairman ELLENDER. In fiscal year 1972, the Congress provided $1,161,035,000 for this budget activity. Please comment on any substantial reprograming increases or decreases for this budget activity and also any Emergency Fund transfer for this budget activity.

General GLASSER. Congress has approved increases totaling $7,500,000 for transfer from the appropriation "Emergency Funds, Defense" to this budget activity. These increases were for the A–X wing tank vulnerability tests under aerospace flight dynamics, $2,500,000, the initiation of engine development for the lightweight fighter aircraft prototype, $3 million, and the integration of a Navy jamming pod into the F–4D Wild Weasel aircraft under F–4 avionics, $2 million. In addition, the reprograming action which reflects the adjustments made to the fiscal year 1972 program when the fiscal year 1973 program was developed is currently before the Congress but as yet has not been approved. That reprograming action provides for increases of $16,482,000 and decreases of $4 million in this budget activity. The increases are associated with acceleration of attractive engine inlet and nozzle technology under aircraft propulsion subsystem integration, $2,100,000, increased emphasis on wing box carry-through structure technology under aerospace structural materials, $4,500,000, increased Air Force share of F–15A engine development costs associated with reduced Navy engine buy, $5,400,000, and acceleration of the successful F–4E leading edge slat development under aircraft equipment development, $4,482,000. The decrease of $4 million is due to rephasing of funding with the fiscal year requirements for the international fighter aircraft, F–5E.

The fiscal year 1971 and 1972 amounts for budget activity aircraft and related equipment have been restructured for comparability with the fiscal year 1973 budget request and are reflected in the "Justification of Estimates for Fiscal Year 1973." This restructuring accounts for the remaining difference between the $1,161,035,000 you referred to here and the $1,197,332,000 response provided to your previous question on the amount made available to this budget activity in fiscal year 1972.

F–5E International Fighter Aircraft

Chairman Ellender. Some $17.7 million is requested for the continuation of development of the international fighter aircraft, referred to as the F–5E. Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

Title: International Fighter Aircraft

Category: support to other nations

Background.—The International Fighter Aircraft (IFA) will provide the nations of South Vietnam, South Korea, Taiwan and other allies an air superiority capability to counter the MIG–21 threat which they face. It is designed to have a relative advantage in a self air defense role against the MIG 21 or an aircraft having similar performance characteristics. The aircraft will also be capable of performing close air support. The recipient countries have experience in operating and maintaining the IFA's predecessor, the F–5 Freedom Fighter.

Description.—The F–5E is an advanced version of the twin-jet Northrop F–5 aircraft. Improvements include greater thrust, higher top speed (Mach 1.51) and altitude (53,000 feet). New features include a radar fire control system, heated windscreen, a "maneuvering" flap and a two-position nose gear for improved take-off performance. Primary air-to-air armament is two 20mm M–39 cannon and two AIM–9 Sidewinder missiles. Counter air mission radius is 145 nautical miles.

Work performed by.—The Air Force Aeronautical Systems Division at Wright-Patterson Air Force Base, Ohio has primary management responsibility. The Northrop Corporation, Hawthorne, California, is system contractor. Northrop is responsible for the design, development and test of the weapon systems. The General Electric Company, West Lynn, Massachusetts, is the contractor for the J85–GE–21 engine and is responsible for its design, development and test. The engine will be Government Furnished Aerospace Equipment (GFAE).

Fiscal year 1972 program.—$42.5M RDT&E Funds are for engineering detail design, fabrication and flight test of five RDT&E aircraft. $79.0M Aircraft Procurement Appropriation 3010 funds for 21 production aircraft includes $8.6M for initial spares provisioning and $7.1M advance buy for long lead items for FY 73.

Fiscal year 1973 planned program.—$17.7M RDT&E funds include certification of additional munitions and modification associated with the additional requirement to provide an operational capability for several models of the Sidewinder missile. The major effort provides for continuing airframe and vendor design and development, fatigue and static tests, flight test support and system program management. Aircraft Procurement Appropriation 3010 funds in the amount of $100.6M provides for 57 production aircraft and includes $7.9M for initial spares provisioning.

Program to completion.—Funding for this program should not come solely from the Air Force budget. The Military Assistance Program/Foreign Military Sales (MAP/FMS) should fund an equitable share of program costs, but at present, only the Military Assistance Service Funded (MASF) program of 83 aircraft and an FMS case for 30 aircraft are firm. Unless additional MAP funds are provided in the near future, the 325 aircraft buy program, scheduled for completion in FY 75, will not be realized.

Milestones

Event and Date:	*Estimated R.D.T. & E. cost to reach milestones*
Contract award, December 1970	0
Engine qualification testing, May 1972	$81,000,000
First flight and CAT I flight test start, September 1972	87,000,000
CAT II flight test start, May 1973	95,500,000
First operational aircraft delivered, August 1973	98,900,000
Initial operational capability, [deleted 74]	98,900,000

RESOURCES

[Dollars in millions]

	Fiscal year—			Additional to completion	Total estimated cost
	1971 and prior	1972	1973		
R.D.T. & E. funds	38.7	42.5	17.7	2.6	101.5

INTERNATIONAL FIGHTER AIRCRAFT

Chairman ELLENDER. This was supposed to be a low-risk R. & D. development program. Have there been any developments during fiscal year 1972 that would indicate that there are problems in the development of this airplane which will result in a failure to obtain desired performance characteristics?

General GLASSER. No. In fact, completed wind tunnel tests indicate that operational/technical characteristics are equal to or exceed development estimates.

Chairman ELLENDER. I note on page 76 of the descriptive summary that the total estimated cost of the development program is $101.5 million. What was the original estimated cost of this development program?

General GLASSER. The original estimate was $104.1 million. Since that time the estimate has been as low as $96.1 million. The increase to $101.5 million is a result of additive requirements which include munitions certification, modifications related to the AIM-9 B/E missile and the provision of a growth capability for DOD Air Traffic Control Radar Beacon System/Identification Friend or Foe/Mark XII System (AIMS).

Senator YOUNG. It is indicated that $2.6 million will be required after 1973 for the completion of the F-5E program. Just what is required after 1973?

General GLASSER. R. & D. effort in fiscal year 1974 is the completion of the test program. Major items include completion of weapons certification, associated wind tunnel, ground and flight tests, and the resultant technical publications.

F-111 SQUADRONS

Chairman ELLENDER. $5 million is requested for the continuation of the development and testing of the F-111 aircraft. Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

TITLE: F–111 SQUADRONS

CATEGORY: GENERAL PURPOSE FORCES

Background.—The tactical F–111 aircraft is being developed to meet the Air Force requirement for an advanced tactical interdiction weapon system to counter the known threat for the 1971 and beyond time period. The F–111 A/E/D/F are designed to accomplish tactical missions under all weather and day/night conditions at very long ranges. Large payloads of both non-nuclear and nuclear weapons can be employed as required in an inclusive range of conflicts from small to general war. The system complements and improves significantly on existing F–105 and F–4 weapon systems.

Description.—The objective of the tactical F–111 program is to provide a very long range tactical interdiction aircraft for limited or general war that is capable of very low altitude high speed attack, day or night in any weather, operating from relatively short runways and possessing trans-Atlantic unrefueled ferry range. These requirements have been met with the unique variable-sweep wing design and incorporation of two afterburning turbofan engines that provide an unequaled performance capability within a broad flight envelope. The aircraft is capable of short field take-off and landing, high-speed low-level penetration of enemy held areas, extensive loiter time and high speed dash at altitude. With a combat ceiling in excess of 58,000 feet, the aircraft has a sustained maximum speed of Mach 2.2 and has a Mach 2.5 dash capability at high altitude. The unrefueled ferry range of the F–111A, with internal fuel only, exceeds 2,750 nautical miles. Current estimates indicate a capability of performing a low-low-high nuclear mission of 540 nautical miles including a Mach 1.2 low altitude penetration distance of 200 nautical miles.

The F–111E is a follow-on to the "A" model and has been used to equip the second tactical F–111 wing. The "E" model is essentially a refined "A" model with improved engine air inlets. The F–111D is a follow-on to the "E" model and will be used to equip the third tactical F–111 wing. The F–111D version incorporates the improved Mark II Avionics system which significantly increases the air-to-ground effectiveness. The F–111F is the follow-on to the "D" model and will be used to equip the fourth tactical F–111 wing. The "F" model will be powered by higher thrust TF30–P–100 engines and will be equipped with a less sophisticated and less expensive avionics package. The decision to equip the "F" model with a less expensive avionics package was based upon budgetary limitations and the increased costs associated with the development and installation of the Mark II avionics system in the F–111D.

Work performed by.—The Air Force management and in-house engineering support is funrished by Aeronautical Systems Division, Wright-Patterson AFB, Ohio. Contractors include: Convair Aerospace Division, Fort Worth, Texas—Prime for weapon system; Grumman Aircraft, Bethpage, New York—Major subcontractor for air vehicle; McDonnell Aircraft, St. Louis, Missouri—Major subcontractor for crew module escape system; Autonetics, Anaheim, California—Major subcontractor for Mark II Avionics; Pratt & Whitney Division of United Aircraft, East Hartford, Connecticut—Government furnished engines.

Fiscal year 1972 program.—Category I and II testing of the F–111D/E/F is continuing through FY 72. The F–111D first squadron IOC is scheduled for [deleted] F–111D aircraft production deliveries have been delayed because of MK II development problems. The F–111F first squadron IOC was achieved in January 1972. Structural fatigue testing as well as weapons delivery testing will continue through FY 72.

3. *Fiscal year 1973 planned program:* The remaining tactical F–111 program development work will be completed in FY 73 and consists primarily of Category I and II flight tests to examine stall/spin, flutter, flight loads, stability and control, and avionics. The December 1969 accident and subsequent grounding impacted flight test as well as the overall program. Generally, all major scheduled flight accomplishments have been delayed approximately one year.

Major milestones	Date	Estimated cost to reach milestones [1]
1. F-111A milestones:		
(a) Specific operational requirement No. 183 published	July 1960	(2)
(b) R. & D. letter contract issued	December 1962	(2)
(c) First flight F-111A	December 1964	(2)
(d) Category I flight test start	do	(2)
(e) Production letter contract award	April 1965	(2)
(f) Category II flight test start	January 1966	(2)
(g) Category III flight test start	Deleted	(2)
(h) Initial operational capability (1st squadron 100 percent equipped)	April 1968	(2)
(i) 1st wing operational ready (1st wing 100 percent equipped plus retraining period)	June 1971	(2)
2. F-111E milestones:		
(a) F-111E approval	January 1968	(2)
(b) First flight	September 1969	(2)
(c) Initial operational capability (1st squadron 100 percent equipped) (upper Heyford)	December 1970	(2)
(d) First wing operational ready (1st wing 100 percent equipped plus 100 days) (upper Heyford)	October 1971	(2)
3. F-111D milestones:		
(a) MK II go-ahead by contract change notification	June 1966	(2)
(b) F-111D approval	May 1967	(2)
(c) Category I testing start	December 1968	(2)
(d) Category II testing start	September 1970	(2)
(e) 1st production MK II set delivery	December 1970	(2)
(f) 1st flight F-111D	May 1970	(2)
(g) Initial operational capability (1st squadron 100 percent equipped)	[Deleted]	(2)
(h) 1st wing operational ready (1st wing 100 percent equipped plus 100 days)		
4. F-111F milestones:		
(a) F-111F approval	September 1969	(2)
(b) First flight	August 1971	(2)
(c) Initial operational capability (1st squadron 100 percent equipped)	[Deleted]	(2)
(d) 1st wing operationally ready (1st wing 100 percent equipped plus 100 days)		

[1] The requirements to track the costs to reach program milestones was initiated at very nearly the end of the F-111 program. Consequently, F-111 program cost accounting was not structured to provide this type of cost breakout.
[2] Not applicable.

[In millions of dollars]

Resources	Fiscal year 1971 and prior	Fiscal year 1972	Fiscal year 1973	Additional to completion	Total estimated cost
R.D.T. & E. funds	1,617.3	19.2	5	0	1,641.5

F-111 Squadrons

Chairman Ellender. On page 79 of the descriptive summary I note references to category I and II flight tests. Will you tell us briefly what the objectives of these two test programs are?

General Glasser. Yes, sir. The contractor is conducting category I tests to continue the investigation of the aircraft's low-speed characteristics so that information may be obtained to operationally avoid stalls and subsequent spins. Our Air Force Flight Test Center pilots will accomplish the last half or so of this remaining investigation during category II tests. Other category I tests include wing structural flutter tests with external stores installed as well as in-flight structural loads tests at high "G's," with and without external stores. The remaining Air Force category II tests will concentrate on finishing up the required stability and control investigations for those altitude/airspeed/configuration combinations not yet completed. There are also some avionics flight tests remaining which will be completed in fiscal year 1973.

Senator YOUNG. I note that the "F" model of the F–111 is to have an avionics system that is less expensive than the Mark II system installed on the "D" version. Can you tell us the major difference in the two systems, and can you also tell us what effect installation of the less expensive and less sophisticated avionics system will have on the capabilities of the F–111F?

General GLASSER. Yes, sir. I'd like to supply that information for the record.

(The information follows:)

MARK II/IIF AVIONICS CAPABILITY COMPARISON

	F–111D	F–111F
Air-to-ground, search (ground map) and detection:		
Fixed target:		
Single frequency	Yes	Yes.
Frequency agility	Yes	Yes.
Man-made target enhancement (major gain)	Yes	No.
Moving target detection and attack (major gain):		
Clutter referenced doppler	Yes	No.
Coherent referenced doppler	Yes	No.
Weather penetration:		
Circular polarization (modest gain)	Yes	Yes.
Target enhancement (major gain)	Yes	No.
Beacon	Yes	Yes.
Target identification/designation aids:		
Inertial predesignation	Yes	Yes.
Intersensor designation/correlation	Yes	No.
Inter crew designation/correlation	Either man, 2 heads-up displays and dual radar and controls.	1 man, 1 heads-up display and 1 radar display.
Direct/offset bombing	10 targets, 2 offsets per target.	10 targets 2 offsets per target.
Multiple check-point correlation	Yes	Yes.
Narrow sector expand	Yes	No.
Image freeze w/real-time designation	Yes	No.
High-resolution ground map	Yes	No.
Computerized symbology cues	Yes	No.
Fly to steering/reattack targets	Yes	No.
Target track:		
Manual designation/track:		
Fixed target and reference points	Yes	Yes.
Moving targets	Yes	No.
Lock-on and auto range/angle track:		
Fixed targets	Yes	No.
Moving targets	Yes	No.
Weapon delivery accuracy, level radar (FT, CEP)	[Deleted.]	
Weapon delivery accuracy, visual (FT, CEP)		
Radar fix taking, nav sys updating (FT)	114	145.
Moving map display	Yes	No.

SUMMARY

The primary capability advantages of the F–111D/Mark avionics over the other F–111 models, including the F–111F, include the following:

1. Improved detection of tactical (smaller) ground targets by a factor of nearly three.
2. Discrimination, tracking, and attack of moving ground targets.
3. Improved bombing accuracy on large targets; very much improved accuracy on the smaller tactical targets difficult to detect with other radars.
4. Improved navigational accuracy to targets by greater than a factor of two.
5. Provides advanced cockpit displays to enable efficient crew reactions to the supersonic/tree-top flight environment.
6. Provides a night and/or all-weather air-to-air intercept avionics capability where other tactical avionics systems are essentially limited to day/clear weather air-to-air engagements.

Chairman ELLENDER. It might be well here if you furnished the committee with a brief description of the various versions of the F–111 aircraft.

General GLASSER. I will be glad to furnish this information.

(The information follows:)

MDS	Engine	Avionics	Differences/remarks
F–111A	TF–30–P–3	MK–I	Basic F–111.
F–111E	TF–30–P–3	MK–I	Refined engine inlets.
F–111D	TF–30–P–9	MK–II	Advanced avionics, new engine with refined inlets, and environmental control system.
F–111F	TF–30–P–100	MK–II–F	New engine and simpler avionics than MK–II.

Senator YOUNG. Have any major problems arisen during the testing of the Mark IIF Avionics System?

General GLASSER. No, sir.

Chairman ELLENDER. I note in the descriptive summary that the loss of a F–111 in December 1969 delayed the entire program by approximately 1 year. Have you had any indications that the delay in development of this aircraft will exceed 1 year?

General GLASSER. No, sir. The extended grounding that followed that accident impacted predominantly only the flight test program portion of the development effort. In fact, the impact was less than a year for some of the flight tests.

Chairman ELLENDER. Have you been able to meet all the major milestones for the F–111F?

General GLASSER. Yes, sir. The "F" program has gone very well. We've had some normal problems with the engine development, but these have been overcome without any significant program impact.

Senator YOUNG. Will the $5 million you have requested for fiscal year 1973 complete the development and testing of the F–111 aircraft?

General GLASSER. Yes, sir.

AEROSPACE FLIGHT DYNAMICS

Chairman ELLENDER. $31,475,000 is requested for the continuation of the exploratory development program entitled "Aerospace flight dynamics." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

TITLE: AEROSPACE FLIGHT DYNAMICS

CATEGORY: EXPLORATORY DEVELOPMENT

Description.—The purpose of this program is to develop the flight vehicle technology required for the improvement of current aerospace vehicles and the design and development of future aerospace vehicles. The program is, therefore, concerned with the technical areas of structures, flight control, flight mechanics, dynamics, and vehicle equipment. Included are efforts directed toward providing structural integrity in flight vehicles; development of new cargo escape and rescue techniques; development of unique aerodynamic configurations; providing new techniques for unproved control display systems; solving problems in stability and control; development of quiet aircraft; and establishing criteria for the development of new structural concepts with improved vulnerability/survivability characteristics. This program also includes operations and manage-

ment of the Air Force Flight Dynamics Laboratory (AFFDL), Wright-Patterson AFB, Ohio. The objective of this program element is accomplished through in-house and contractual efforts.

Work Performed by.—Work is performed and managed by the Air Force Flight Dynamics Laboratory, Wright-Patterson AFB, Ohio. Various in-house facilities, such as the 50 megawatt electrogasdynamic tunnel, sonic fatigue facility, and structures laboratory are a part of the Air Force Flight Dynamics Laboratory and are utilized in the accomplishment of the program. The ten largest contractors for this program include: McDonnell Douglas Astronautics Company, Eastern Division, St. Louis, Missouri,—$2,700,000, accomplishing experimental and theoretical studies in the area of structures, flight control, flight mechanics and dynamics; Teledyne Systems Company, 11525 South Daphne Avenue, Hawthorne, California,—$2,500,000, fabrication and verification of advanced flight control equipments; Bendix Corporation, Navigation and Control Division, Teterboro, New Jersey,—$1,300,000, analytical analysis of advanced flight control systems and experimental fabrication of advanced flight control equipments; Lockheed Georgia Company, Marietta, Georgia,—$1,200,000, development of advanced fatigue damage sensors and methods of analysis for predicting soft field landing loads; General Dynamics, Ft Worth Division, P.O. Box 748, Ft Worth, Texas,—$1,100,000, analytical and experimental investigations to determine optimum airfoil configurations for transonic speeds; Bell Aerospace Corporation, Bell Aerosystems Company, Buffalo, New York,—$900,000, investigating, both theoretically and experimentally, unique crew escape and landing systems; the Bunker-Ramo Corporation, 8433 Fallbrook Avenue, Canoga Park, California,—$800,000, analytical studies directed towards improved control displays for weapon delivery and landing maneuvers; Northrop Corporation, Aircraft Division, 3901 W. Broadway, Hawthorne, California,—$800,000, analytical investigation to determine the effects of atmospheric turbulence on flight control; General Electric Company, Aircraft Equipment Division, Binghamton, New York,—$500,000, analysis of advanced fire control systems and advanced flight control systems; The Boeing Company, P.O. Box 3707, Seattle, Washington,—$400,000, methods to predict and prevent flutter and analytical and experimental studies in the areas of flight control, dynamics, and advanced structures.

Fiscal year 1972 program.—Efforts are being devoted to development of fuel tank configurations that are highly survivable, reliability of advanced filamentary composite structures, composite reinforcement of aluminum structures, experimental investigation of in-flight thrust reversers, analysis and definition of unmanned vehicles capable of optimum performance at subsonic, transonic, and supersonic speeds, design of ejection seats that automatically initiate when aircraft reaches a critical state, development of sonic fatigue design charts, aerodynamic configurations that reduce aircraft noise, low cost flight control systems that automatically adjust for changing flight conditions, and stall/spin experiments for advanced systems.

Fiscal year 1973 planned program.—The planned program includes efforts such as development of vibration and acoustic test criteria for heavy bomber aircraft, development of improved analytical methods for predicting fatigue crack initiation and propagation, design of leading edge slats and trailing edge flaps for improved maneuvering, establishment of external store design criteria, development of analysis methods for deflated tires, design and development of landing gear that automatically adjusts for runway roughness, develop and demonstrate repair techniques for large honeycomb structures, and complete the establishment of the Survivability Technology Information Center.

Program to completion.—Continuing program.

RESOURCES

[In millions of dollars]

	Fiscal year—			Additional to completion	Total estimated cost
	1971	1972	1973		
R.D.T. & E. funds	32.3	33.7	31.5	Continuing	NA

AEROSPACE FLIGHT DYNAMICS

Chairman ELLENDER. Please provide a tabulation for the record showing all the projects funded under this program, the amounts for fiscal years 1971 and 1972, and the request for fiscal year 1973.

General GLASSER. Yes, sir. I will be glad to.

(The information follows:)

[In thousands of dollars]

Project No.	Title	Fiscal year 1971 actual	Fiscal year 1972 estimate	Fiscal year 1973 estimate
	Aerospace flight dynamics	32,323	33,730	31,475
06DF	Laboratory operation	15,990	18,830	19,175
1309	Environmental interactions	25	26	116
1315	Bearings	63	69	32
1347	Structural testing	105	147	111
1362	Crew escape	249	297	213
1366	Aeromechanics	3,489	3,594	2,052
1367	Structural design criteria	89	82	245
1368	Structural design concepts	45	326	192
1369	Mechanical subsystems	579	501	453
1370	Dynamic problems	1,072	445	408
1425	Crew station	113	59	43
1426	Simulation of flight mechanics	253	435	266
1431	Performance analysis	64	149	107
1467	Structural analysis	220	282	465
1470	Cryogenic cooling	235	231	107
1471	Aeroacoustic problems	315	405	245
1472	Dynamic measurement	45	68	72
1476	Airframe propulsion compatibility	885	580	586
4362	Advanced structures	331	454	354
4363	Combat survivability	1,009	775	442
4364	Composite structures	900	695	536
4437	Sound simulation	60	61	128
6065	Aerodynamic decelerators	690	490	577
6146	Environmental control	365	198	304
6190	Control-display	562	602	596
8219	Stability and control	2,259	900	895
8222	Control data	421	337	336
8224	Stored energy data system	189	257	256
8225	Flight control equipment	709	772	767
8226	Flight control techniques	992	744	741
----------	Advanced military aircraft configuration		919	655

Senator YOUNG. Does your request for fiscal year 1973 include funds for any projects that were not funded in previous years?

General GLASSER. No, sir.

Senator YOUNG. How much of the request for $31,475,000 is for work to be performed in Air Force facilities?

General GLASSER. $17,410,000.

FLIGHT DYNAMICS LABORATORY

Chairman ELLENDER. I note that of the $31.5 million requested for "Aerospace flight dynamics," $19.2 million is for the support of the Air Force Flight Dynamics Laboratory. Would you please comment briefly on the mission of this laboratory.

General GLASSER. The Air Force Flight Dynamics Laboratory is the flight vehicle laboratory of the Air Force and therefore its mission is to develop the technology required for current and future aerospace vehicles. This mission is fulfilled by accomplishing exploratory development efforts in the areas of structure, flight control, flight mechanics, dynamics, and vehicle equipment. Representative efforts include development of new crew escape and rescue techniques, development of

unique aerodynamic configurations, development of quiet aircraft, and improving the nonnuclear survivability of current and future Air Force aircraft.

Senator YOUNG. How many civilian employees do you have at the flight dynamics laboratory and how much of the $19.2 million requested is for their compensation and benefits?

General GLASSER. There are 800 civilian employees in the Air Force Flight Dynamics Laboratory and $15,175,000 will be utilized for their compensation and benefits.

Senator YOUNG. Would you tell us how many military personnel are assigned to this laboratory and comment on the need for them.

General GLASSER. There are currently 137 military personnel assigned to the Air Force Flight Dynamics Laboratory. Our experience has shown that we need military personnel to better accomplish our mission. The rated pilots assigned to the laboratory provide very valuable experience and guidance to the program. Other nonrated personnel provide a good sampling of overall Air Force experience and also provide new and innovative ideas that complement those generated by the more permanent civilian work force. The laboratory also provides very valuable training for the military personnel who will eventually command the Air Force research and development program of the future.

AEROMECHANICS

Chairman ELLENDER. I note that, of the $19.2 million requested for the flight dynamics laboratory, $2.1 million is for a project entitled "Aeromechanics." Would you give us a brief description of this project?

General GLASSER. As you know, weapon system effectiveness is dependent on such factors as reaction time, maneuverability, payload, range, and average velocity. These factors are strongly related to the aeromechanics technology. Therefore, the objective of this project is to conduct exploratory development programs in aerodynamics and vehicle concepts to provide design criteria and analysis methods for development of military flight vehicles. Effective and properly oriented technology can reduce weapon system acquisition cost and increase weapon system effectiveness.

Chairman ELLENDER. I note that the request for fiscal year 1973 for aerospace flight dynamics is $2.2 million less than the request for fiscal year 1972. Please comment on this reduction.

General GLASSER. This reduction has occurred because of a change to the service funding of the Arnold Engineering Development Center (AEDC), Tullahoma, Tenn. During fiscal year 1972, this program paid to AEDC approximately $3.5 million for required wind tunnel testing. For fiscal year 1973 the AEDC will provide testing support at no charge to the aerospace flight dynamics program. The total funding has, therefore, been adjusted downward to account for this change in service funding arrangements.

AEROSPACE BIOTECHNOLOGY

Chairman ELLENDER. $20,925,000 is requested for continuation of the exploratory development program entitled "Aerospace Biotechnology." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

TITLE: AEROSPACE BIOTECHNOLOGY

CATEGORY: EXPLORATORY DEVELOPMENT

Description.—Man is a key element in every aspect of Air Force systems and operations. As a consequence of advancing technology and resultant changes in operational situations, more and greater demands are made on the man. As new technology makes possible conceptual breakthroughs in the form of advanced weaponry, means must be devised for better capitalizing on man's inherent capabilities and for accommodating his limitations in a cost effective manner with minimum system performance penalty. The Biotechnology program addresses these situations with R&D which provides improved operational utility of man, better means of providing safety, and the enhancement of man's effectiveness in hostile operational environments. This program also provides improved capability for medical selection, health care and retention of aircrews, and other specialized operational personnel. It increases efficiency of support of tactical Air Force units operating at remote sites and for patients in the aeromedical evacuation system.

The Biotechnology program is closely managed and coordinated to meet the needs of specific aeronautical system and operational requirements. This is accomplished with a multifaceted approach which includes: (a) measurement and evaluation of existing or prediction of new hostile crew environments, (b) simulation of these environments in highly sophisticated and, in many cases, unique in-house simulators (for example, human centrifuge, toxic inhalation exposure chambers, complex vibration and crash impact devices, altitude chambers and combined stress simulators), (c) determination of hazard levels and exposure criteria for extreme environments (toxic materials, laser and RF radiation, crash forces, acceleration, etc.), (d) defining ability to perform operational tasks as a function of severity of the related operational environment (i.e., ability to perform tactical combat maneuvers during high level sustained acceleration), (e) development of techniques and equipment to moderate or reduce the harmful effects of the environment on crewmen, and improve man-machine coupling through human engineering R&D, (f) development of up-dated medical standards for improved care and selection of aircrew, missile operators and other specialized personnel, providing for increased retention of aircrew members with mild disease states. This is accomplished in part by validating new medications which do not interfere with flying ability and by developing improved selection criteria for evaluating the significance of diseases on flying ability, (g) development of improved medical equipment and clinical procedures for safer, more comfortable and more efficient air evacuation of battle casualties from combat areas as well as within the continental U.S.; development of doctrine, techniques and equipment for operational medical support of mobile tactical Air Forces and support of the Data Systems Design Center with R&D needed to employ modern automated technology in USAF medical facilities.

Work performed by.—The Biotechnology program is accomplished in the Aerospace Medical Division (AMD) by (a) the USAF School of Aerospace Medicine (USAFSAM) at Brooks AFB, Texas, and (b) the Aerospace Medical Research Laboratory (AMRL), Wright-Patterson AFB, Ohio. Approximately 74% of the program is accomplished in-house with contracts closely supporting the in-house effort. The largest contractors are as follows: SysteMed Corp., Newport Beach, California, toxic hazards research; Raytheon Co., Lexington, Massachusetts, operation and maintenance of the Dynamic Environment Simulator; University of Dayton Research Institute, Dayton, Ohio, human fatcors applied research; Honeywell, Inc., Minneapolis, Minnesota, and Hughes Aircraft Corp., Culver City, California, helmet mounted sight/display research; IBM, Gaithersburg, Maryland, human engineering systems effectiveness; and Webb Associates, Yellow Springs, Ohio, human engineering systems simulation. These contracts vary in scope and duration and average three years in length.

Fiscal year 1972 program.—The following are representative of the broad program underway in FY 72: (a) *Acceleration Capability Enhancement*—determining the maximum safe and effective levels of tactical maneuvering loads in which pilots can survive and perform effectively and finding ways of extending these limits to take full advantage of improved air frame and power plant capability,

(b) *Visually Coupled Systems*—development of second generation test prototype helmet sight and display systems which will automatically aim or terminally guide weapons or direct reconnaissance sensors in the direction that the pilot looks, (c) *Selection/Retention of Aircrew Members*—continue the long-range effort to better define the future status of flyers with early signs of chronic disease and to develop medications which can be used to treat these diseases without interfering with flying ability, (d) *Environmental Quality*—define and incorporate into current related efforts the additional R&D necessary to improve environmental quality, (e) *Escape and Crash Landing*—define the injury mechanisms and derive protection against windblast acting on the unsupported body (as occurs in new extraction-type ejection seats) and provide new technology for automatic prepositioning and restraint of the body prior to ejection or crash landing, (f) *Laser Hazards*—to define exposure risk criteria and production requirements for new laser systems or applications to assure that human safety considerations do not constitute a pacing item, (g) *Aircrew Nuclear Vulnerability*—radiation effects data are incorporated into specific man-machine (B–52, B–1) models to give quantitative estimates of man-system performance decrement (Probability of mission success) as a function of mission scenario, system hardness, etc., (h) *Medical Equipment*—care of aeromedical evacuees and for mobile tactical Air Forces in the field is inadequate. Analysis of field deficiencies, jointly conducted with operational commands, forms the basis of design and development of specialized medical equipment for Air Force use.

Fiscal year 1973 planned program.—Examples illustrating the fiscal year 1973 efforts of this program are: (1) new R&D directed to developing quantitative methods to define acceptable performance of escape and crash attenuation systems to reduce the presently unacceptable level of *aircrew injury from crash and ejection forces*, (2) significant new complex flight simulator capability (Dynamic Environment Simulator) in which the pilot-subject is exposed to maneuvering acceleration he may induce by closed-loop control actions will be exploited to *improve and refine air combat maneuvering (ACM) tactics* and to provide data for *improved design of controls and displays* for tactical fighter systems, (3) R&D on *visually coupled systems* will include pre-processing of sensor information to develop improved efficiency of information acquisition in heads-up displays. Eye position rather than head position sensing for automatically aiming weapons or sensors in the direction the pilot looks will improve accuracy and reduce helmet mounted hardware, (4) since cardiovascular disease is the largest single medical reason for *grounding aircrewmen* the program will emphasize improved methods for early detection of symptoms in aircrew which predict this problem in the flyer's later years and to improve the ability to determine which individuals can be safely retained (in some cases with medication) on flight status. The broader effort to qualify other *medications for use by the flyer* will continue, (5) data from new complex environmental simulators will provide significant new knowledge on effects of operationally significant *combinations of stresses* on performance ability, pointing the way to *improved life support systems and personal equipment.*

Program to completion.—This is a continuing program.

[Dollar amounts in millions]

Resources	Fiscal year— 1971	1972	1973	Additional to completion	Total[1]
R.D.T. & E. funds	17.8	20.5	20.9	Continuing...	N/A.

[1] Estimated cost.

AEROSPACE BIOTECHNOLOGY

Chairman ELLENDER. Would you please provide for the record a listing of the projects funded under this program, the amounts for fiscal years 1971 and 1972 and the request for fiscal year 1973?

General GLASSER. Yes, sir.

(The information follows:)

[In thousands of dollars]

Project number and title	Fiscal year— 1971	1972	1973
6CH Oper. of aerospace med. div. and in-house labs	14,073	14,860	16,025
6301 Laser and nuclear biomed. hazards	167	175	100
6302 Toxic hazards of propellants and materials	1,020	1,000	1,000
6319 Mathematical analysis of medical data	19	20	10
6320 Aerospace bio-instrumentation	0	20	0
6770 Biotech. studies in advanced systems	170	550	260
6893 Performance in Air Force operational environments	30	175	100
7164 Aircrew protective techniques	52	180	200
7184 Human engineering for Air Force systems	632	850	1,025
7222 Combined stress in Air Force environments	723	650	800
7231 Mechanical forces on Air Force personnel	359	675	650
7233 Biological principles in information processing	117	175	150
7753 Epidemiological aspects of Air Force operations	0	250	0
7755 Medical aspects of Air Force operations	8	30	30
7756 Air Force clinical medicine	95	0	0
7757 Radiobiology in aerospace operations	107	400	400
7930 Acceleration/atmospheric criteria for aircrews	199	350	100
7996 Exploratory development of medical systems and equipment	0	150	75

Senator YOUNG. How much of the funds requested is for work to be performed in Air Force facilities?

General GLASSER. Of the $20,925,000 requested for fiscal year 1973, $16,025,000 is to be used to support operation of the Aerospace Medical Division's in-house R. & D. facilities. These Air Force facilities are Headquarters, Aerospace Medical Division and the U.S. Air Force School of Aerospace Medicine at Brooks Air Force Base, Tex., and the 6570th Aerospace Medical Research Laboratory at Wright-Patterson Air Force Base, Ohio.

AEROSPACE MEDICAL DIVISION

Senator YOUNG. I note that, of the $20.9 million requested for "Aerospace Biotechnology," $16 million is for the support of the Aerospace Medical Division operation. Would you give us a brief description of this operation and tell us what the $16 million requested is used for.

General GLASSER. The Aerospace Medical Division operation involves the support of in-house R. & D. facilities. Six defense research sciences, 15 exploratory development, four engineering development projects, and one advanced development effort receive their in-house support from these resources. Organizations supported with these in-house funds are Headquarters, Aerospace Medical Division and the U.S. Air Force School of Aerospace Medicine at Brooks Air Force Base, Tex. and the 6570th Aerospace Medical Research Laboratory at Wright-Patterson Air Force Base, Ohio. These funds will provide pay and related costs of civilian scientists, engineers, and support personnel, travel, transportation, communications and utilities costs, rentals, procurement of supplies and equipment, and contractor support services.

Chairman ELLENDER. How many civilian employees are involved in this operation, and how much of the $16 million requested is for compensation and benefits?

General GLASSER. In fiscal year 1972, 667 civilian personnel were assigned to the Aerospace Medical Division R. & D. facilities. In fiscal

year 1973, the projected average is 622 civilian personnel assigned to Headquarters, Aerospace Medical Division and the USAF School of Aerospace Medicine, and the Aerospace Medical Research Laboratory.

Eleven and one-tenth million dollars of the $16 million will be utilized for civilian personnel costs, which include $10.2 million for salaries and $0.9 million for other benefits and compensation such as retirement fund, health and group life insurance, and awards.

Chairman ELLENDER. How many military personnel are assigned to this activity?

General GLASSER. In fiscal year 1972, R.D.T. & E. military man-years number 801. In fiscal year 1973, the projected average is 756 military personnel. These figures include military personnel assigned to Headquarters, Aerospace Medical Division and the USAF School of Aerospace Medicine, Brooks AFB, Tex., and the Aerospace Medical Research Laboratory, Wright-Patterson AFB, Ohio.

TOXIC HAZARDS OF PROPELLANTS AND MATERIALS

Chairman ELLENDER. I note that, of the $20.9 million requested for "Aerospace biotechnology," $1 million is for a project entitled "Toxic Hazards of Propellants and Materials." Would you please give us a brief description of this project?

General GLASSER. The Air Force can be regarded as one of the largest industrial operations in the United States. It employs many new chemicals and materiels associated with ground, weapon, aircraft, and missile systems. This research effort is necessary to protect personnel from harmful exposure to these substances, causing loss of effectiveness or valuable man-hours. Since many Air Force operations are conducted by contractor personnel and also may effect neighborhood communities, the hazard of exposure to propellants and other toxic materials is not restricted to military personnel. With the new policies introduced by recent Executive order and AFR 161-22 to control environmental pollution, this R. & D. project to develop environmental pollution toxicity criteria for Air Force materials is a firm national requirement.

Senator YOUNG. Does your request for fiscal year 1973 include funds for any new projects? If so, please comment briefly on the objectives of these projects.

General GLASSER. No new projects per se are planned for fiscal year 1973. However, several on-going projects will have expanded levels of effort to meet new R. & D. requirements such as drug abuse detection methodology, implementation of legislation on environmental quality, operation of newly acquired motion simulators, and definition of personnel hazards for new Air Force laser systems.

HUMAN ENGINEERING

Chairman ELLENDER. I also note that $1,025,000 is requested for a project entitled "Human Engineering for Air Force Systems." Would you give us a brief description of this project?

General GLASSER. Efforts under this project are aimed at the production and dissemination of human engineering data, as well as to principles and techniques which are applicable to the design, test,

operation, and maintenance of Air Force systems, their subsystems and supporting systems. The ultimate object of this project is to assure that the performance capabilities and limitations of the man, interacting with machines in Air Force operational environments, are appropriately considered to the end that systems effectiveness is maximized.

AEROSPACE PROPULSION

Chairman ELLENDER. $29,060,000 is requested for the continuing exploratory development program entitled "Aerospace Propulsion." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

AEROSPACE PROPULSION

CATEGORY: EXPLORATORY DEVELOPMENT

Description.—This program is comprised of five functional areas to provide technology advances to satisfy future needs. These are: turbine propulsion; ramjet propulsion; power generation; fuels/lubricants/hazards and the operation and management of the Air Force Aero Propulsion Laboratory (AFAPL), Wright-Patterson, AFB, Ohio.

Work performed by.—The Air Force Aero Propulsion Laboratory, Wright-Patterson AFB, Ohio manages the work performed under this program. Some of the larger contractors engaged in this effort are: Pratt and Whitney, East Hartford, Connecticut—$1.3 million, a variable pitch fan, an advanced augmentor combustor, a power turbine and nozzle/airframe integration effort; General Electric, Cincinnati, Ohio—$1.0 million, an advanced compressor, combustor and turbine subsystems; Allison Detroit Diesel Division of General Motors, Indianapolis, Indiana—$.8 million, component effort on high tip speed compressor aerodynamics, combustor high temperature turbine, turbo-fan stability and advanced materials application; Teledyne CAE, Toledo, Ohio—$.4 million, component effort on small engine combustors, turbine and accessory drive subsystems; Honeywell, Minneapolis, Minnesota—$.4 million, fluidic control and control sensors development; The Marquardt Co., Van Nuys, California—$1.8 million, development of ramjet components; fuel controls, combustors, nozzles and inlets; Hughes Aircraft Co., Culver City, California—$.4 million, the flexible roll-up solar cell array was qualified for flight and was flight tested about September 1971; Shell Development Corp., Emeryville, California—$.3 million, a vaporizing endothermic fuel for advanced jet engine applications; Southwest Research Institute, San Antonio, Texas—$.8 million, research on advanced fuels and lubrication for high Mach number applications; Ling-Temco-Vought Inc., Dallas, Texas—$.3 million, research on solid state electrical power distribution system. These contracts vary in scope and duration and average two years in length.

Fiscal year 1972 program.—Programs are continuing to develop higher pressure ratio compressors, higher temperature variable turbines, improved combustors and nozzles, and pneumatic controls. The efforts on the Hybrid Control, which are bringing electronics and fluidics into use are continuing and are being tested on a J–58 engine. Ramjet programs include component testing aimed at the Mach 3–12 regime, low volume ramjet, high density fuels and dual mode (subsonic and supersonic combustion) ramjet. An increased in-house capability has been deveolped. Efforts are being continued on the development of improved fuel and lubrication test and evaluation methods. Efforts are underway to design, fabricate and evaluate improved colloid electric propulsion engines in preparation for orbital test. Completion of development and test of first series of improved capability batteries for aircraft expendable countermeasure devices is planned. Batteries with improved low temperature capability are being tested. Efforts include design and testing of liquid metal power transmission systems and gas and solid film lubricants. The application of new composite materals to compressors and fans will continue. High temperature fire extinguishing agents and explosion detection systems are being evaluated, including flight test.

Fiscal year 1973 planned program.—Most of the fiscal year 1972 efforts will be continued. Some of the new efforts planned include a small effort on supersonic combustion ramjet, a composite engine concept for advanced manned and unmanned vehicles. Efforts to develop improved fuel handling techniques, ground check out requirements and airbearings will be initiated. Efforts will continue on the integration of the engine and the aircraft; there is a large performance improvement potential in this area. A cost reduction program for small gas turbine engines and a pulse plasma thruster development for spinning satellites will be initiated.

Program to completion.—This is a continuing program.

Resources (In millions of dollars:)

R.D.T. & E. funds for fiscal year 1971, $27.6; fiscal year 1972, $28.6; fiscal year 1973, $29.1; additional funds to completion are continuing; and the total estimated cost is not available.

AEROSPACE PROPULSION

Chairman ELLENDER. Please provide a tabulation for the record listing each of the projects funded under this program, the amounts for each for fiscal years 1971 and 1972, and the estimate for fiscal year 1973.

General GLASSER. I will be glad to.

(The information follows:)

[Dollars in thousands]

Project and title	Fiscal year 1971	Fiscal year 1972	Fiscal year 1973 estimate
06CL: AF propulsion laboratory operations	$6,037	$7,837	$7,988
3012: Ramjet technology	4,122	4,074	4,556
3048: Fuels lubrication and hazards	3,188	3,145	2,549
3066: Gas turbine technology	8,520	7,850	8,748
3141: Electric propulsion	515	200	0
3145: Power generation technology	5,238	5,464	5,219
Totals	27,620	28,570	29,060

Chairman ELLENDER. How much of the total requested for aerospace propulsion is used for work performed in Air Force facilities?

General GLASSER. The $7.988 million requested for project 06CL, laboratory operations, funds the work performed at the aeropropulsion laboratory. The balance of the requested funds will be used for contracts with industry in support of the laboratory mission.

Senator YOUNG. Of the total requested, $8 million is for the support of the Air Force propulsion laboratory. Can you give us an idea of the mission of this laboratory?

General GLASSER. The mission of the Air Force aeropropulsion laboratory is to plan, formulate, present and execute exploratory and advanced development programs in such areas as air breathing, electric, and advanced propulsion, fuels and lubricants, and flight vehicle power; conduct inhouse research to maintain a high level of technical competence; act as focal point for information in the assigned technical areas; execute assigned projects for and work with the Army, Navy, NASA, ARPA, and other Government agencies; and support programs and insure the rapid application of research and technology to advanced systems.

Senator YOUNG. How many civilian employees are there at the propulsion laboratory, and how much of the total requested is for their compensation and benefits?

General GLASSER. Three hundred and four civilians are employed at the Air Force aeropropulsion laboratory; $5.3 million is for their compensation and benefits.

Senator YOUNG. How many military personnel are assigned to the laboratory?

General GLASSER. There are 56 military personnel assigned to the aeropropulsion laboratory.

Chairman ELLENDER. Please comment on the need for the $490,000 increase requested for aerospace propulsion.

General GLASSER. The requested increase in funds for aerospace propulsion is required to pay the civilian salary increase and to allow an increase in the gas turbine technology effort. A small increase in advanced propulsion systems for aeronautical vehicles is planned.

AEROSPACE AVIONICS

Chairman ELLENDER. $47.2 million is requested for the continuing exploratory development program entitled "Aerospace Avionics." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

AEROSPACE AVIONICS

CATEGORY: EXPLORATORY DEVELOPMENT

Description.—This program provides electromagnetic technology and devices for the command, control, navigation, penetration aids, and defense of aerospace vehicles and for the military mission of reconnaissance and weapon delivery. This includes inertial and celestial instruments and subsystems for navigation and guidance, airborne terminals for secure satellite communications, active and passive electromagnetic warfare devices such as expendable decoys, jammers and chaff, radars for navigation, reconnaissance and weapon delivery and the development and application of large scale integrated circuits. This program also provides for the operation and management of the Air Force Avionics Laboratory at Wright-Patterson Air Force Base, Ohio.

Work performed by.—The Air Force Avionics Laboratory, Wright-Patterson Air Force Base, Ohio, manages the work performed under this program. Some of the major contractors are: the University of Michigan, Ann Arbor, Mich.—twelve contracts worth $7.8 million for high resolution radar, infrared, electronic warfare technology and target signature data analysis; the Goodyear Aerospace Corp., Akron, Ohio, and Litchfield Park, Ariz.—five contracts worth $6.1 million for satellite antennas, electronic warfare signal processing, high resolution radar, and real time digital radar data processing; Charles Stark Draper Laboratories, Cambridge, Mass.—two contracts worth $3.6 million for advanced inertial sensors and guidance techniques; North American Rockwell Corp., Los Angeles and Anaheim, Calif.—fifteen contracts worth $3.1 million for long wavelength infrared space surveillance detectors, large scale integrated circuits, radar antennas and radomes, and inertial components; Radio Corp. of America, Princeton, N.J., and Burlington, Mass.—seventeen contracts worth $2.3 million for high resolution electronic cameras and displays, high power solid state devices, avalanche diodes and other electronic devices; Hughes Aircraft Corp., Culver City, Calif.—twenty-one contracts worth $1.9 million for radar, optical and infrared sensors and data processors; Data Corp., Dayton, Ohio.—five contracts worth $1.8 million for photo and data systems analysis; Raytheon Co., Bedford, Mass.—ten contracts worth $1.6 million for inertial and electromagnetic guidance, components and techniques; Systems Research Laboratories, Dayton, Ohio—seven contracts worth $1.4 million for laser measurement and evaluation for reconnaissance and evaluation of electronic warfare techniques; and the Sperry Rand Corp., Great Neck, N.Y.—nine contracts worth $1.3 million for infrared sensors, computers and laser guidance techniques.

Fiscal year 1972 program.—The work covers the spectrum from formulative investigations to development of hardware for feasibility demonstration. Some efforts are being pursued in all of the technical areas previously mentioned. A few of the specific efforts underway are: (1) A multispectral forward looking infrared sensor optimized for use with air to surface infrared seekers. This is a two year effort costing approximately $0.2 million in fiscal year 1972 and $0.1 million in fiscal year 1973. (2) A two year effort to develop modulation techniques for low-cost expendable jammers. The anticipated cost is $160,000 in fiscal year 1972 and $140,000 in fiscal year 1973. (3) An eighteen month development to investigate the concept of miniature photographic reconnaissance subsystems for drones. Both 35 and 70 millimeter cameras will be evaluated. This program is expected to cost $450,000 of which $350,000 is fiscal year 1972 monies. (4) A two year program to develop a wideband width traveling wave tube in the higher airborne radar frequency bands for electronic countermeasures. This will cost approximately $100,000 in both fiscal year 1972 and fiscal year 1973.

Fiscal year 1973 planned program.—The program will continue in all of the technical areas outlined above. A few examples of specific items to be procured are: Solid state microwave generation and amplification devices for airborne radar and communications, $0.35 million; an airborne [deleted] antenna for secure communication between aircraft and satellite, $0.5 million; electro-optical flat plate displays for television, infrared and radar sensors to replace bulky cathode ray tubes, $0.30 million; and a multifunction microwave antennas to reduce the number presently needed in a weapon system, $0.10 million.

Program to completion.—This is a continuing program.

Resources (in millions of dollars):

R.D.T. & E. funds for fiscal year 1971, $44.9; fiscal year 1972, $46.9; fiscal year 1973, $47.2; additional funds to completion are continuing; and the total estimated cost not available.

AEROSPACE AVIONICS

Chairman ELLENDER. Will you please provide for the record a listing of the projects funded under this program, the amounts for each for fiscal years 1971 and 1972 and the estimate for fiscal year 1973?

General GLASSER. Yes, sir.

(The information follows:)

[In thousands of dollars]

Project No.	Title	Fiscal year— 1971	1972	1973
OSCQ	Air Force avionics laboratory operations	12,440	14,645	16,100
6090	Avionic data handling technology	875	884	800
6091	Avionic system design techniques	605	872	1,100
6095	Inertial reference and guidance technology	1,663	1,780	1,800
6096	Electronic device and circuit technology	1,766	2,205	2,100
6098	Microwave device and circuit technology	1,824	1,805	1,600
6099	Radar and microwave technology	2,481	2,538	2,200
6100	Laser technology	2,806	2,616	2,500
6102	Electro-optical technology	2,035	2,353	2,000
6103	Target signatures and phenomena	1,759	1,310	1,200
7622	Tactical weapon delivery	1,594	2,507	2,400
7629	Strategic and defensive weapon delivery	2,460	1,997	2,400
7633	Electronic passive countermeasures	2,050	2,209	2,000
7636	Microwave active countermeasures	2,169	2,689	2,600
7644	Electro-optical active countermeasures	1,832	1,529	1,500
7645	Aerospaceborne reconnaissance subsystem development	2,776	2,300	2,100
7646	Reconnaissance/surveillance photographic technology	845	600	500
7660	Space surveillance and intercept technique	1,218	1,107	1,300
7662	Avionic data transmission and reception	1,742	994	1,000

Senator YOUNG. Of the total requested for Aerospace Avionics, I note that $16.1 million is for the support of the Air Force avionics laboratory. Could you comment briefly on the mission of this laboratory.

General GLASSER. The Air Force avionics laboratory, located at Wright-Patterson Air Force Base, Ohio, is responsible for exploratory and advanced programs concerned with navigation and guidance, weapon delivery and fire control, reconnaissance and aerospace surveillance, aerospaceborne communications, electronic countermeasures, and avionic devices and techniques. They support the systems divisions in the Air Force systems command in preparing the specifications for and monitoring the development of avionics subsystems.

Chairman ELLENDER. How many civilian employees are there at the avionics laboratory, and how much of the $16.1 million requested is for their compensation and benefits?

General GLASSER. There are 542 civilian employees at the Air Force avionics laboratory, and $13.1 million is for their compensation and benefits.

Chairman ELLENDER. How many military personnel are assigned to this laboratory?

General GLASSER. There are 105 military personnel assigned to this laboratory.

Chairman ELLENDER. I note that the funds requested for the support of this laboratory have increased each year since fiscal year 1971. In fiscal year 1971, $12.4 million was provided, in fiscal year 1972, $14.6 million was provided, and for fiscal year 1973, you are requesting $16.1 million. Will you explain to the committee the reason for these increases?

General GLASSER. In addition to the increased payroll as a result of general civil service pay raises, the Avionics Laboratory is in the process of moving a large percentage of the personnel into the second section of a new facility. This requires increased expenditures for purchasing new laboratory equipment, moving existing equipment, and additional maintenance costs.

Senator YOUNG. Can you give us an estimate of how much of the $47.2 million requested for Aerospace Avionics is for work to be performed in Air Force facilities?

General GLASSER. Approximately $15.1 million is for work to be performed in Air Force facilities.

ADVANCED AIRCRAFT PROPULSION

Chairman ELLENDER. $15.8 million is requested for continuation of the advanced development program entitled "Advanced Aircraft Propulsion." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

ADVANCED AIRCRAFT PROPULSION

CATEGORY: ADVANCED DEVELOPMENT

Description.—This program provides for the demonstration of advanced propulsion system design concepts to insure their timely low risk application into future aircraft systems. Previously this work was accomplished under the Aircraft Propulsion Subsystem Integration (APSI) PE 63202F and Advanced Turbine Engine Gas Generator (ATEGG) PE 63216F programs, which are now separate projects under this program. This consolidated program now has the responsibility for the advanced development of the entire propulsion system. This includes the aerodynamic interface with he aircraft created by the interaction with the inlet and nozzle flow field, and the individual and integrated

performance of major propulsion system components (inlet, compressor, combustor, turbine, afterburner, nozzle, and control systems). The components being developed will provide the basis for increased performance, improved stability, reduced weight, lower cost, and greater airflow-matching potential in future propulsion systems. The work in this program will not only provide the cirtical technology baseline for future system development, but will provide an important data source for insuring the early resolution of any integration or performance problem encountered during system development.

Work performed by.—The current contractors involved in this effort include: Boeing Company, Seattle, Washington; Engine Cycle-Exhaust System Integration. Detroit Diesel Allison Division of General Motors, Indianapolis, Indiana; Advanced Turbine Engine Gas Generator and Advanced Fan Aerodynamics. Garrett Corporation, Phoenix, Arizona; ATF–3 Development. General Dynamics Corporation, Fort Worth Division, Fort Worth, Texas; Airframe-Inlet Interaction and Supersonic Inlet Development. General Electric, Evendale, Ohio; Advanced Turbine Engine Gas Generator, Propulsion Simulator, and Advanced Turbofan Component Integration. Lockheed California Company, Burbank, California; Airframe Nozzle Interaction. McDonnell-Douglas Corporation, St. Louis, Missouri, Engine Cycle Exhaust System Integration. Pratt and Whitney Aircraft Division of United Aircraft Corporation, East Hartford, Connecticut; Advanced Turbine Engine Gas Generator, Applied High Temperature Technology and Fan Stability and Performance. Teledyne Continental Aviation and Engineering, Toledo, Ohio; Advanced Turbine Engine Gas Generator.

Fiscal year 1972 program.—Turbine engine components will be tested to demonstrate increased performance and efficiency. As an example, a turbine capable of running at [deleted] will be tested. This compares to less than 2500° F. in current engines. Work will be completed on two separate programs investigating the effects of the interaction of the inlet and nozzle flow with the aircraft flow field. Also in fiscal year 1972, the Garrett model ATF–3 turbofan engine was tested at altitude under the Advanced Turbine Engine Gas Generator program. More details are given in the project descriptions.

Fiscal year 1973 planned program.—The development of an advanced composite fan and a high temperature power turbine compatible with the gas generator core engine in development will continue. This work will integrate the component development efforts under the APSI and ATEGG projects and demonstrate a new baseline of turbine engine technology. The ATF–3 turbofan development program will be completed in fiscal year 1973 with altitude and sea level endurance testing for flight test qualification. A program, based on the results of previous efforts, will be started to improve and integrate the techniques used to predict propulsion system installation performance. More details are given in the project descriptions.

Program to completion.—This is a continuing program to support systems development and insure advanced performance and airframe/propulsion compatibility.

Resources (In millions of dollars:)

R.D.T. & E. funds for fiscal year 1971, $17.0; fiscal year 1972, $21.9; fiscal year 1973, $15.8; additional funds to completion are continuing; and the total estimated cost is not available.

ADVANCED AIRCRAFT PROPULSION

Chairman ELLENDER. I note that the $15.8 million requested is for the support of two projects entitled "Aircraft Propulsion Subsystem Integration" and "Advanced Turbine Engine Gas Generator." Could you briefly describe these two projects?

General GLASSER. The aircraft propulsion subsystem integration project develops the design criteria, analytical methods, and turbine engine component technology to optimize airframe/propulsion system performance and assure stable operation over the complete flight envelope. Specifically, development work is required on inlets, fans, power turbines, afterburners, nozzles, engine installations, and propulsion system controls. The advanced turbine engine gas generator project develops the advanced turbine engine components in the core

of the engine and tests these components as an integrated unit. These components are the high pressure compressor, the combustor and the high pressure turbine. The integrated testing of these components provides a realistic assessment of advanced technology for future engines.

Senator YOUNG. $8.2 million was provided in fiscal year 1972 for the aircraft propulsion subsystem integration project, and only $4.8 million is requested for fiscal year 1973. Would you tell us the reason for this substantial reduction in funds requested?

General GLASSER. Higher priority requirements for our R.D.T. & E. funds have forced us to reduce our efforts in this area. The fiscal year 1973 funds will be allocated within the project to insure a balanced program.

Chairman ELLENDER. $13.7 million was provided in fiscal year 1972 for the advanced turbine engine gas generator project, and $11 million is requested for fiscal year 1973. Why has there been a reduction of some $2.7 million in funds requested for this project?

General GLASSER. The reduction of $2.7 million in the advanced turbine engine gas generator project is because of other more pressing demands for our development funds in other areas.

Senator YOUNG. How much of the total requested for advanced aircraft propulsion is for work to be performed in Air Force facilities?

General GLASSER. The funds requested are entirely for contracted efforts.

ADVANCED AVIONICS FOR AIRCRAFT

Chairman ELLENDER. $21.9 million is requested for the continuing advanced development program entitled "Advanced Avionics for Aircraft." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

ADVANCED AVIONICS FOR AIRCRAFT

CATEGORY: ADVANCED DEVELOPMENT

Description.—This program element provides improved avionics for weapon delivery. This program element is a combination of Avionics for Navigation/Guidance/Weapon Delivery (formerly PE 63203F), Aircraft Navigation System Verification (formerly PE 65708F), Air-to-Air Identification of Non-Cooperative Targets (formerly PE 63742F), and the Electronically Agile Radar (Project 1206). Promising techniques developed under the Advanced Devices Project (Project 698CK, PE 63203F) are quickly incorporated into radar systems development work of the Advanced Avionics Project (Project 698DF, PE 63203F). Similarly, inertial navigation systems, developed under the Advanced Aircraft Navigation Project (Project 666A, PE 63203F), provide instantaneous velocity vectors for weapon delivery schemes developed by the Advanced Avionics Project. Performance of navigation systems is verified by test at the Central Inertial Guidance Test Facility (CIGTF). Equipment to provide positive identification of airborne targets during all weather conditions is developed under the Identification Project (Project 1177, PE 63203F). See the supporting descriptive summaries on Advanced Avionics, Advanced Aircraft Navigation, and Electronically Agile Radar for additional details.

Work performed by.—The Air Force Avionics Laboratory, Wright-Patterson Air Force Base, an organization of Air Force Systems Command, is the program manager for all projects in this program element except the Navigation Systems Verification Project. The Central Inertial Guidance Test Facility, Holloman Air Force Base, an organization of the Air Force Systems Command, manages the verification of navigation systems performance. Contractors include Litton Systems, Inc., Woodland Hills, Calif., for the Close Air Support System; Honey-

well Inc., Minneapolis, Minn., for the close-in, air-to-air missile guidance effort; Hughes Aircraft, Culver City, Calif., and Autonetics, Anaheim, Calif., for the Forward Looking Advanced Multimode Radar (FLAMR); Westinghouse, Baltimore, Md., for Low Light Level TV; Microwave Associates, Burlington, Mass., for high power phase shifters needed in radar arrays; and TRW, Redondo Beach, Calif., for large scale integration (LSI) application to high speed logic circuits and analog-to-digital converters.

Fiscal year 1972 program.—Development of the Reliable Advanced Solid State Radar continued; the solid state weapon delivery analog computer was flight tested by the Navy in conjunction with their Angle Rate Bombing System (ARBS) tests. Microelectrostatic gyros were fabricated and tested to support development of a low cost, medium accuracy micronavigator. Flight testing of the all-weather Close Air Support System (CLASS) continues. Tests were continued on the forward Looking Advanced Multimode Radar (FLAMR) to demonstrate improved performance and versatility. The design of dual-mode air-to-air identification equipment was started. The Electronically Agile Radar (EAR) phase zero analysis to identify the system design based upon cost of ownership, reliability, maintainability, nuclear hardness and performance trades was completed. The increased funding is a result of consolidating program elements 63742F and 65708F into 63203F, and the initiation of the Electronically Agile Radar project.

Fiscal year 1973 planned program.—Test and refinement of the Reliable Advanced Solid State Radar will continue. Van tests of the low cost, medium accuracy micronavigator system will continue. Forward Looking Advanced Multimode Radar flight tests (which support the Electronically Agile Radar) will be completed. Testing of candidate inertial navigation systems will continue at the Central Inertial Guidance Test Facility. The C–141 test bed aircraft used by the Central Inertial Guidance Test Facility will be equipped with a Completely Integrated Reference Instrumentation System. Design and fabrication of experimental dual-mode air-to-air identification equipment will be completed, and evaluation of its performance conducted. The EAR phase one will be initiated to continue the cost of ownership analysis, complete the detail design of the EAR system, and fabricate and test high-risk components.

Program to completion.—This is a continuing program.

Resources (In millions of dollars:)

R.D.T. & E. funds for fiscal year 1971, $16.7; fiscal year 1972, $20.0; fiscal year 1973, $21.9; additional funds to completion continuing; and the total estimated cost is not available.

ADVANCED AVIONICS FOR AIRCRAFT

Chairman ELLENDER. Would you please provide a listing of all projects funded under this program, the amounts for each for fiscal years 1971 and 1972 and the estimate for fiscal year 1973?

General GLASSER. Yes, sir.

(The information follows:)

[In millions of dollars]

	Fiscal year 1971	Fiscal year 1972	Fiscal year 1973
Advanced devices	3.8	3.9	2.6
Advanced aircraft navigation	3.0	3.4	3.0
Navigation systems verification	1.0	1.1	0.5
Air-to-air identification of noncooperative targets		2.5	2.0
Advanced avionics	8.9	7.5	7.7
Electronically agile radar		1.6	6.1
Total	16.7	20.0	21.9

Chairman ELLENDER. Of the total requested, I note that $7.7 million is for a project entitled "Advanced Avionics." Could you tell us how this project is related to the development of aircraft such as the F–15, the B–1, and the A–X?

General GLASSER. The advanced avionics project supports the F–15, B–1, and A–X. The objective of the advanced avionics project is to demonstrate advanced components and subsystems to improve the weapon delivery capability of Air Force aircraft. Sensors in the visual, infrared and radar spectral regions (for target detection, recognition, and acquisition) are tested and integrated into air-to-air and air-to-ground advanced weapon control systems. These weapon control systems have potential application to the F–15, B–1, and A–X aircraft and yield increased accuracy and/or reduced size, cost, and complexity. For example, the missile guidance element could provide the F–15 and B–1 with improved air-to-air missile guidance (all-aspect, long-range, downlook capability). The close air support system is a low-cost, highly accurate all weather air-to-ground weapons delivery system with potential application to the A–X, should the need be established to so equip a portion of the A–X force. The forward looking advanced multimode radar is demonstrating the component technology (such as digital doppler signal processor and high power tube) and component integration which has application to the B–1, as well as other advanced attack aircraft.

Senator YOUNG. Of the $21.9 million requested for advanced avionics for aircraft, $6.1 million is for the project entitled "Electronically Agile Radar." I note then, in fiscal year 1972, only $1.6 million was provided for the project. Please comment on this very substantial increase requested for fiscal year 1973.

General GLASSER. The fiscal year 1972 effort consisted solely of engineering analysis and trade-off studies to determine the most cost-effective definition of the electronically agile radar. The fiscal year 1973 effort, however, will consist of the detailed engineering design of the system and the fabrication and test of selected components. Discrepancies discovered during testing of the selected components will be corrected by modifying the detailed design.

FLIGHT VEHICLE SUBSYSTEM CONCEPTS

Chairman ELLENDER. $15 million is requested for the continuing advanced development program entitled "Flight Vehicle Subsystem Concepts." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

FLIGHT VEHICLE SUBSYSTEM CONCEPTS

CATEGORY: ADVANCED DEVELOPMENT

Description.—This program element supports the development and demonstration of new aeronautical technology. Advances in aeronautical technology which will be applied in the solution of operational problems are demonstrated and evaluated. Areas of principle investigation are flight dynamics, flight control, landing gear technology, and related aeronautical subsystems. Program goals include improved aircraft performance, reduced weight, improved survivability, reduced cost, and increased operational capability. The individual projects included under this line item are: *Survivable Flight Control System* (*SFCS*) which will develop and flight test/demonstrate on an F–4 aircraft an all-electrical (fly-by-wire), redundant flight control system with integrated control surface actuators; *Air Cushion Landing System* (*ACLS*) is an international cooperative project with the Canadian Government to develop and flight test/demonstrate on an operationally-sized aircraft (De Havilland C–8 Buffalo), the revolutionary

new air cushion landing gear concept; *Transonic Aircraft Technology (TACT)* is a joint project with NASA which will demonstrate increased aircraft combat maneuverability by flight testing an aluminum supercritical wing on an F–111 aircraft; *Controls Configured Vehicle (CCV)* which will demonstrate the significant performance improvements and aircraft weight reductions that can be achieved by utilizing advanced flight control techniques in the design of future aircraft systems; *Tactical Airlift Technology (TAT)* which will develop the Air Force STOL and V/STOL technology base to support the development of the STOL prototype transport, the Advanced STOL Transport, and future V/STOL tactical fighter and rescue aircraft.

Work performed by.—The Air Force Flight Dynamics Laboratory, an organization of the Air Force Systems Command, Wright Patterson AFB, Ohio, has program responsibility. Primary contractors include: McDonnell-Douglas Corporation, St. Louis, Missouri, Survivable Flight Control System (SFCS); Lear Siegler, Incorporated, Grand Rapids, Michigan, (SFCS); Sperry Flight Systems, Phoenix, Arizona, (SFCS); Bell Aerospace Systems, Buffalo, New York, Air Cushion Landing System (ACLS); General Dynamics, Fort Worth, Texas, Transonic Aircraft Technology (TACT); Boeing, Wichita, Kansas (CCV); McDonnell-Douglas Corporation, St. Louis, Missouri, (CCV); General Dynamics, San Diego, California, (TAT); Boeing, Seattle, Washington, (TAT); North American Rockwell, Los Angeles, California, (TAT).

Fiscal year 1971 and prior accomplishments.—Flight testing of the SFCS integrated servo-actuator package was successfully completed and the performance requirements were exceeded. Canadian/Air Force ACLS Project Agreement was signed and the contractors began working. Contracts were awarded for the start of the bomber/transport phase of the CCV project and for the initiation of the TACT project. The STOL aircraft configuration study contracts were awarded under the Tactical Airlift Technology (TAT) project.

Fiscal year 1972 program.—The first phase of the flight test program for the Survivable Flight Control System (SFCS) fly-by-wire system will be completed. The development of the stabilator and rudder integrated actuators will be completed and compatibility testing will be initiated. Development and fabrication of the Air Cushion Landing System (ACLS) air bag will be completed. Modification of the C–8 aircraft to accept the ACLS will be completed. The design of the Transonic Aircraft Technology (TACT) supercritical wing will be completed. Component tests will be performed and wing fabrication will be initiated. Under the Controls Configured Vehicle (CCV) program, one of the four control concepts to be demonstrated for bomber/transport application will be installed in the test aircraft. The design analysis of the CCV control system for the tactical fighter portion of the program will be initiated. Under the Tactical Airlift Technology (TAT) project, the analytical portion of the STOL aircraft configuration studies will be completed and small scale wind tunnel testing of selected configurations will be conducted.

Fiscal year 1973 planned program.—In fiscal year 1973 contractor flight testing of the Survivable Flight Control System (SFCS) will be completed. An operational evaluation of the system by the Air Force will then be conducted. Contractor flight testing of the Air Cushion Landing System (ACLS) will be initiated and the overwater tests will be completed. The design and fabrication of the lateral axis integrated actuator package will be initiated. The joint Air Force/Canadian operational evaluation of the ACLS will commence. The fabrication of the TACT supercritical wing will be completed. The wing will be static tested and then installation on the F–111 test aircraft will be initiated. Three of the four parts of the bomber/transport portion of the CCV project will be completed. Engineering design of the flight control system for the tactical aircraft portion of the project will be completed. The small scale wind tunnel test of different STOL transport configurations will be completed.

Program to completion.—This is a continuing Program Element. As promising new technology is demonstrated to be feasible in the solution of military problem areas, new projects to exploit new capabilities will be initiated. The SFCS, CCV, ACLS and TACT (Transonic Aircraft Technology) projects will be completed in FY 75.

Resources (in millions of dollars):

R.D.T. & E. funds for fiscal year 1971, $16.5; fiscal year 1972, $20.0; fiscal year 1973, $15.0; additional funds to completion are continuing; and the total estimated cost is not available.

FLIGHT VEHICLE SUBSYSTEM CONCEPTS

Chairman ELLENDER. Please provide a listing of the projects funded under this program, the amounts for each for fiscal years 1971 and 1972 and the estimate for fiscal year 1973.

General GLASSER. Yes, sir.

(The information follows:)

[In millions of dollars]

	Fiscal year 1971	Fiscal year 1972	Fiscal year 1973
(a) Survivable flight control system	7.2	4.7	1.7
(b) Air-cushion landing system	1.6	2.8	1.7
(c) Transonic aircraft technology	2.4	5.7	5.7
(d) Tactical airlift technology	3.0	3.9	.9
(e) Controls configured vehicle	1.0	2.9	5.0
(f) Total inflight simulator	.9	0	0
(g) Critical atomspheric turbulence	.4	0	0
	16.5	20.0	15.0

Senator YOUNG. I note that $20 million was provided for this program in fiscal year 1972, and as I stated, you are requesting only $15 million for fiscal year 1973. Does this reduction in funds requested indicate the completion of some major efforts, and if so, what are these major efforts?

General GLASSER. The $5 million reduction in the fiscal year 1973 request indicates that we were unable, because of fiscal constraints, to initiate any new projects in fiscal year 1972 or fiscal year 1973, and that the majority of the ongoing projects are nearing completion. The survivable flight control system program and the air cushion landing system program have passed through the high cost hardware development stage. Fiscal year 1973 activities for these two programs will primarily be directed at the test and evaluation of the systems. The tactical airlift technology program is being phased down in fiscal year 1973 because of other STOL technology related programs.

Chairman ELLENDER. Of the total requested, I note that $5.7 million is for a project entitled "Transonic Aircraft Technology." Please comment on the objectives and status of this program.

General GLASSER. The objective of the transonic aircraft technology program is to evaluate and demonstrate the tactical advantages of the supercritical airfoil. Specific items to be demonstrated include increased aircraft maneuverability, increased lift capability, and increased range in the transonic flight regime. Detailed design of the supercritical wing has been completed. The performance of the wing has been verified by wind tunnel tests, and over 65 percent of the engineering design drawings have been released. Tooling for the wing is being set up and fabrication has begun. The wing is scheduled to be completed in December 1972.

Chairman ELLENDER. I also note that, of the total requested, $5 million is requested for a project entitled "Controls Configured Vehicle." This is an increase of $2.1 million over the sum provided for fiscal year 1972. Will you comment on the objectives and status of this project and the need for the increase that is requested?

General GLASSER. The objectives of the controls configured vehicle project is to demonstrate improved aircraft performance through the application of advanced flight control concepts. These concepts will be applied to two classes of aircraft; bomber/transport and the fighter. For the bomber/transport class the ability to reduce the weight of future aircraft by 15–25 percent will be demonstrated. For the fighter aircraft, improved maneuverability, weapon delivery capability and reduced weight will be demonstrated. The bomber/transport portion of the program was initiated in September 1971. Design of the first of four specialized control systems will be completed in June 1972. Flight testing will commence in December 1972 and will be completed in December 1973. The contract for the fighter portion of the programs was finalized in April 1972. The flight control system fabrication and aircraft modification will be completed in December 1973. The first flight is scheduled for March 1974. The program will be completed in March 1975. The fiscal year 1973 funding increase in the program is to support the major portion of the control system fabrication, aircraft modification, and part of the testing program for the controls configured bomber/transport. Additionally, the controls configured fighter effort will move into the detail design and hardware fabrication phase in fiscal year 1973. These factors have increased the cost of the fiscal year 1973 program over the fiscal year 1972 program.

AEROSPACE STRUCTURAL MATERIALS

Chairman ELLENDER. $12 million is requested for the continuing advanced development program entitled "Aerospace Structural Materials." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

AEROSPACE STRUCTURAL MATERIALS

CATEGORY: ADVANCED DEVELOPMENT

Description.—The objective of this program is to develop high strength, high modulus, filament reinforced composite materials for aircraft, missile and space vehicle structures and propulsion systems; and to demonstrate integrated and improved structural design methods, fabrication processes, and evaluation techniques for full size aircraft strutcural assemblies utilizing the latest metallic materials. The composite materials portion of the program includes development of filaments for improved strength, reliability, and reduced cost; efficient combination of filament with suitable matrix material; and fabrication of a limited number of prototype structural components to demonstrate the engineering and economic feasibility of composites. The metallic materials portion of the program is a new effort that began in fiscal year 1972 and involves designing, building, and testing aircraft structures such as a wing carry-through structure using the latest alloys of titanium, steel and aluminum.

Work performed by.—Project 69CW, Advanced Composites, is managed by the Air Force Materials Laboratory (AFML), Wright-Patterson Air Force Base, Ohio. All work performed in the composites program is by contract. Contracts range in length from six months to four years with an average near three years. The largest contractors are: McDonnell Douglas Coporation, St. Louis, Missouri, for the development of a flight test composite wing based upon the F–15 design ($3.3 million); General Dynamics Corporation, Fort Worth, Texas, for the development of a prototype aircraft center fuselage section based upon the F–5 design ($1.2 million); Grumman Aerospace, Bethpage, Long Island, New York, for the development of a second generation (30 to 40 percent weight savings) proto-

type wing torque box ($0.7 million); and United Aircraft Corporation, East Hartford, Connecticut, for the development of improved boron filaments and the development of prototype jet engine components such as compressor blades, discs, etc. ($.5 million). Project 486U, Advanced Metallic Structures, is managed by the Air Force Flight Dynamics Laboratory (AFFDL), Wright-Patterson Air Force Base, Ohio. The largest contractors are: Boeing Company, Seattle, Washington; Lockheed Georgia Company, Marietta, Georgia; and General Dynamics Corporation, Fort Worth, Texas, ($.5 million each) for the development of new design concepts for advanced bomber wing carry-through structures.

Fiscal year 1972 program.—Project 69CW, Advanced Composites—A F–100 wing with boron reinforced epoxy skins is being assembled for static test late in fiscal year 1972. Rig and actual engine tests of jet engine compressor blades made from metal and high temperature plastic matrix composites are being conducted. A four year program has been initiated to design, fabricate, ground test and flight test a full scale prototype wing based upon the F–15 design. Project 486U, Advanced Metallic Structures—This program is a new start in fiscal year 1972. Conceptual design studies have been initiated to identify promising advanced structural concepts for bomber wing carry-through structures, fighter wing structures and cargo/tanker structures.

Fiscal year 1973 planned program.—Project 69CW—Static and fatigue testing of the F–5 center fuselage made from composites will be conducted. Preliminary and detail design phases of the F–15 composite wing will be completed, as will fabrication of the initial static test articles. Project 486U—A specific new structural concept will be selected as a result of current studies for the detail design phase for the advanced bomber wing carry-through structure. Preliminary design phases will be completed for an advanced fighter wing structure and a critical (from a structural integrity standpoint) cargo/tanker structure.

Program to completion.—Continuing program.

Resources (in millions of dollars):

R.D.T. & E. funds for fiscal year 1971, $11.6; fiscal year 1972, $13.9; fiscal year 1973, $12.0; additional funds to completion are continuing; and the total estimated cost is not available.

Aerospace Structural Materials

Chairman Ellender. Will you give us a brief description of the two projects being funded under this program?

General Glasser. The objective of Project 69CW, advanced composites, is to develop high strength, high modulus, filament reinforced composite materials for aircraft, missile, and space vehicle structures and propulsion systems; and to demonstrate design methods, fabrication processes, and evaluation techniques for full size aircraft structural assemblies utilizing these materials. The program includes development of filaments for improved strength, reliability, and reduced cost; efficient combination of filament with suitable matrix material; and fabrication of a limited number of prototype structural components to demonstrate the engineering and economic feasibility of composites.

Project 486U, advanced metallic structures, involves design, fabrication, test, and evaluation of aircraft primary structures that utilize the latest material and structural technologies and represent those most likely to be utilized in advanced Air Force systems. The assemblies to be investigated include wing carry-through structures, empennage-fuselage structures, landing gear-fuselage structures, and inlet-diffuser structures. Recent structural failures in current Air Force systems indicate that the accomplishment of such a program as described above will significantly reduce the risk of structural failures in future systems.

Senator Young. I note that, in fiscal year 1972, $13.9 million was provided for this program, and for fiscal year 1973, you are requesting

only $12 million. Please comment on the factors which led to this reduction.

General GLASSER. The $13.9 million of fiscal year 1972 funds will fund some efforts, particularly the advanced metallic structures project, beyond the end of this fiscal year. In response to congressional direction and the new Air Force policy on phasing funding with fiscal year performance, the fiscal year 1973 request was reduced to $12 million without a change in scope of effort.

SUBSONIC CRUISE ARMED DECOY

Chairman ELLENDER. $48.6 million is requested for the continuation of the development of SCAD, the subsonic cruise armed decoy. Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

SUBSONIC CRUISE ARMED DECOY (SCAD)

CATEGORY: ADVANCED DEVELOPMENT

Background.—Today the Soviet Air Defense system comprises an estimated [deleted] aircraft control and warning (ACW) radars, 1,200 to 1,500 surface-to-air missiles (SAMs) and about 1,800 to 2,300 fighters available for Strategic air defense purposes. A primary tactic for bombers penetrating area defenses is a mass attack to dilute the defenses and provide mutual support between the bombers. Complementary systems are (1) Electronic Countermeasures (ECM) to degrade defenses and decoys to dilute the area defenses, and (2) short-range attack missiles (SRAM) to defeat surface-to-air missiles (SAM) which cannot be vaoided. The Quail our current decoy for the B–52 must be replaced with a better decoy at the earliest possible date. The SCAD with longer range and an electronic avionics package to stimulate B–52s to the current and future enemy radars will cause defense resources to be committed against SCADs that would otherwise be concentrated against bombers. The desired Initial Operating Capability (IOC) for the SCAD system is not geared to the forecast of a postulated Soviet defense system. The SCAD is needed as soon as possible against the current threat and is expected to remain effective against even more advanced threats.

Description.—SCAD characteristics have been selected to obtain the simplest design at the least cost that will provide an effective decoy against area defenses. To achieve a high level of confusion of defenses, the SCAD will employ radar cross-section augmentors and jamming devices to simulate the characteristics of the electronic signature of the bomber whether the bomber is jamming or running silent. SCAD will have maximum commonality with the Short Range Attack Missile (SRAM) with respect to carriage features of the B–52 G/H aircraft. It will be designed for launch from either external pylons or the internal SRAM rotary rack, and will thus be constrained in size, shape and function by the permissible envelope provided by the rotary rack. While sized to fit the SRAM rotary rack, the air vehicle will be initially tested and certified for external carriage on the B–52. It will also be designed to accept, with minimum modification, improvements in range and the later incorporation of a warhead with associated improved guidance. The basic SCAD design is not to inhibit later adaptability to the B–1. The program is being constructed to provide competition for the award of subsystem development contracts and competitive development of a suitable engine.

Characteristics:

Length x Diameter (in)—168 x 21
Weight (lbs)—1700
High Altitude Range (NM)/Mach—About [deleted]
Low Altitude Range (NM)/Mach—Approximately [deleted]
Electronics Payload—Augmentors & Jammers [deleted]
Warhead (Optional)—[deleted]
Nominal Carriage—10–12 per B–52/B–1

Work performed by.—The Aeronautical Systems Division of the Air Force Systems Command, Wright-Patterson AFB, Ohio, has primary management responsibility. The following contractors have been involved in past activities:

Preliminary missile design studies: The Boeing Company, Seattle, Washington; Beech Aircraft Corporation, Wichita, Kansas; Lockheed Aircraft Corp., Sunnyvale, California.

Decoy electronics preliminary designs: Philco-Ford Corp., Newport Beach, California; Raytheon Company, Santa Barbara, California.

Electronic warfare payload studies & credibility development: Cornell Aeronautical Laboratory, Buffalo, New York.

Preliminary engine experimental activity: Williams Research Corp., Walled Lake, Michigan.

High density fuel studies: Garrett Corporation, Phoenix, Arizona.

Systems engineering/technical assistance (SE/TE): Cornell Aeronautical Laboratory, Buffalo, New York.

Fiscal year 1972 program.—Preliminary system design and development of performance specifications continued. Requests for Proposals (RFPs) for SCAD components and subsystems were prepared for release upon passage of the fiscal year 1972 Appropriations Bill. Contracts for airframe, engine, SE/TA, and studies of range extension and arming will be awarded in calendar year 1972.

Fiscal year 1973 planned program.—Subsystem contractors will perform on an associate basis with integration functions retained by the Air Force. Major fiscal year 1973 tasks include detail design, component fabrication, wind tunnel testing, and engine development. The airframe contractor will be responsible for accomplishing hardware assembly and supporting subsequent system testing.

Program to completion.—Operating/supporting command participation directed toward determining operational suitability will continue in concert with the development program. Scheduling of appropriate demonstration milestones and production approval is contingent upon success of hardware demonstration and program funding approval.

MILESTONES

Event	Milestone date	Estimated cost to reach milestones (millions)
1. RFP release	February 1972	0
2. Proposal receipt	March 1972	0
3. Source selection evaluation	June 1972	0
4. Approval of sources by source selection authority	do	0
5. Subsystem contract award	do	$17.0
6. Airframe contract award and critical design review, engine altitude demonstration, decoy breadboard.	July–December 1973	27.3
7. Airframe element integration, critical design review of navigation/guidance, decoy breadboard simulation start fabrication of carrier aircraft equipment.	January–June 1973	61.8

Note: Outlays in fiscal year 1973 represent efforts through July 31, 1973, and the delay in billing procedures.

Resources (in millions of dollars:)

R.D.T. & E. funds for fiscal year 1971 and prior, $9.7; fiscal year 1972, $10.0; fiscal year 1973, $48.6; additional funds to completion, $200; and the total estimated cost is $268.3.

SUBSONIC CRUISE DECOY

Chairman ELLENDER. Just how will the SCAD be used in connection with the short range attack missile that is being developed to be carried on the B–52s?

General GLASSER. SCAD and SRAM are complementary systems. The principal purpose of SCAD is to help our bombers penetrate the more sophisticated Soviet area defenses. The SCAD will achieve this purpose by duplicating the flight mode of the carrier aircraft and presenting a bomber-like target to the enemy against which he will have to commit his defensive weapons. On the other hand, SRAM is a

short range, high speed missile which can attack and destroy selected targets. With SCAD being designed for maximum compatibility with SRAM equipment, the bomber's mission profile can be enhanced by the carriage of either the decoy, the missile or the appropriate mix.

Senator YOUNG. On page 138 of the descriptive summary, I note the following statement, "The basic SCAD design is not to inhibit later adaptability to the B–1." Would you please elaborate on this statement?

General GLASSER. The B–52 must carry the primary strategic bomber responsibility until the B–1 is deployed in substantial quantities; hence, the decision to build initially a decoy for the B–52 which can be modified later for use with the B–1. We, therefore, intend to design SCAD initially for the B–52, while at the same time including as many features applicable to the B–1 as are presently known and not likely to change. There will be no attempt then to follow the various B–1 design evolutions. When the B–1 design becomes sufficiently firm, and a production decision has been made, a single modification for SCAD can be devised to adapt it to the B–1.

Senator YOUNG. On page 39, under the heading "Characteristics," I note a reference to the SCAD warhead. Is this an existing warhead, or is there some development work involved in the warhead?

General GLASSER. The reference under "Characteristics" is not to an existing warhead. While an existing warhead may prove to be a cost effective starting point, we anticipate that development work will be necessary to provide the SCAD warhead.

Chairman ELLENDER. Comment on the major efforts included in your planned program for fiscal year 1973 for the SCAD.

General GLASSER. In fiscal year 1973, we plan to accomplish the design effort and ground testing of components to permit completion of the critical design reviews of the airframe, engine, navigation/guidance, and decoy electronics package subsystems. Also, studies will be conducted to determine the new equipment for the carrier aircraft and the modification of present short range attack missile equipment to meet SCAD requirements.

Senator YOUNG. Under the current schedule, when do you expect the SCAD to be operational?

General GLASSER. The SCAD development program is not geared to the specific Initial Operational Capability (IOC) date. However, we expect to have accumulated sufficient data in the flight test program to permit a production decision approximately mid-fiscal year 1975. This production decision date would then allow an operational capability in fiscal year [deleted].

Senator YOUNG. I note that the current total estimated cost of R. & D. for the SCAD is $268.3 million. How does this compare to the total estimated cost given to the committee last year?

General GLASSER. The current total estimated cost of R. & D. for the SCAD system is less than the estimate given to the committee last year. Because of program changes and an intensive examination of the costs associated with present program planning, last year's R. & D. estimate of $279.1 has been reduced to $268.3 million.

Chairman ELLENDER. Under your current schedule, when will the Congress have to consider a production decision on SCAD?

General GLASSER. The earliest possible production decision point as the program is now structured is December 1974.

Chairman ELLENDER. Under your current plan, what is your total estimated program acquisition cost for the SCAD system?

General GLASSER. The total estimated program acquisition cost for the SCAD system is $873 million.

ADVANCED AERIAL TARGET TECHNOLOGY

Chairman ELLENDER. $4.7 million is requested for the continuing advanced development program entitled "Advanced Aerial Target Technology." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

ADVANCED AERIAL TARGET TECHNOLOGY

CATEGORY: ADVANCED DEVELOPMENT

Description.—This program develops and demonstrates new targets including scoring devices and improved radar and infrared augmentation systems to upgrade future aerial target presentations. Success in this program will improve our ability to evaluate air-to-air weapon systems and related components. Present effort includes the tri-service High Altitude Supersonic Target (HAST). HAST will provide a manueuvering target capable of speeds up to Mach 4.0 at altitudes up to 100,000 feet and satisfies tri-service requirements for a supersonic high altitude target.

Work performed by.—HAST management is provided by the Air Force Armament Laboratory, Armament Development and Test Center, Eglin Air Force Base, Florida. *Beech Aircraft Corporation*, Wichita, Kansas is the prime contractor. *United Technology Center*, Sunnyvale, California is the propulsion subcontractor. *Military Electronics Division, Motorola*, Scottsdale, Arizona is providing the radar augmentation and vector scoring and *Ordnance Research Inc.*, Fort Walton Beach, Florida, the IR augmentation.

Fiscal year 1972 program.—The HAST vehicle design/fabrication phase initiated in fiscal year 1971 continues. Efforts include flight weight propulsion assembly and test, propulsion system certification, initiation of vehicle fabrication, and design and modification of aerospace ground equipment. The first article HAST vehicle will undergo ground test and system design flight tests will be initiated to verify vehicle performance. Development of augmentation and scoring for HAST will continue with fabrication and demonstration of prototype augmentation subsystems during this time.

Techniques for droning existing fighter type surplus aircraft such as the F–102 will be investigated and evaluated. This will provide a much needed low cost realistic target to support development and operational evaluation of air-to-air missile systems.

Fiscal year 1973 planned program.—In fiscal year 1973 the HAST vehicle design/fabrication phase will be completed and will furnish the target vehicles for the flight test phase of the program. Radar and infrared augmentation and vector scoring development will be completed in fiscal year 1973 and integrated into flight test vehicles and demonstrated. The HAST system demonstration is scheduled to start in the fourth quarter of fiscal year 1973. HAST development is scheduled to be completed in June 1973.

Program to completion.—Production of HAST will be initiated in fiscal year 1974. Advanced avionics and vector scoring developed under the HAST program will be integrated into current targets and provide for more effective missile evaluation. Development of a low-cost, subsonic full size maneuvering target will be initiated. This target will utilize low cost non-aircraft methods of construction and low cost propulsion concepts. It is expected that this target will become the work horse target for O.T. & E. and Weapon System Evaluation Program and with HAST provide for more effective air intercept missile evaluation in the post fiscal year 1975 time period.

Resources (in millions of dollars):
R.D.T. & E. funds for fiscal year 1971, $4.3; fiscal year 1972, $4.8; fiscal year 1973, $4.7; additional funds to completion, continuing; and total estimated cost is continuing.

ADVANCED AERIAL TARGET TECHNOLOGY

Senator YOUNG. Will you give us a brief description of the high altitude supersonic target which is being developed under this program?

General GLASSER. During the fiscal year 1970 budget cycle, D.D.R. & E. requested the Air Force to formulate a program with the Army and Navy to satisfy triservice requirements for a high altitude supersonic target (HAST). HAST is a maneuverable target capable of operation within an envelope extending from mach 1.2 at 40,000 feet to mach 4.0 at 100,000 feet of altitude. It is propelled by a hybrid rocket motor utilizing a solid fuel and liquid oxidizer. The rocket motor is throttleable and provides for efficient fuel management in the boost and cruise phase of operation. HAST is a recoverable, reuseable target which is designed around a modular concept for easy repair and refurbishment after recovery. HAST will be provided with advanced augmentation and scoring. The radar augmentation will simulate the gross and fine structure of a missile or fighter threat aircraft. The vector miss distance scorer being developed for HAST will evaluate air-to-air missile guidance and fuzing and furnish data for warhead lethality assessment. It is expected that the augmentation and scoring being developed in the HAST program will be adopted to other targets when development is completed.

Chairman ELLENDER. In last year's hearings, we were told that you expect to make a production decision on this target in June 1973. On page 143 of the descriptive summary, there is a statement, "Production of HAST will be initiated in fiscal year 1974." It would appear that you have already made a production decision before the development and test program on this target is complete. Could you comment on this?

General GLASSER. The production decision has not been made on the high altitude supersonic target (HAST). HAST flight test will be initiated in July 1972, the D.T. & E. phase will be completed by July 1973. An O.T. & E. will be run concurrently in the later phase of the test program. The production decision is planned for June 1973. If the flight test data is favorable, it is expected that production will be initiated in fiscal year 1974, otherwise the production will be delayed.

A–X AIRCRAFT

Chairman ELLENDER. $48.1 million is requested for the continuation of the Air Force's A–X close air support aircraft that we discussed earlier. Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

A–X AIRCRAFT

CATEGORY: ADVANCED DEVELOPMENT

Background.—As a result of a Close Air Support Study conducted in 1966, the Chief of Staff of the Air Force directed that action be taken to develop a new aircraft specialized for the Close Air Support (CAS) mission. In 1967,

four aerospace companies completed studies of the CAS mission for the Air Force. These contracted studies established a better understanding of the CAS mission so that later, more definitive studies would (1) determine the optimum set of aircraft performance parameters, (2) identify the avionics and weaponry essential to satisfactory performance of the CAS tasks and (3) define the resultant aircraft. The aircraft defined as a result of the above efforts, the A–X (Attack—Experimental), will have the capability to: (1) operate from forward airstrips near the supported ground forces; (2) air loiter close to the battle area for extended periods of time with a meaningful payload of ordnance; (3) provide the friendly ground forces immediate aerial fire support.

Description.—The A–X is a new, single place, twin turbofan aircraft specifically designed for the CAS mission. High survivability is a primary design objective. It will have an austere basing capability. It will have a high velocity, rapid fire, 30mm internal cannon for increased effectiveness and can carry up to 16,000 lbs of external ordnance at speeds ranging from 120 knots to about 400 knots. It will takeoff and land on 1,000 ft. forward airstrips with up to 6,500 lbs. of useful load. The A–X is presently in the Validation Phase and a competitive prototype development concept is being implemented. Northrop was selected to design and manufacture two prototype aircraft, designated the A–9A; similarly, the Fairchild Industries, Republic Division was selected to build two prototypes, designated the A–10A. These aircraft will be flown and evaluated in a competitive environment. [Deleted] wings are planned for the attack mission and will be incorporated into the inventories of the Tactical Air Forces and the Air National Guard. Last year, the A–X was reported under P.E. 64211F, A–X Aircraft.

Work performed by.—This program is managed by the A–X System Program Office, Aeronautical Systems Division, Wright-Patterson Air Force Base, Ohio. The prime contractors are Northrop Corp., Aircraft Division, Hawthorne, Calif., for the A–9A Aircraft, and Fairchild Industries, Republic Division, Farmingdale, Long Island, N.Y., for the A–10A Aircraft.

Fiscal year 1972 program.—In July 1971, the first formal program reviews were successfully completed. Wind tunnel testing led to a final design configuration freeze for the A–10A in August and the A–9A in September 1971. Egress system testing is on-going and scheduled for completion early in 1972. Cockpit armor was tested and successfully withstood direct hits by 23mm High Explosive Incendiary (HEI) antiaircraft artillery rounds. Preparations for testing the A–X fuel system against the 23mm HEI threat are continuing. Final assembly of major components of both the A–9A and A–10A will be completed early in 1972. The second formal program review will be held in January 1972. The engine programs are on schedule, and deliveries are expected to support first flight of the A–9A and A–10A in June 1972. Both contractors' flight test programs will be conducted at Edwards AFB, Calif. To insure availability of fully qualified engines to support flight testing during Full-Scale Development, separate contracts will be let to GE and Lycoming for developing the engines from preliminary to fully qualified status.

Only the winning engine will be carried into the A–X Full-Scale Development program. No schedule or cost changes occurred during fiscal year 1972.

Fiscal year 1973 planned program.—Both contractors will complete the flight test programs and deliver the prototype aircraft to the Air Force in October 1972. The Air Force will evaluate each aircraft in terms of aerodynamic performance, operational suitability and logistic supportability. Technical and cost proposals for Full-Scale Development/Production will be received and evaluated. Testing of the A–X fuel systems against the 23mm anti-aircraft artillery rounds will be completed by December 1972. Source selection, which considers the prototype flyoff results and evaluation of the technical and cost proposals, will be completed in February 1973. The winning airframe and engine contractors will enter Full-Scale Development/Production in late February 1973. The final design process for the production configuration A–X will be initiated. The design for production tooling will be frozen and procurement for the tooling initiated. Components for the R.D.T. & E. aircraft will be ordered. The critical design review will be held late in fiscal year 1973. Engine development efforts for full qualification will be continued.

Program to completion.—The engineering development program will continue into fiscal year 1976. This program includes manufacturing the flight test aircraft, structural testing, development testing, and initial operational testing and evaluation. Initial production funding is planned in January 1974 and, pending further testing results, a full production go-ahead is planned for May 1974.

Significant cost, schedule and other R.D.T. & E. changes.—No significant changes have occurred in the costs and schedule. The fiscal year 1973 Planned Program includes the $7.6M to complete the Competitive Prototype Phase (CPP) and $40.5M to initiate Full-Scale Development. The Additional to Completion of $152.1M will be applied to Full-Scale Development efforts. The Total Estimated cost of $277.1M includes $84.5M for the CPP and $192.6M for Full-Scale Development efforts through completion of R.D.T. & E.

[In millions]

	Date	CUM R.D.T. & E.
Major development and testing milestones:		
Begin prototype flyoff	October 1972	$83.0
Complete prototype flyoff	December 1972	83.7
Award full-scale development/production contract	February 1973	84.5
Initial production funding	January 1974	166.1
Full production go-ahead	May 1974	193.5
Engine qualification, complete	October 1974	219.1
First flight	January 1975	231.0
Category I, test complete	December 1975	264.1
Category II, test complete	[deleted]	277.1
Initial operational capability	[deleted]	277.1

Resources (in millions of dollars:)

R.D.T. & E. funds for fiscal year 1971 and prior, $29.9; fiscal year 1972, $47.0; fiscal year 1973, $48.1; additional funds to completion, $152.1; and total estimated cost is $277.1.

A–X AIRCRAFT

Chairman ELLENDER. How much of the $48.1 million is required to complete the competitive prototype phase of the A–X program, and how much is included for the full-scale development of the airframe, and how much is included for the full-scale development of the engine?

General GLASSER. We will require $7.6 million to complete the A–X competitive prototype phase. The remainder of the fiscal year 1973 request is $40.5 million which will be used to initiate A–X full-scale development. Of this amount, $31.0 million will be used for airframe development and $9.5 million will be used for engine development.

Senator YOUNG. As I understand the tabulation on page 147 of the descriptive summary, you expect to award the full-scale development and production contract in February 1973. Is this correct?

General GLASSER. Yes, sir; that is correct. We plan to award the full-scale development contract in February 1973 and will include production options for a limited quantity, if the program is approved.

Senator YOUNG. Am I to understand that you expect to enter into only one contract for full-scale development and production of this aircraft?

General GLASSER. No, sir. A final procurement approach has not been determined. As a minimum, we plan to use a fixed price type contract to acquire the A–X full-scale development effort and a limited quantity of production aircraft. This approach will provide the cost visibility to enable us to establish realistic firm prices for the remainder of production aircraft procurements.

Chairman ELLENDER. Under your current schedule, do you expect to ask for production funds for this aircraft in the budget for fiscal year 1974?

General GLASSER. Yes, sir. As you know, we have requested fiscal year 1973 funds to initiate full-scale development of the A–X in addi-

tion to completing the competitive prototype phase. We have done this because we are confident that we will be able to meet the A–X performance and cost goals; hence, we expect to initiate A–X full-scale development in February 1973. Similarly, we will be requesting production funds for the A–X in the fiscal year 1974 budget. If OSD approves the A–X for production, these funds will enable us to exercise the first production option in May 1974.

Chairman ELLENDER. What is the estimated cost of this program through the completion of the competitive prototype phase?

General GLASSER. $84.5 million.

LIGHTWEIGHT FIGHTER PROTOTYPE

Chairman ELLENDER. $46 million is requested for the continuation of the lightweight fighter prototype development program. Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

LIGHTWEIGHT FIGHTER PROTOTYPE

CATEGORY: ADVANCED DEVELOPMENT

Background.—The Lightweight Fighter (LWF) prototype program resulted from the Air Force Prototype Study completed in August 1971. The entry of the LWF into the prototype study was motivated by several aircraft contractors' unsolicited proposals and by the desire to maintain competitive fighter design teams in industry. The design and performance objectives evolved from considerable contractor and Air Force trade-off studies into methods of optimizing fighter performance in a lightweight, low-cost airframe. In addition to the airframe development, an advanced engine development, already started under contractor funding, is being pursued under this program element through flight certification tests. This development program will provide an alternative engine for possible use in the LWF. This engine, developed by General Electric Co., can give the airframe designer an option for either a single or a twin engine LWF prototype.

Description.—The Lightweight Fighter prototype is an attempt to demonstrate in hardware the technology leading to a low-cost, high thrust to weight fighter aircraft combining an optimum combination of new aerodynamic concepts and design ideas in a prototype program in advance of stated operational requirements. The program is intended to demonstrate the contribution and utility of these concepts in flight test to reduce reliance on theoretical studies and analyses, to lessen technological risk and uncertainty, and to provide decision makers with options for future fighters based on demonstrated hardware.

The advanced engine development program is to continue development testing on the YJ 101–GE–100 engine through Flight Demonstration Tests. The YJ 101 is an advanced, high thrust to weight engine in the 14,000 lb thrust class. It is a low bypass, augmented, turbojet engine, configured to minimize fuel consumption in the high power ranges of the engine. The detailed design of the engine began in March 1970 and the program has proceeded to date using contractor funding.

More detailed information on the aircraft and engine is contained in the attached Descriptive Summary for each project.

Work performed by.—Five contractors have expressed an intent to respond to the Request for Proposal which was released on January 6, 1972. They are Boeing, Seattle, Washington; General Dynamics, Fort Worth, Texas; Lockheed, Burbank, California; LTV Aerospace, Arlington, Texas; and Northrop, Hawthorne, California. In addition, other major airframe contractors have been solicited. Two contractors will be selected in March or April 1972.

General Electric Co., Lynn, Massachusetts, is developing the YJ 101 engine. The engine program management will be under the Air Force Aero Propulsion Laboratory, Dayton, Ohio.

Fiscal year 1972 program.—The LWF program will start with selection of two contractors in the 4th quarter. Conceptual aircraft designs will be completed.

Two engine sets will be fabricated and fifty hours of engine core testing will be accomplished.

Fiscal year 1973 planned program.—The LWF aircraft will complete detailed design and wind tunnel testing and begin fabrication and assembly.

The two YJ 101 engines will accumulate 1,000 hours of testing including inlet distortion, turbine cooling, vibration, and endurance testing.

Program to completion.—The LWF aircraft will complete fabrication, and a 12 month, approximately 300 hour developmental and initial operational flight test will be conducted.

The engine testing will be completed through Flight Demonstration Test by September 1973 so that the engine could be available, if selected by the airframe contractor, for the LWF flight test.

Resources (in millions of dollars):

R.D.T. & E. funds for fiscal year 1971 and prior, not available; fiscal year 1972, $6.0[1]; fiscal year 1973, $46.0[2]; additional to completion, $65.0; total estimated cost is $117.0.

LIGHTWEIGHT FIGHTER PROTOTYPE

Chairman ELLENDER. I note on the tabulation on the project listing on page 22 of the justifications that the fiscal year 1972 program is stated at $6 million. Wasn't there an emergency fund transfer associated with this effort?

General GLASSER. There was a transfer of $3 million from emergency funds for the fiscal year 1972 program to initiate development of an advanced turbine engine for lightweight fighter application.

Senator YOUNG. As I understand the material in the descriptive summary, the total estimated cost of this prototype effort is $117 million, of which $6 million is associated with the development of the engine. Is this correct?

General GLASSER. The total estimated cost of this prototype effort is $117 million, of which $11 million is associated with development of the engine.

Senator YOUNG. Is this aircraft to have one or two engines?

General GLASSER. Two fighter designs will be selected for prototyping. Both single and twin engine configurations are competing. Because we are in a source selection process at this time, the winning configurations have not been determined. It is possible that both a single and a twin engine design will be selected.

Chairman ELLENDER. What engines are being considered for use in the lightweight fighter prototype?

General GLASSER. Two engines are being considered for this program, the Pratt and Whitney F100–PW–100 engine and the General Electric YJ–101 engine.

Chairman ELLENDER. On page 148 of the descriptive summary, I note the following statement:

> The Lightweight Fighter Prototype is an attempt to demonstrate in hardware the technology leading to a low cost, high thrust to weight fighter aircraft combining an optimum combination of new aerodynamic concepts and design ideas in a prototype program in advance of stated operational requirement.

If there is no stated operational requirement for this aircraft, just what is to be gained from this effort?

General GLASSER. By undertaking this program in advance of a stated operational requirement, the Air Force intends to demonstrate in hardware at relatively low cost the contribution and utility of ad-

[1] Excludes a request for $4.0 million for engine development from emergency funds.
[2] Includes $6.0 million for engine development.

vanced aerodynamic concepts thereby reducing our reliance on paper studies and analyses, lessening technical risks and uncertainties, and providing decisionmakers with several options for application to future fighter development. As a corollary objective, this program will retain competitive fighter design teams in industry.

Senator YOUNG. I note on page 149 you state that five contractors have expressed an intent to respond to the request for proposals with respect to this program. How many of these will be selected to compete in this program, and how many aircraft will be built by each competitor?

General GLASSER. Two contractors will be selected, and two aircraft will be built by each contractor. There is no intent, at this time, to compete one aircraft against the other in a competitive flyoff.

ADVANCED STOL TRANSPORT

Chairman ELLENDER. $46 million is requested for the continuation of the development of the advanced STOL transport prototype aircraft. Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

ADVANCED SHORT TAKEOFF AND LANDING TRANSPORT

CATEGORY: ADVANCED DEVELOPMENT

Background.—The Advanced Short Takeoff and Landing (STOL) Transport prototype program resulted from the Air Force prototype study completed in August 1971. The prototype program could provide a development option for Tactical Airlift modernization. The Advanced Development prototype concept will place more reliance on the performance of hardware and less reliance on paper analysis. This concept will permit evaluating both the feasibility and utility of vehicles and propulsion systems in advance of production commitments.

Description.—The objectives of the Advanced Short Takeoff and Landing (STOL) transport program are: (1) design, fabricate, and evaluate a prototype transport which will demonstrate in hardware new technology which after additional engineering development will provide a low cost development option for the modernization of the Tactical Airlift Force, (2) obtain visibility and costs associated with short field performance and define STOL operational rules and related design criteria. The Advanced Turbofan Engine program will develop the test demonstrator engines that are designed for the Advanced STOL Transport if a development option is required. The demonstrator engines will be in the 25,000 lb. thrust size. The engine is compatible with either the externally blown flap or mechanical flap plus vectored thrust concept.

Work performed by.—Responses to the Request for Proposals (RFP) for the STOL transport prototype are anticipated from: (1) Boeing Co., Seattle, Wash.; (2) Fairchild Industries, Hagerstown, Md.; (3) General Dynamics (Convair Division), San Diego, Calif.; (4) Lockheed-Georgia, Marietta, Calif. A formal Request for Proposal for the Advanced Turbofan Engine will be issued to: Detroit Diesel Allison Division of General Motors, Indianapolis, Ind.; General Electric Co., Evendale, Ohio; Pratt & Whitney Aircraft Division, East Hartford, Conn.

Fiscal year 1972 program.—A Request for Proposal was issued 24 January 1972, and contract award is planned for late May 1972 for the Advanced STOL Transport Prototype. The conceptual design for the Advanced STOL Prototype will be initiated in this fiscal year. The contractor proposals for the Advanced Turbofan Engine will be evaluated and contracts awarded to two contractors by May 1972. During this period the basic designs and manufacturing drawings for the turbofan engine will be refined. Initial procurement of test hardware for the turbofan engine demonstrator will be started.

Fiscal year 1973 planned program.—The conceptual design and preliminary design for the prototype will be completed this fiscal year. Major component test-

ing for the Advanced Turbofan Engine will be started this fiscal year. These tests will be conducted for the fan, the fan/compressor combination, the turbine and the combustor. The final demonstrator design will be completed and hardware for the gas generator procured.

Program to completion.—The first flight is scheduled for early fiscal year 1974 and flight testing will be completed in fiscal year 1975. For the Advanced Turbofan Engine first full-scale engine testing will occur in fiscal year 1974. Later testing will be concerned with verifying overall engine cycle performance. Each contractor is expected to complete 150 hours of demonstrator testing.

Milestones.—Exact program schedules will be established after source selection at which time milestones and thresholds for each contractor will be determined.

Resources (In millions of dollars.)

R.D.T. & E. funds for fiscal year 1971 and prior, none; fiscal year 1972, 11.8[1]; fiscal year 1973, 46.0[2]; additional to completion, 212.2; total estimated cost, 270.0.

ADVANCED STOL TRANSPORT

Chairman ELLENDER. I am a little confused by the dollars provided in fiscal year 1972 for this program. As I recall, the appropriation act provided $6 million, and there is a request of $5.8 million in the pending fiscal year 1972 supplemental request for a total of $11.8 million. Wasn't there an emergency fund transfer associated with this effort during fiscal year 1972?

General GLASSER. Congress approved a $6 million fiscal year 1972 program for initiation of the STOL aircraft prototype development and stated that it should be a competitive procurement. The $5.8 million fiscal year 1972 supplemental request was for the additional funds necessary to initiate the competitive approach. The supplemental has since been withdrawn and resubmitted as a fiscal year 1973 budget amendment. With regard to the emergency fund transfer, the Air Force originally proposed to OSD a transfer of $4 million to initiate in fiscal year 1972 a new, improved propulsion system for the STOL transport. In deliberations with director of defense research and engineering, the emergency funds transfer request was reduced to $3 million. The Air Force requirement is still valid, but the transfer request has not yet been formally submitted to Congress.

Senator YOUNG. How much of the $46 million associated with this effort for fiscal year 1973 is associated with the development of the airframe, and how much is associated with the development of a new engine?

General GLASSER. Of the $46 million, $30 million is associated with the airframe and $16 million with the engine.

Chairman ELLENDER. As I understand the information in the descriptive summary, the current total estimated cost of this prototype development is $270 million, of which $70 million is for the development of the engine. Is this correct?

General GLASSER. Yes, that is correct.

Senator YOUNG. Is there a stated military requirement for this aircraft?

General GLASSER. Tactical Air Command has submitted a required operational capability for a medium STOL transport to replace the

[1] $5.8 million of fiscal year 1972 supplemental request for the advanced STOL prototype is included in this figure. Also $4.0 million of emergency funds have been requested for the advanced turbofan engine and are not included here. A total of $6.0 million has been approved for the advanced STOL prototype in fiscal year 1972.

[2] $16.0 million is programed for the advanced turbofan engine—STOL. An additional $40.0 million for the advanced STOL transport will be required in fiscal year 1973 to support a competitive effort to satisfy the intent of Congress.

C–130. The design/performance goals specified therein are very similar to those specified in the request for proposals for advanced STOL transport prototypes which were released to industry.

Senator YOUNG. Is it correct to assume that this will be a replacement for the existing C–130 aircraft that is our basic tactical airlift aircraft?

General GLASSER. This program will provide a technology base and a development option for the modernization of tactical airlift at reduced risk. However, no commitment is now being made to begin engineering development leading to a production aircraft.

Chairman ELLENDER. With respect to the development of the airframe, I note that you had six contractors to express an interest. How many contractors will be selected to compete in this program, and how many aircraft will each build?

General GLASSER. Two contractors will be selected to build two aircraft each.

Chairman ELLENDER. How many contractors will be selected to participate in the engine development program?

General GLASSER. Two contractors.

STALL/SPIN INHIBITORS

Chairman ELLENDER. $1 million is requested for an advanced development program entitled "Stall/Spin Inhibitors". Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

STALL/SPIN INHIBITORS

CATEGORY: ADVANCED DEVELOPMENT

Description.—The Air Force and the National Aeronautics and Space Administration (NASA) will jointly conduct this program. The program consists of a four-pronged attack on the basic problem of aircraft losses due to loss of control at or near stall angles of attack. These types of losses over the last four years have cost the services 226 aircraft, which represents an investment of $367 million. This integrated, comprehensive technology program will place increased emphasis on developing the technology necessary to reduce loss of control from stalls and spins in current high performance aircraft and to provide improved aerodynamic and flight control design criteria for the future design of spin resistant aircraft. Improvements in high angle-of-attack characteristics for high performance aircraft in maneuvering flight will be demonstrated. The program will result in improved analytical design methods, improved testing techniques, and an improved testing capability, all leading to an increased operational capability.

The four parts of this program are: "Stall Inhibitor and Loss-of-Control Prevention System", "Flying Qualities for High Angle of Attack Flight", "Design for Improved High Angle of Attack Characteristics", and "Aerodynamic Design Test Techniques for Near Stall Flight".

Work performed by.—The Air Force Flight Dynamics Laboratory, an organization of the Air Force Systems Command, Wright-Patterson Air Force Base, Ohio has program responsibility. NASA Langley and the NASA Flight Research Center will support and perform a major portion of the testing. Hardware contractors have not yet been selected.

FY 1973 Planned Program.—A stall inhibitor and loss-of-control preventer flight control system will be fabricated and integrated with the existing primary flight control system of the A–7 flight test aircraft. A functional ground checkout will be performed and a detailed flight test program will be formulated.

The flight control system design criteria will be examined through an effort which will survey existing criteria and the suitability of the current military specification requirements for high angle-of-attack flight.

A dynamic balance for use in the 12 foot wind tunnel at NASA Ames Research Center will be designed and built. The balance will allow movement of the wind tunnel models and will be of great value in establishing the expected motions of maneuvering aircraft at high angles of attack.

An analytical effort to evaluate and expand aerodynamic theory suitable for describing high angle-of-attack phenomena will be initiated.

A design study for a new test facility for spin-testing models will be performed. The new facility will allow models with active control systems to be tested.

Program to completion.—The stall inhibitor flight test program will be completed in FY 74. The Flying Qualities, the Design part of the program, and the Aerodynamic Design Techniques will be completed in FY 77.

Resources (In millions of dollars).—RDT&E funds for fiscal year 1971 and prior, none; fiscal year 1972, none; fiscal year 1973, $1.0; additional to completion, $14.5; total estimated cost, $15.5.

Chairman ELLENDER. This seems to be the first year in which funds have been requested for this program. Will you tell us what the major objectives of the program are?

General GLASSER. The major objectives of the stall/spin inhibitor program is to develop technology to reduce stall/spin losses in current high performance aircraft and to provide improved aerodynamic and flight control design criteria for application to future aircaft. The program includes aerodynamic research, flight control system design, and hardware flight evaluation, and the development of improved testing techniques. Improvement in high angle of attack characteristics for high performance aircraft will be demonstrated. Both aircraft configuration and flight control augmentation concepts will be considered in developing criteria for proper stall warnings, delayed loss of control and positive recovery following loss of control.

Chairman ELLENDER. What do you now estimate the total cost of this program will be, and how did you arrive at this figure?

General GLASSER. The total cost of the stall/spin inhibitor program is estimated to be $15.5 million. This cost was arrrived at by dividing the program into four areas: (1) The high-angle of attack safety system, (2) expanded high-angle of attack capability, (3) high-angle of attack design guides and criteria, (4) improved high-angle of attack design tools. Parts 1 and 2 are primarily oriented toward flight control system solutions, while 3 and 4 investigate aerodynamic and model testing techniques. In each area, technology deficiencies were identified and efforts proposed to eliminate or close a portion of these technology gaps. The stall/spin inhibitor program is composed of approximately 27 integrated work efforts which fit into the four areas. The cost of each work effort was estimated and then added together to arrive at the total program cost.

F–4 AVIONICS

Chairman ELLENDER. $5.6 million is requested for the engineering development program entitled "F–4 Avionics." Give us a brief, unclassified description of this program.

General GLASSER. This program is providing for the design, development, and test of the advanced F–4D Wild Weasel, electronic warfare aircraft.

Chairman ELLENDER. I note that, in fiscal year 1972, it was estimated that the total cost of this program would be $30.4 million. Now the

total cost is estimated at $34.1 million. What has caused this increase in the total estimated cost?

General GLASSER. This program was initially planned for only one flight test aircraft. A second flight test aircraft was added to protect against the possibility of a loss of the first aircraft and to allow an operational evaluation of the system by the Tactical Air Command prior to a production decision. This effort required $3.2 million. An additional $0.5 million was added for increased computer memory which will provide for future growth.

F–15 FIGHTER AIRCRAFT

Chairman ELLENDER. The next item is the request for $454.5 million for the continuation of the development of the F–15. Selected paragraphs from the descriptive summary will be included in the record.

(The information follows:)

FISCAL YEAR 1973 R.D.T. & E. DESCRIPTIVE SUMMARY—F–15A

CATEGORY: ENGINEERING DEVELOPMENT

Background.—Tactical Air Command's F–4E is now and has been in recent years our best air-to-air fighter. The F–4 is marginal in air-to-air combat capability with the Soviet MIG–21 "Fishbed" [deleted.] Improved models of the MIG–21 are expected to remain in the Soviet Bloc inventory through 1980, as will three new interceptors: Flagon, Foxbat, and Flogger. The fighter threat for the 1975–1985 time period will range from simple, very maneuverable, day-visual fighters to those with advanced fire control capabilities.

Description.—This program is for the development and acquisition of an advanced air superiority tactical fighter, designated the F–15, for force introduction in the mid-1970's. The F–15 will be a high performance, highly maneuverable fighter, equipped with a balanced mix of air-to-air weapons to provide an outstanding close-in visual, and medium range all-weather kill capability against the postulated air threat. The F–15 will replace the F–4E in the post-1975 era as the primary air superiority fighter in the force structure. Among the significant performance characteristics of the F–15 are a high thrust-to-weight ratio of [deleted] and low wing loading of 66 lbs/ft^2 at take-off. The combat ceiling is [deleted] ft and the basic mission radius is [deleted] nautical miles. In addition, the F–15 has a maximum sea level speed of Mach [deleted] and a maximum burst speed of Mach [deleted] at altitude.

Related activities.—A 25mm caseless ammunition, rapid firing, internally mounted aerial cannon will be developed for use in the F–15 under P.E. #64603F, Improved Aircraft Gun Systems, in fiscal year 1972 and beyond. The M61 Gatling gun will be used in the F–15 until the 25mm gun development is completed. The Tactical Electronics Warfare System for F–15 application will be developed in P.E. #64738F, Protective Systems.

PROGRAM ACCOMPLISHMENTS AND FUTURE PLANS

Fiscal year 1972 program.—Preliminary Flight Rating Test (PFRT) of the F–15 engine is planned to be completed in February 1972. Various system tests are being conducted in fiscal year 1972 to include structural testing of major airframe subassemblies and airframe/propulsion compatibility tests.

Fiscal year 1973 planned program.—First flight of the F–15 is planned for July 1972. The major effort for fiscal year 1973 will be actual flight testing of the aircraft. Two significant program decision points are scheduled in fiscal year 1973. These are production approval (October 1972) for procuring long lead items and authorization (February 1973) for release of production funding for the first wing of aircraft. Several important program milestones planned for completion in fiscal year 1973 are listed below under "Program to Completion." The significant change in the F–15 program total estimated R.D.T. & E. cost since last year's Descriptive Summary is caused almost totally by a $30.6 million increase (impacts fiscal year 1972 through fiscal year 1974) due to Navy failure to exercise its option for F–14B engines under contract with Pratt & Whitney.

MILESTONES

[In millions]

Program to completion	Date	Estimated cost to reach milestones
1. Award total system development contract	January 1970	$170
2. Preliminary design review	September 1970	315
3. Critical design review	April 1971	510
4. Engine preliminary flight rating test (PFRT)	February 1972	890
5. First flight	July 1972	1,030
6. Long-lead release (production approval)	October 1972	1,180
7. Engine qualification test (MQT)	February 1973	1,340
8. First wing full release	do	1,340
9. Fatigue test—3 lifetimes	December 1973	1,580
10. Increase production rate	January 1974	1,590
11. Begin category II tests	March 1974	1,630
12. Fatigue test—4 lifetimes	October 1974	1,700
13. First aircraft to TAC	November 1974	1,705
14. Exercise option for 2d wing	December 1974	1,710
15. Initial operational capability	[Deleted.]	1,730

Resources (In millions of dollars).

R.D.T. & E. funds for fiscal year 1971 and prior, $602.1; fiscal year 1972, $419.9; fiscal year 1973, $454.5; additional to completion, $276.9; total estimated cost, $1753.4.

Military/Civilian Man-Years in Spt of R. & D. (SPO and SPO Spt) fund for fiscal year 1971 and prior, $348[1]; fiscal year 1972, $373; fiscal year 1973, $398; additional to completion, not available; total estimated cost, not available.

Chairman ELLENDER. We have spent a lot of time on the F–15 during the last few days, and I do not have any further questions.

Senator YOUNG. I have nothing further on the F–15, Mr. Chairman.

Chairman ELLENDER. General Glasser, do you desire to add anything on the F–15?

General GLASSER. No, Mr. Chairman. I think it has been pretty well covered.

AIRCRAFT EQUIPMENT DEVELOPMENT

Chairman ELLENDER. $12 million is requested for the continuing engineering development program entitled "Aircraft Equipment Development". Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

AIRCRAFT EQUIPMENT DEVELOPMENT

CATEGORY ENGINEERING DEVELOPMENT

Description.—The objective of this program is to develop, test, and evaluate a wide variety of aircraft subsystem equipments in response to operational needs. The equipment is characterized by installation on or within the aircraft, and used to enhance combat or combat support operational capability. Examples are: the recording equipment for audio/video material to improve pilot training, a radar for hurricane reconnaissance which will provide better information and improved prediction and warning, a leading edge wing slat for the F–4 to achieve improved performance, and application of a radar with terrain-avoidance/terrain following characteristics to rescue helicopter aircraft. Sensors for Weather Reconnaissance Aircraft, P. E. 64716F, is being transferred to this program element, effective with FY 73 budget/program.

Work performed by.—Program management is provided by the Air Force Aeronautical Systems Division, Wright-Patterson AFB, Ohio. The contractors include such companies as Goodyear Aircraft Corporation, Akron, Ohio; B. F. Goodrich, Akron, Ohio; McDonnell-Douglas Aircraft, St. Louis, Missouri; Lockheed Air-

[1] For 1971 only.

craft Corporation, Marietta, Georgia; LTV, Dallas, Texas; Westinghouse Electric Corporation, Baltimore, Maryland; Hughes Aircraft Company, Culver City, California; General Dynamics, Fort Worth, Texas; Bendix Corporation, Teterboro, New Jersey and Montrose, Pennsylvania; Sperry Rand, Phoenix, Arizona; Dynamic Science Corporation, Phoenix, Arizona; Lear Siegler Corporation, Grand Rapids, Michigan; Norden Division of United Aircraft Corporation, Norwalk, Connecticut; Kaiser Corporation, San Francisco, California; Martin Corporation, Orlando, Florida; and Minneapolis-Honeywell, Minneapolis, Minnesota.

Fiscal year 1972 program.—Project number 1126—The collecting of storm data was completed at the end of CY 1971 for the Hurricane Reconnaissance Radar development. The data are being analyzed, system specifications are being prepared, and request for proposals for the radar development will be released in July 1972. Wind tunnel testing is being conducted for radome design. The storm-data instrumentation is being removed from the aircraft.

1145—Prototype units of the Parachute Altitude Sensing System will be available by end of FY 72 for initial testing. The parachute altitude sensing equipment uses a radar signal to open the parachute at a preset height above the ground. This will improve both the delivery accuracy of airdropped supplies and the survivability of the aircraft which will fly at higher altitudes to reduce vulnerability from ground fire.

1197—Development of a replaceable tread tire for C–130 aircraft will apply the technology and concept developed under the exploratory development program for 0–2 aircraft. The new tire will be of a larger size for C–130. The tread is a belt, installed with tire deflated, and held in position by tire pressure. The new tire is expected to reduce maintenance time, storage space, shipping cost, and replace retreading of used casings after successful service tests. Work during this year is in building the tire molds and making of prototype units.

2713—Development of seven new instruments will be started: low cost flight instruments, fluidic engine pressure ratio system, altitude warning system, digital flight director computer, solid state rate gyro sensor, optical sensor for turbine inlet temperature, and digital vertical scale instruments (for altitude and speed). Under low cost flight instruments, fabrication will be completed of the attitude and heading reference units. Flight testing will be started on Vertical Scale standby instruments. The solid state Central Air Data Computer will complete qualification and flight testing will follow. Flight test will begin on the Fluidic Engine Pressure Ratio unit. Equipment design will be completed on the remaining tasks.

3004—Development of process to retread Battle Damage Proof Tires will be completed.

3006—Under Rescue Ranging equipment the LORAN data link component was assembled and satisfactorily completed laboratory evaluation. A field test version will be assembled and tested prior to end of fiscal year 1972.

4366—After fabrication of the installation and mounting structure, testing was done on the [deleted] gun for AC–130 aircraft. Simulation by computer was completed successfully by both Air Force Academy and Honeywell Corporation as a portion of the evaluation of the sight line auto pilot concept. Testing of the auto pilot is scheduled to begin this fiscal year. An additional item of test and evaluation will be a helmet mounted display for target acquisition and reconnaissance from the gunship aircraft.

5047—Commercially available recorders and cameras will be modified and incorporated into a prototype system with engineering services by appropriate contractors. Following fabrication and test of the prototype audio/video recorders by Aeronautical Systems Division and Air Training Command, a procurement package will be prepared and solicitation released for production.

5068—The development of the leading edge slat continued for the F–4E aircraft. Improved performance will result with the slat installed. Trial installation and flight testing will be conducted and static testing of structure will be started.

5069—The prototype Advanced Laser Seeker will be available by end of fiscal year 1972. An A–7 aircraft will be instrumented for testing the Seeker in fiscal year 1973. These low cost units will have operational features to permit use with existing equipment or individually on aircraft such as A–7, A–X, F–4, F–111, and OV–10.

5075—This project will certify the C–141 for full operation of the Container Delivery System for supply or resupply by aerial delivery. Flight testing is scheduled to begin in March 1972 and be completed by end of the fiscal year. Previous work limited the load to nine container units. This project will provide

full certification of 16 containers for more effective operations in support of U.S. Army.

5549—The improved tire and modification of the F–4 anti-skid system, testing of the tire and modified anti-skid unit will be conducted by Air Force Flight Test Center during March thru June 1972 time period.

5551—Development continued on the Terrain-Avoidance/Terrain-Following radar for HH–53 by converting the Army "Cheyenne" system to the requirements of the Air Force Search and Rescue Mission. This calls for changes in pilot display and symbology update. Six months flight testing is underway and will be completed by July 1972.

5610—Electro-explosive Devices will be subjected to validation tests to confirm safety data. Test check the devices for use in path of signals from anti-ballistic missile radars.

6033—The cannister weapon of the defense suppression project will be tested with laser and optical guidance. An area correlator for terminal guidance is planned for development. In fiscal year 1973 this project will be conducted as part of Program Element 64733F.

6040—The sensor development under this project will be completed this fiscal year. An evaluation report will be prepared comparing laboratory and flight test results of current low light level television systems. A large portion of the results of the work conducted under this project has been transferred to the AC–130 Gunship aircraft.

Fiscal year 1973 planned program.—Project number 1126—Wind tunnel testing for radome design will be completed for Hurricane Reconnaissance Radar development. Prototype design will be done; engineering, fabrication, and procurement of long lead aerospace ground equipment will be underway but only partially completed.

1145—The Parachute Altitude Recognition System development will be completed by testing of preproduction versions and certification for procurement and inventory usage.

1197—Development will continue on the replaceable tread tire; laboratory tests will be conducted on the dynamometer to assure safety factors have been met prior to flight testing on the C–130 aircraft.

1208—The first phases of B–52/Harpoon project will be conducted; these will be flight tests to assess equipment performance. Evaluation will be completed on results of target detection tests.

1213—Sensors for Weather Reconnaissance Aircraft, formerly Program Element 64716, will be incorporated into 64212F with start of fiscal year 1973. See the separate summary on this project.

2713—The following six programs will be completed in Advanced Cockpit Instrumentation, Low Cost Flight Instruments, Vertical Scale Standby Instruments, Solid State Central Air Data Computer, Fluidic Engine Pressure Ratio System, Altitude Warning System, and the Solid State Rate Gyro system. The following five new programs will be initiated: Attitude Corrected Fuel Quantity Gauge, Percent Engine Pressure Ratio, Low Cost Vertical Scale Instruments, Digital Round Dial Instruments and Solid State Engine Transducers. Fabrication and operational testing of the Digital Flight Director Computer will be completed. Flight testing will then be initiated. Fabrication of the Digital Vertical Scale Flight Instruments will be completed and qualification tests will be started.

4366—The Gunship test aircraft project will complete the installation development of the 105mm howitzer sight-line auto pilot testing, and evaluation of a helmet mounted display.

5068—Fatigue testing will continue and flight testing will be completed on the F–4E leading edge slat. Additional fatigue testing is planned for fiscal year 1974.

5069—Work on the advanced seeker will be transferred to P.E. 64709F effective fiscal year 1973.

5572—A variable geometry external fuel tank development will be started for application to the F–4 aircraft. The tank reduces in diameter as fuel is used and, because there is no air space to support fire, it has superior survivability characteristics. A new starter, this development will utilize the concept and technology from the tank of the exploratory development program element 62201F.

5610—Final R. & D. will be conducted on Electro-Explosive Devices and necessary modifications will be identified.

Program to completion.—This is a continuing program.

Resources (In millions of dollars).

R.D.T. & E. funds for fiscal year 1971, $15.7; fiscal year 1972, $18.2; fiscal year 1973, $12; additional to completion, continuing; total estimated cost, not available.

AIRCRAFT EQUIPMENT DEVELOPMENT

Chairman ELLENDER. Please provide for the record a listing of the projects funded under this program, the amounts for each for fiscal years 1971 and 1972 and the estimate for fiscal year 1973.

General GLASSER. I will be glad to.

(The information follows:)

[In thousands of dollars]

Element	Project No.	Title	Fiscal year— 1971 actual	1972 estimate	1973 estimate
6.42.12.F		Aircraft equipment development	15,650	18,182	12,000
	1126	Hurricane reconnaissance radar	1,510	950	2,850
	1145	Parachute altitude sensing system		150	350
	1197	Replaceable tread tire for C-130		165	200
	1208	B-52/harpoon			600
	1213	Sensors for weather reconnaissance aircraft	1,900	4,200	3,200
	2713	Cockpit instrumentation and integration	425	300	880
	3004	Battle damage proof tires	25		
	3006	Rescue ranging equipment	300		
	4022	Radar correlation bombing	875	10	
	4366	Gunship test aircraft	300	1,150	700
	4372	F-4E downlook radar	85		
	5047	Audio video recording system	30	150	
	5068	F-4E leading edge slat	6,405	8,300	2,400
	5069	Advanced laser seeker	100	1,650	
	5075	C-141 container delivery		100	
	5549	F-4 tire and antiskid equipment	150		
	5551	Terrain avoid/terrain following radar	350	250	
	5572	Variable geometry external fuel tank			570
	5610	Electroexplosive devices	300	400	250
	6033	Defense suppression	2,695	307	
	6040	Have auger	200	100	

Senator YOUNG. I note that the request for fiscal year 1973 is $6.2 million less than the amount for fiscal year 1972. Does this mean that you have completed some of the major efforts funded under this program? If so, what are these major efforts?

General GLASSER. There are no major efforts scheduled for completion in fiscal year 1972. The request for fiscal year 1973 is less than for fiscal year 1972 because the major item of development cost—the F-4E leading edge slat—has passed the funding peak and is now in a decreasing cost status. The fiscal year 1972 amount for the slat is $8.3 million; the fiscal year 1973 request is $2.4 million. This accounts for $5.9 million of the $6.2 million.

Chairman ELLENDER. One of the projects funded under the aircraft equipment development program is "Hurricane Reconnaissance Radar" for which $950,000 was provided in fiscal year 1972. For fiscal year 1973 you are requesting $2.850 million. What has taken place in this project to bring about the need for such a large increase?

General GLASSER. The increased funding is a result of the planned initiation of a prototype radar development effort in fiscal year 1973. The program through fiscal year 1972 has collected R. & D. data from the hurricane environment by using specially instrumented WC-130's. The data analysis will be completed in fiscal year 1972 and a development contract awarded in fiscal year 1973. The bulk of these funds will be spent on design efforts.

Senator YOUNG. Would you comment briefly on the project entitled "Sensors for Weather Reconnaissance Aircraft" for which you are requesting $3.2 million.

General GLASSER. The Airborne Weather Reconnaissance System (AWRS) is being developed in the "Sensors for Weather Reconnaissance Aircraft" project to upgrade the weather reconnaissance capability of the Air Force. This system will provide more accurate environmental data needed to support worldwide military operations. Also, it will provide improved storm reconnaissance information required by the Air Force-Navy Joint Typhoon Warning Center to forecast typhoons and by the National Oceanic and Atmospheric Administration's National Hurricane Center to forecast hurricanes. The system will gather temperature, pressure, and humidity at flight level and below, and wind speed and direction at flight level, and will process the data for transmission to existing ground-based weather communications equipment. The development phase of the project is scheduled for completion in April 1973.

Chairman ELLENDER. The total requested includes $600,000 for what appears to be a new project entitled "B–52/Harpoon." Would you give us a brief description of this project, and indicate its relation, if any, to the Navy's Harpoon missile development?

General GLASSER. The B–52D/Harpoon project involves studying the interfaces required to adapt the Navy's Harpoon missile to the B–52D aircraft for the purpose of assisting the Navy in the mission of sea control.

Chairman ELLENDER. Please comment on the request of $570,000 for what seems to be another new project entitled "Variable Geometry External Fuel Tank."

General GLASSER. The variable geometry tank will be ready for engineering development in fiscal year 1973. Work on the exploratory development project for the tank has proceeded through design, development, fabrication, and delivery of tanks for testing. Testing of the exploratory development tanks is scheduled for completion this year.

Reducing in diameter as fuel is used, the tank has no airspace to support fire and therefore has superior survivability characteristics. The reduction in size as fuel is used also reduces aerodynamic drag and results in improved range and/or payload capability. Additionally, its reduced size confers supersonic qualities and its high density provides improved jettisoning. Elimination of fuel sloshing problems and center of gravity shifting are inherent with this design.

B–1 BOMBER

Chairman ELLENDER. The fiscal year 1973 request includes $444.5 million for the continuation of the development of the B–1 strategic bomber. Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

B–1

CATEGORY: ENGINEERING DEVELOPMENT

Background.—The need for a manned weapon system for strategic deterrence having long range large payload carrying capabilities and the ability to penetrate and survive an increasingly effective enemy defense has been under active consideration by the Air Force for a number of years. The B–52 has been out of production for some years and modifications to the B–52 to delay obsolescence are

becoming increasingly expensive and difficult. Cos, effectiveness analyses have shown that a replacement for the B–52 should be programmed for the post-1975 time period. The desired capabilities for this replacement weapon system, the B–1, have been studied in great detail, and the most desired characteristics have been identified.

Description.—The B–1 will be able to operate from continental U.S. bases against any potential aggressor through the full spectrum of nuclear or non-nuclear conflict. The B–1 engineering development program will provide for design, fabrication and test of three airplanes plus one fatigue airframe. Pertinent characteristics are as follows:

T.O. gross weight (lb.)	360,000
T.O. dist. over 50 ft	[Deleted]
Obstacle (SLS) (ft.)	[Deleted]
Max. speed high alt/low alt (kts.)	[Deleted]
Max. internal payload (lb.)	75,000
Max. external payload (lb.)	40,000
Max. SRAM payload (int/ext)	24/8
Wing span (ft.) (unswept)	137
Length (ft.)	150
Number of eng./max. thrust (lb.)	4/[deleted]
Radius/range (NM) unrefueled	[Deleted]
High altitude subsonic mission:	
With/14,800 lb. payload	[Deleted]
With/50,000 lb. payload	[Deleted]

Work performed by.—This program is managed by the B–1 System Program Office, Aeronautical Systems Division, Wright-Patterson Air Force Base, Ohio. The following are the prime contractors:

1. The System.—North American Rockwell (NR), Los Angeles, California. NR, as the Aircraft/System Integrating Contractor, is responsible for achieving design integrity and has Total System Performance Responsibility for the development of the B–1 Strategic Bomber weapon system. The five largest subcontractors are: AiResearch, Arizona; Rocketdyne, Texas; Radiation, Florida; Hamilton Standard, Conn.; Cleveland Pneumatic Tool, Ohio.

2. Propulsion.—General Electric Company (GE), Flight Propulsion Division, Cincinnati, Ohio. GE is an associated contractor with NR and is responsible for the design and development of the propulsion system.

3. Avionics.—Source selection of avionics contractors now in progress. Contract awards anticipated prior to end of FY 1972.

Fiscal year 1972 program.—As of 1 November 1971, the first two major milestones: Preliminary Design Review and Full-Scale Engine/Airframe Mockup, were successfully completed on schedule. Critical component test efforts for the aircraft and engine design along with design, validation efforts for flight hardware, will continue for the remainder of the current year. Twenty-five subcontracts have been let for either component parts or further development effort. Four additional subcontracts have been identified and will be released prior to 1 Feb 72. The initial purchase of raw materials to fabricate long lead items has begun, and the design and test of the static and fatigue aircraft components are underway. By the end of the year approximately 300 hours of engine runs toward preliminary flight rating will be completed. Four XF–101 engines will be procured. Over 7,200 wind tunnel aircraft and engine test hours will have been completed. An avionics Subsystem Interface Contractor, a RFS/ECM contractor, and an IRS contractor will be selected and placed under contract to begin development of mission critical avionics. Maximum use of off-the-shelf equipment will be used wherever practical. The entire FY 72 effort will require the $370.3M budgeted for FY 1972.

Fiscal year 1973 planned program.—Principal activities to be accomplished: The Design Validation Milestone and Critical Review Milestone; full release of engineering drawings and specs; and all configuration and engine/inlet compatibility wind tunnel tests. Aircraft #1 will be undergoing final assembly and have 75% of its major assembly completed, and aircraft #2 will be in major assembly and be 33% complete; all major subsystems for test aircraft and four XF–101 engines will be delivered; manufacture and test of static and fatigue structural sections and sub-assemblies will continue; the engine Critical Design Review, Design Assurance Review and 1,960 hours of YF–101 engine runs toward preliminary flight rating will be completed. Avionics development will be continued.

Program to completion.—The engineering development program will continue through FY 79. First flight is planned for April 1974. A production decision is not planned until one year after first flight. *Significant Cost, Schedule and Other RDT&E Changes:* The information on costs and schedule provided to the Congress in the FY 72 hearings remains unchanged. The specific amounts for the current program are as contained in the funding section below and result in a 47 month-from contract-to-first flight program.

	Date	CUM R.D.T. & E. (in millions)
Major development and testing milestones:		
Engine preliminary qual complete	October 1973	$1,264.0
Delivery 1st test engine	November 1973	1,290.0
First flight	April 1974	1,759.0
Production go-ahead	April 1975	1,889.0
Engine qual complete	June 1976	2,240.0
Delivery 1st prod engine	February 1977	2,390.0
Delivery 1st prod aircraft	October 1977	2,540.0
Initial operational capability	December 1979	2,618.3

Resources (in millions of dollars) :[1]
R.D.T. & E. funds for fiscal year 1971 and prior, $319.0; fiscal year 1972, $370.3; fiscal year 1973, $444.5; additional to completion, $1,484.5; total estimated cost, $2,618.3.[2]

B–1 Bomber

Chairman Ellender. We discussed this project at length earlier. However, there are some figures that I want to get clear in my mind. As I read the tabulation on page 104 of the descriptive summary, the current total estimated cost of R. & D. for the B–1 is $2,618.3 million. Am I correct about this?

General Glasser. Yes, sir; that is correct.

Chairman Ellender. Through fiscal year 1972, the Congress has provided $689.3 million for the development of the B–1. Is that correct?

General Glasser. Yes, sir; that is correct.

Chairman Ellender. You are requesting $444.5 million for fiscal year 1973, as I stated earlier, which would leave a balance to complete the program after fiscal year 1973 of $1,484.5 million. Is this correct?

General Glasser. Yes, sir; that is correct.

Senator Young. I call your attention to the tabulation on page 184 entitled "Major Development in Testing Milestones." There it is indicated that you expect to have a production decision in April 1975. It is further indicated that the costs of R. & D. up to this point are approximately $1.9 billion. Am I reading this tabulation correctly?

General Glasser. Yes, sir; you are.

Senator Young. Now, if I understand what you are saying, the situation is as follows: The total cost of R. & D. for the B–1 of $2,618.3 million includes $729.3 million for the development and testing of the B–1 that will be required after a production decision is made. Is this correct?

General Glasser. Yes, sir. We are limiting development and testing to that amount actually necessary to make a logical decision on a production go-ahead. If a production go-ahead is approved, additional development and testing will be required.

[1] Cost estimates for fiscal year 1970 and beyond are based on then year dollars.
[2] $10 million below estimate in January 1971 because $10 million has been transferred to PE 65802F, AEDC Base Costs as B–1 program share of AEDC support.

Senator YOUNG. Then, does it follow that, if the Congress does not approve the production of the B–1, it will not be necessary to spend this $729.3 million that is required for R. & D. after a production decision?

General GLASSER. Yes, sir; that is essentially correct. If the production of the B–1 is not approved and the program was completely cancelled, we would be liable for termination costs of approximately $22 million. It would not be necessary to spend the remainder of the $729.3 million. We might, however, recommend to the Congress that we be allowed to complete the development and testing of the B–1 so as to preserve the option to produce it at a later date.

Chairman ELLENDER. I wish you would comment briefly on the major efforts that are included in the planned B–1 program for fiscal year 1973.

General GLASSER. The principal activities to be accomplished in fiscal year 1973 will be the design validation milestone and the critical design review milestone. All engineering drawings and specifications will be released and the first two test aircraft will be in final assembly. Aircraft No. 1 will be 75 percent complete and aircraft No. 2 will be 33 percent complete. All of the major subsystems for the test aircraft and four XF–101 engines will be delivered. Manufacture and test of the static and fatigue structural sections and subassemblies will continue. The engine critical design and design assurance reviews will be completed and 1,960 hours of engine runs toward the preliminary flight rating will be complete. The avionics development effort will continue.

MISSILES AND RELATED EQUIPMENT

Chairman ELLENDER. The next group of projects to be considered are funded under the budget activity entitled "Missiles and Related Equipment" for which $387.4 million is requested for fiscal year 1973. How much was made available for this budget activity in fiscal years 1971 and 1972?

General GLASSER. For prior years, the amounts made available for this budget activity, restructured for comparability with fiscal year 1973, were: $691,509,000 for fiscal year 1971 and $418,063,000 for fiscal year 1972.

Chairman ELLENDER. Please comment on any major reprograming increases or decreases in this budget activity and any emergency fund transfers to this activity during fiscal year 1972.

General GLASSER. There has been no emergency fund transfers to this budget activity in fiscal year 1972. There has been only one major reprograming action in this area. Congress recently approved an increase of $9,100,000 for the advanced ballistic reentry systems, ABRES, program to develop promising technology which could lead to production of a small terminal evader reentry vehicle for use on Air Force and Navy ballistic missiles.

MINUTEMAN SQUADRONS

Chairman ELLENDER. $154.7 million is requested for the continuation of the development and testing of the Minuteman ICBM missile system. Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

MINUTEMAN SQUADRONS

CATEGORY: STRATEGIC FORCES

Background.—The Minuteman weapon system was initially conceived in the late 1950's and it was developed to provide a rapid reaction ICBM that would be storable for long periods of time in underground facilities to provide survivability. Deployment was subsequently authorized and Minuteman has been the prime nuclear deterrent force of the United States for over nine years. It is the cornerstone of the Triad.

Description.—The objective of this program is development and deployment of the Minuteman Intercontinental Ballistic Missile (ICBM) weapon system to achieve the approved force structure of 450 Minuteman II and 550 Minuteman III missiles. It includes development of improvements involving reliability, survivability, and force effectiveness. Minuteman II and III are three-stage solid-propellant ballistic missiles which are guided to their targets by an all-inertial guidance and control system. The missiles are deployed in hardened and dispersed underground silos which are unattended, but constantly monitored by an electronic system manned by two officers located in underground launch control facilities. There is one launch control facility for every ten missiles. The Minuteman III is an improved Minuteman II with a higher performance third stage, and a new post boost vehicle consisting of a post boost propulsion system, the missile guidance set, and the MK–12 Reentry System. With these additional features, this missile can deliver multiple independently targetable reentry vehicles (MIRV) and their penetration aids to multiple targets. The program is described in two Descriptive Summaries. This Summary addresses the overall program and includes the total funding but refers to the Minuteman Force Modernization Summary for specifics on Basic Force Modernization, Upgrade Silo Program, and Command Data Buffer. Important specifics in this summary include the Dust and Debris Program, flight and ground testing including associated on-board instrumentation improvements, Minuteman II Operational Base Launch Program, procurement of Minuteman III Missiles, and R.D.T. & E. effort for Force Modernization (all three parts). Characteristics: [Deleted.]

Work performed by.—The responsible Air Force agency is Air Force Systems Command's Space and Missile Systems Organization, Norton Air Force Base, California. The principal contractors and their responsibilities are: TRW Systems, San Bernardino, California—systems engineering and technical direction. The Boeing Company, Seattle, Washington—assembly and checkout, missile interstages, system testing. North American Rockwell Corporation. Autonetics Division, Anaheim, California—guidance and control. Thiokol Chemical Corporation, Wasatch Division, Brigham City, Utah—Minuteman III Stage I and III motors. Aerojet Solid Propulsion Corporation, Sacramento, California—Minuteman III Stage II and III motors. Hercules, Inc., Magna, Utah—Minuteman II Stage III motor. AVCO Corporation, Missile Systems Division, Wilmington, Massachusetts—MK–11 Reentry System. General Electric Company, Philadelphia, Pennsylvania—MK–12 Reentry System. Sylvania Electronics Systems, Needham Height, Massachusetts—ground electronics. Bell Aerospace Corporation, Buffalo, New York—post boost propulsion system.

Fiscal year 1972 program.—Deployment of Minuteman III is continuing, with a planned year-end force mix of [deleted] Minuteman I, 500 Minuteman II and [deleted] Minuteman III missiles. Flight testing of Minuteman III consists of four Special Test Missile launches, all from Vandenberg Air Force Base, California. The first of these was the first flight of the Improved Digital Computer Unit and was a success, the second experienced an electronic failure. Continuing efforts include in-place and in-flight hardness assessment and ground testing, operational test launch instrumentation improvements, design and development of: dust-debris modifications, Operational Base Launch (OBL) equipment needed to launch OBL-configured Minuteman II missiles from Vandenberg Air Force Base, and Command Data Buffer hardware. Two Minuteman II OBL flights are scheduled for launch from Vandenberg Air Force Base. Adaptation of the Wing V silo hardness improvements (blast/shock and Electromagnetic Pulse) to other wings is continuing)(see the Minuteman Force Modernization Descriptive Summary).

Fiscal year 1973 planned program.—Deployment of Minuteman III will continue with a year-end projected force mix of [deleted] Minuteman I, 500 Minuteman II, and [deleted] Minuteman III. The dust and debris modifications for Minuteman III will be flight tested on one Special Test Missile, the eleventh flight in the series. Development will continue for dust and debris modifications for Minuteman II. Design and development continues on an airborne instrumentation system designed to enable satisfactory missile performance measurement. Other efforts will include: contractor support for the Special Test Missile program, in-flight hardness assessment and ground testing and start in-line implementation of dust fixes for Minuteman III. See the Minuteman Force Modernization Descriptive Summary for Command Data Buffer and Upgrade Silo Program information.

Program to completion.—Complete deployment of Minuteman II in FY 1975, resulting in a force mix of 450 Minuteman II and 550 Minuteman III missiles. Complete all Force Modernization: (1) Basic—conversion of Minuteman I to II, I to III, and II to III (includes all ground system updates), (2) Upgrade Silo—upgrading silo hardness against nuclear blast/shock and electromagnetic pulse effects, and (3) Command Data Buffer—remote retargeting capability for Minuteman III. Complete implementation of the Dust and Debris program and complete development of the airborne instrumentation system for Minuteman III.

Resources (in millions of dollars):

R.D.T. & E. funds for fiscal year 1971 and prior, $2,926.0; fiscal year 1972, $181.6; fiscal year 1973, $154.7; additional to completion, $237.4; total estimated cost, $3,499.7.

BUDGET ACTIVITY, 3—MISSILES AND RELATED EQUIPMENT

MILESTONES

Wing	Compl deploy MM II	Compl deploy MM III	Upgrade silo (blast/shock plus emp	Command data buffer	Dust and debris	Wing location
I:						
Planned	June 1969		[Deleted]		[Deleted]	Malmstrom AFB, Mont.
Actual						
II:						
Planned	[Deleted]		[Deleted]		[Deleted]	Ellsworth AFB, S. Dak.
Actual						
III:						
Planned		January 1972	[Deleted]	[Deleted]	[Deleted]	Minot AFB, N. Dak.
Actual		December 1971				
IV:						
Planned	October 1967		[Deleted]		[Deleted]	Whiteman AFB, Mo.
Actual						
V:						
Planned						
Actual		[Deleted]	[Deleted]	[Deleted]	[Deleted]	Warren AFB, Wyo.
VI:						
Planned	November 1966					
Actual		[Deleted]	[Deleted]	[Deleted]	[Deleted]	Grand Forks AFB, N. Dak.
Sqdn 20:						
Planned	April 1967					
Actual		[Deleted]	[Deleted]	[Deleted]	[Deleted]	Malmstrom AFB, Mont.
Costs:						
R.D.T. & E.	1,382.5	1,769.9	188.5	82.5	84.3	
Procurement	2,681.0	3,121.5	1,148.1	151.1	165.7	

MINUTEMAN SQUADRONS

Chairman ELLENDER. I note that the total requested includes $80.7 million for basic Minuteman and $74 million for force modernization. Please comment in detail on both of these efforts.

General GLASSER. The fiscal year 1973 planned program for the basic Minuteman includes flight testing the dust and debris modifications for Minuteman III on one special test missile, the 11th flight in the series. Development will continue for dust and debris modifications for Minuteman II. Design and development continues on an airborne instrumentation system designed to enable satisfactory missile performance measurement. Other efforts will include: Contractor support for the special test missile program, in-flight hardness assessment and ground testing.

Under force modernization, the adaptation of the wing V upgrade silo design to other wings will continue. The major efforts will be electromagnetic pulse (EMP) test and assessment, blast/shock assessment and test, and blast/shock mechanical design and development for follow-on wings. All preliminary assessments needed to support hardness improvement decisions for the remaining wings (I and IV) will be completed. The EMP preimplementation assessment of squadron 20 will be completed. Design effort for command data buffer for wings III, V, VI, and squadron 20 and contractor testing related to wings III and V will be completed. Testing at Vandenberg Air Force Base, Calif., will continue.

Senator YOUNG. On page 189 of the descriptive summary I note that the total estimated R. & D. cost for Minuteman squadrons is stated at $3,499.7 million. Just what is included in the total estimated cost?

General GLASSER. The estimated R.D.T. & E. costs of $3,499.7 million include the development of Minuteman II and Minuteman III. This included development of the airborne launch control system and basic force modernization. The Minuteman II basic development was completed in February 1968, and the Minuteman III basic development in July 1970. Continuing development efforts for Minuteman II and Minuteman III are the dust and debris modifications to improve the ability to launch through a nuclear dust cloud, and the Upgrade Silo program to improve the prelaunch survivability against nuclear blast, shock, and electromagnetic pulse. Command data buffer is also being developed to provide remote retargeting for Minuteman III.

Chairman ELLENDER. Please provide a tabulation for the record giving the total estimated cost of R. & D., procurement, and military construction for the Minuteman I system.

General GLASSER. Yes, sir, I will be glad to.

(The information follows:)

Minuteman I costs

[In millions of dollars]

R.D.T. & E.	$2,095.3
Procurement	3,228.2
Military construction	666.9
Total	5,990.4

Senator YOUNG. It is indicated on page 189 that a total of $237.4 million will be required during the years 1974 through 1977 for the continuation of R. & D. on Minuteman. Just what is involved in this program after fiscal year 1973?

General GLASSER. Development of Upgrade Silo modifications will be completed. These modifications will improve the Minuteman prelaunch survivability against nuclear blast/shock and electromagnetic pulse effects. We will complete the development of the command data buffer remote retargeting capability for Minuteman III, the dust and debris modifications and the airborne instrumentation system for Minuteman III.

TACTICAL AIR INTERCEPTOR MISSILES

Chairman ELLENDER. $2.7 million is requested for the program element entitled "Tactical Air Interceptor Missiles" for fiscal year 1973. Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

TACTICAL AIR INTERCEPTOR MISSILES (AIM–7F SPARROW)

CATEGORY II: GENERAL PURPOSE FORCES

Background.—The AIM–7 SPARROW family of radar guided air-to-air missiles was introduced in 1958. The presently-operational AIM–7E2 SPARROW is the result of SEA experience with prior AIM–7D and AIM–7E missiles, which showed a need for improved performance against maneuvering targets (fighter aircraft). The AIM–7E2 missile configuration has been in quantity production since 1967. Results of operational use of the AIM–7E2 have identified several additional deficiencies. The AIM–7F development program initiated in the Navy in 1966 was expanded to address these deficiencies. However, operational introduction has been delayed by developmental difficulties. The Air Force R.D.T. & E. funding contribution to this Navy initiated program is limited to a design simplification effort and a preproduction contract for 50 missiles for early F–15/AIM–7F weapon system compatibility testing.

Description.—The AIM–7F SPARROW is an air-to-air missile using semi-active radar guidance with an external configuration similar to previous SPARROW missiles. This improved missile will contain a dual mode guidance system with solid state electronics, a larger continuous rod warhead, improved fuzing systems, and greater reliability through instant start capability. The AIM–7F will provide increased capability against multiple targets, improved electronic counter countermeasures, extended range, increased warhead lethality and increased missile availability to cope with the postulated threat of mixed groups of attacking bombers and fighters using countermeasures which can not be effectively countered with existing mid-range air-to-air missiles. This program will provide an improved mid-range air-to-air missile for the F–15 and the F–4E for the time period beyond [deleted]. Four missiles will be carried on the F–15 and F–4E for all-weather air-to-air combat.

Description:

Length: (inches)	145
Diameter: (inches)	8
Weight: (pounds)	515
Wing span: (inches)	40
Warhead: (pounds) (continuous rod)	86
Motor	(1)

[1] Solid boost/sustain (31,000 lb-sec).

Performance:

	Feet
Min launch range	[Deleted]
Max launch range	[Deleted]
Maximum "G"	[Deleted]
Warhead radius	[Deleted]
Accuracy: (Within)	[Deleted]

Work performed by.—Naval Air Systems Command; AIM–7F Project Office (PMA–262), Washington, D.C. Missile Guidance and Control—Raytheon, Lowell, Mass. Propulsion—Rocketdyne, McGregor, Tex.; Aerojet, Sacramento, Calif.; and Hercules, Cumberland, Md. All qualified sources for competitive procurement.

Fiscal year 1972 program.—The fiscal year 1972 funds are being used to initiate the preproduction contract for 50 missiles. Navy efforts on NTE have been completed and Operational Evaluation (OPEVAL) started.

Fiscal year 1973 program.—Preproduction contract will be completed with the delivery of 50 missiles and initial missile checkout equipment for support of F–15 Category I systems compatibility testing.

Program to completion.—R.D.T. & E. completes in fiscal year 1973.

Milestones	Date	Dollars (millions)
Contract award	January 1972	
Pilot prod contract award	January 1973	28.3
F–15 Cat I start	April 1973	29.7
50 production missiles delivered	December 1973	31.0
Full production contract award	January 1974	96.4
F–15 Cat II start	June 1974	
F–15 Cat III start	October 1974	
F–4E compatibility test	March 1975	
Initial operational capability (F–15/AIM–7F)	[Deleted]	
Initial operational capability (F–4E/AIM–7F)		
Completion of approved program		293.3

Resources (In millions of dollars):

R.D.T. & E. funds for fiscal year 1971 and prior, $1; fiscal year 1972, $7.8; fiscal year 1973, $2.7; additional to completion, none; total estimated cost, $11.5.

TACTICAL AIR INTERCEPTOR MISSILES

Chairman ELLENDER. I note that $7.8 million was provided for fiscal year 1972, and for fiscal year 1973, you are requesting only $2.7 million. Please comment on the rather wide disparity between these two figures. Are you completing the development of the AIM–7F missile?

General GLASSER. The fiscal year 1972 and fiscal year 1973 R.D.T. & E. fund requirements are for the acquisition of 50 preproduction missiles and initial missile checkout equipment for support of early F–15/AIM–7F weapon system compatibility testing. The large incremental funding requirement in fiscal year 1972, in relation to fiscal year 1973, is primarily attributable to materials acquisition to support the fabrication of missiles in fiscal year 1973. Except for the $1.0M R.D.T. & E. funds provided the Navy in fiscal year 1971, for the design simplification program, the Air Force has not provided any funds for the actual development of the AIM–7F missile. This has been a Navy function. At the present time, the Navy has declared the technical evaluation completed and committed the AIM–7F to operational evaluation. This basically marks the completion of development, however, the Navy will continue to conduct some advanced efforts on various missile subsystems, which could result in later product improvements.

Senator YOUNG. Would you please comment on the arrangements that have existed between the Air Force and Navy with respect to the development program for the AIM–7F missile?

General GLASSER. The Navy is the designated DOD executive agent for the development and procurement of the AIM–7F missile. The Air Force joined the program in early calendar year 1971 by providing $1.0M for its share of a design simplification program. A joint-service

charter has been prepared and approved by both the Navy and Air Force. The charter establishes the AIM–7F Missile System as a joint-service project for development and acquisition. The AIM–7F project will be planned, organized, and controlled as an integrated service project by a jointly manned project management office. This office will be responsive to the requirements of the two services and will be primary point of contact for all official actions during the development and acquisition phases. An Air Force lieutenant colonel is assigned as the deputy project manager with other Air Force personnel assigned as assistant project managers in the functional areas of engineering, logistics, test, and budget.

Senator YOUNG. In fiscal year 1971, there was about a 5-month period when testing of the AIM–7F missile was stopped while the entire program was reassessed. What difficulties were encountered in the test program, and have these difficulties largely been eliminated?

General GLASSER. Sir, I will provide that information for the record.

(The information follows:)

The primary AIM–7F problems identified by the test program which was terminated in December 1970 were:

1. Low flight test reliability, apparently related to, (a) power supply logic; (b) autopilot initial steering; (c) fuze guard gate, and; (d) complicated circuit design.

2. Unsatisfactory broadband radome performance which evidenced itself in a wider-than-acceptable miss distance at high altitude.

3. Compatibility for Pulse Doppler (PD) guidance by the F–14/AWG–9 radar appeared to require significant redesign of AIM–7F receiver.

4. The phase-locked loop (PLL) for multiple-target discrimination was not meeting specifications.

The design simplification program approved in February 1971 addressed these areas with the following results:

1. The PLL specs were relaxed so that the PLL circuits would not drive the design. This circuit has subsequently been deleted because of its marginal utility.

2. The "partial power" mode—originally intended to enable firing of the AIM–7F from an unmodified F–4—was eliminated because of circuit complexity in the missile.

3. General circuit design cleaned-up addressed to the power supply, auto pilot and fuze.

4. In regards to the radome, it now appears that the contractor will be able to grind a radome to acceptable standards, although missiles with these broadband radomes will be delivered uitil late CY 72. Testing of the basic missile will be impeded since acceptable narrow band radomes are available for each guidance mode.

5. Regarding the F–14 PD compatibility, it was decided to forego modifying the [deleted] because of the added missile complexity. The limited flight tests have proved that the PD guidance mode works and is compatible with the F–15/APG–63 and, therefore, will be retained.

The Navy, as Executive Agent, believes that the problems identified through December 1970 have been solved through the redesigns in the "simplified" AIM–7F now being built, although final flight demonstration is just beginning in Navy OPEVAL.

Chairman ELLENDER. Do I understand correctly that the $2.7 million you are requesting for fiscal year 1973 will complete the Air Force's share of this development and test program?

General GLASSER. As I indicated earlier, the $2.7 million in the fiscal year 1973 increment for the acquisition of 50 preproduction missiles and initial missile checkout equipment. The Air Force has not been sharing in the development cost of the AIM–7F missile except for the $1 million in fiscal year 1971 for the design simplification program.

TACTICAL DRONE SQUADRONS

Chairman ELLENDER. $700,000 is requested for what seems to be a new program entitled "Tactical Drone Support Squadrons." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

TACTICAL DRONE SUPPORT SQUADRONS

CATEGORY: GENERAL PURPOSE FORCES

Description.—This program has been established to develop a precision sensor delivery system using drone aircraft. The need for this type of sensor delivery technique increases with the sophistication of enemy air defenses. Manned aircraft flights become increasingly hazardous to implant sensors in this heavily defended environment. Once a sensor field has been established, strike aircraft can then locate potential moving targets and proceed with strike operations by taking the least hazardous routes. USAF initiated an avionics/navigation update program to reduce drone navigation errors for more reliable photographic reconnaissance. The first task under this effort was to combine a LORAN navigation receiver with a general purpose computer for more precise navigation fixing. Other additional development areas included refinement of the flight control systems and improved recovery circuits. The Defense Special Projects Group (DSPG) was addressing a closely related problem and requested USAF to perform a subtask of developing a system to emplace sensors from a drone. When the Secretary of Defense announced that DSPG would be disestablished, funds from PE 27243F, TAC Drone Support, used to continue development efforts for refined drone sensor delivery.

Work performed by.—Development and procurement of this program will be managed by the Aeronautical Systems Division of the Air Force Systems Command. No contractor has been named.

Fiscal year 1973 planned program.—In FY 73 the primary effort will be to develop a package capable of delivering sixteen sensors per drone. In addition, a ground launch and recovery system will be development. An engineering study conducted in Phase I of the Navigation/Avionics Update will provide the basis for the ground launch and recovery system.

Program to completion.—This is a continuing program.

Resources (In millions of dollars):

R.D.T. & E. funds for fiscal year 1971, none; fiscal year 1972, none; fiscal year 1973, $0.7; additional to completion, continuing; total estimated cost, not available.

Senator ELLENDER. Will you comment briefly on what the $700,000 being requested for fiscal year 1973 will be used for.

General GLASSER. The primary effort will be to develop and demonstrate a delivery system capable of delivering 16 sensors per drone.

ROCKET PROPULSION

Chairman ELLENDER. $24.5 million is requested for the continuing exploratory development program entitled "Rocket Propulsion." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

ROCKET PROPULSION

CATEGORY: EXPLORATORY DEVELOPMENT

Description.—This program investigates new concepts and techniques in rocket propulsion technology which show promise of improving ballistic or tactical missiles and air launched or space propulsion systems. This encompasses effort in the following areas: liquid rocket engines, solid propellant motors, hybrid

rockets, air augmented rockets, advanced propulsion concepts, non-propulsion applications of rocket technology such as chemical lasers, all rocket components, supporting ground equipment, R.D.T. & E. facilities, theoretical analyses, and engineering support to Air Force weapon system development programs. In the solid propellant rocket area, the effort includes use of stronger and lighter materials for the case and nozzle, improved case insulation and nozzle throat insert materials, advanced thrust vector control systems, improved thrust modulation and termination methods, and higher performance propellants. In the liquid propellant rocket engine area, the effort includes incorporating stronger and lighter materials into propellant tankage, improved injectors, turbopumps, nozzles, higher performance propellants, advanced attitude control concepts, and laser technology. A new task included in the liquid area is the Advanced Liquid Rocket Technology effort, formerly P.E. 63408F. This program also includes operation and management of the Air Force Rocket Propulsion Laboratory (AFRPL), Edwards AFB, California.

Work performed by.—Air Force management of this project is provided by the Air Force Rocket Propulsion Laboratory, Edwards AFB, California. Other Air Force organizations involved are the Air Force Aero-Propulsion Laboratory, Wright-Patterson AFB, Ohio; the Space and Missile Systems Organization, Los Angeles, California; and the Air Force Weapons Laboratory, Kirtland AFB, New Mexico. Primary contractors are: Hercules, Inc., Magna, Utah, $1.4 million, eight contracts, Solid Propellant Development Testing and Characterization; United Technology Center, Sunnyvale, California, $2.2 million, ten contracts, Liquid and Solid Rocket Motor Design, Test and Evaluation; Thiokol Chemical Corp., Huntsville, Alabama, $1.6 million, two contracts, Rocket Motor Testing and Combustion Analysis; Thiokol Chemical Corp., Brigham City, Utah, $1.2 million, eight contracts, Solid Motor Design and Analysis; Lockheed Propulsion Company, Redlands, California, $1.9 million, eleven contracts, Solid Propellant Motor Design and Analysis; Atlantic Research Corp., Alexandria, Virginia, $1.8 million, six contracts, Solid Propellant Development and Characterization; North American Rockwell, McGregor, Texas, $1.5 million, two contracts, Propellant Development; North American Rockwell, Canoga Park, California, $1.6 million, ten contracts, Liquid Rocket Engine Development Testing and Evaluation; Rocket Research Corp., Redmond, Washington, $.3 million, two contracts, Mono-Propellant Engine Development; Aerojet General Corp., Sacramento, California, $2.6 million, twelve contracts, Liquid and Solid Rocket Engine and Component Development.

Fiscal year 1972 program.—Major efforts are being placed on improving the reliability and cost effectiveness of rocket propulsion. Areas of primary concern are in high performance air-launched missile propulsion, low cost tactical armament propulsion, ballistic missile booster propulsion, and in long life satellite propulsion. The in-house effort on lasers is also continuing with emphasis on development of a chemical laser test facility, on determining the feasibility of the solid propellant laser, and on improving the storability of gas dynamic laser propellants. It can be seen from these areas of primary concern that the FY 1972 program is oriented toward a few specific types of propulsion systems with particular emphasis on solid rocket technology.

Fiscal year 1973 planned program.—The FY 73 efforts will emphasize solid rocket technology for air-launched, ballistic missile and satellite propulsion. Major efforts will continue on improvements for the Post-Boost-Propulsion-System (PBPS) such as a demand gas generator with 15:1 throttling; repeatable and predictable thrust terminations; extended service life and capability to withstand a mobile environment. The liquid rocket work formerly documented under P.E. 63408F will include improving hydrazine monopropellant technology with a long life catalyst with zero degree temperature capability. Space maneuvering propulsion needs will include a cryogenic propellant feed system for an improved attitude control development. Other liquid rocket efforts will continue to decrease. The Air Force will rely on the other services and NASA for future technology in these areas.

Program to completion.—Continuing program.

Resources (In millions of dollars):

R.D.T. & E. funds for fiscal year 1971, $21.3; fiscal year 1972, $20.3; fiscal year 1973, $24.5; additional to completion, continuing; total estimated cost, not available.

Chairman ELLENDER. Please provide a tabulation for the record listing each of the projects funded under this program element, the amounts for each for fiscal years 1971 and 1972 and the estimate for fiscal year 1973.

General GLASSER. Yes, sir.

(The information follows:)

[In thousands of dollars]

Project No.		Fiscal year—		
		1971	1972	1973
06CJ	Air Force rocket propulsion laboratory operation	8,500	8,800	9,200
3058	Space propulsion technology	6,300	2,300	5,300
3059	Ballistic missile propulsion technology	2,500	3,800	4,400
3148	Air-launched missile propulsion technology	2,900	2,500	3,200
5730	Supporting propulsion technology	1,110	2,900	2,400
	Total	21,310	20,300	24,500

[1] Estimate.

Senator YOUNG. Of the total requested, I note that $9.2 million is for the support of the Air Force rocket propulsion laboratory. Will you please comment on the basic mission of this laboratory?

General GLASSER. The basic mission of the rocket propulsion laboratory is to develop the required technology to support the long range objectives of the Air Force in all phases of rocket propulsion.

Senator YOUNG. How many civilians are employed at the rocket propulsion laboratory, and how much of the $9.2 million requested is for their compensation and benefits?

General GLASSER. Three hundred and twenty-two civilians are employed at the rocket propulsion laboratory; $5.924 million is for their compensation and benefits.

Senator YOUNG. How many military personnel are assigned to this laboratory, and please comment on the need for them.

General GLASSER. One hundred and eighty-three military personnel are assigned to this laboratory. They provide very valuable input and guidance to the program because of their experience in using the types of weapons being developed by the laboratory. They also provide new and innovative ideas that complement those generated by the more permanent civilian work force. The laboratory also provides valuable training for the military personnel who will eventually command the Air Force research and development program of the future.

Chairman ELLENDER. For fiscal year 1972, I note that $2.3 million was provided for a project entitled "Space propulsion technology." For fiscal year 1973, you are requesting $5.3 million. Could you explain to us the need for this rather large increase in funds requested?

General GLASSER. The increase in funding for this project for fiscal year 1973 occurred because work formerly documented and funded in the advanced liquid rocket technology program element is now included in this project along with a number of other efforts which were previously performed under other projects. This consolidation of programs relevant to space propulsion will permit an improvement in management and response capability.

Chairman ELLENDER. Would you comment on the need for the increase of $0.6 million requested for the project entitled "Ballistic Missile Propulsion Technology."

General GLASSER. These funds will be used to scale up HTPB (hydroxy terminated polybutadiene) propellant and demonstrate its performance in a large motor. This new propellant has several advantages over the presently used Minuteman propellant, including the following: (1) Lower cost, (2) commercial availability, (3) a simple cure system, (4) much better mechanical properties, and (5) longer shelf life.

Chairman ELLENDER. Please comment on the need for the increase of $0.7 million requested for the project entitled "Air launched missile propulsion technology."

General GLASSER. There are several areas in this project which require increased effort. Included are improved technology to (1) improve environmental service life; (2) reduce required maintenance; (3) reduce cost; and (4) improve survivability in a nuclear and nonnuclear thermal environment.

Chairman ELLENDER. In fiscal year 1972, $2.9 million was provided for a project entitled "Supporting Propulsion Technology," and for fiscal year 1973, you are requesting $2.4 million. Does this reduction of $0.5 million in your request indicate that this project will continue to be phased downward?

General GLASSER. No, not necessarily. The fiscal year 1972 program included some nonrecurring costs which were for work done in support of the Minuteman program. There was also a realinement of programs which were transferred to other projects for management and funding.

Senator YOUNG. How much of the total requested for rocket propulsion is for work to be performed in Air Force facilities?

General GLASSER. $6.4 million of the total requested is for work to be performed in Air Force facilities.

ADVANCED ICBM TECHNOLOGY

Chairman ELLENDER. $8.4 million is requested for a continuing advanced development program entitled "Advanced ICBM Technology." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

ADVANCED ICBM TECHNOLOGY

CATEGORY: ADVANCED DEVELOPMENT

Description.—The objective of this program is to provide the technology for improving the capability or extending the useful life of existing Intercontinental Ballistic Missile (ICBM) systems and to provide the technology base for the development of future ICBM systems or subsystems. The nature of the threats postulated for the mid to late 1970s has caused this program to focus on the areas of survivability and performance. In developing the technology base in this continuing program technical options are created that can later be translated by a deliberate decision into national strategic options. Given this technology base, that translation will be accomplished much more quickly, with lower cost, and with much higher confidence. The potential scope of the program encompasses all ballistic missile technology except reentry systems. The current program is limited to critical efforts in: Advanced Inertial Guidance Technology which includes design, development, fabrication and testing of high performance, nuclear hardened guidance components (gyros, accelerometers, circuitry) and an inertial

measurement unit (IMU) platform; and Far Term Computer Technology which includes design, fabrication, and demonstration of radiation-hardened large scale integrated circuits arrays and definition of computer system design trade-offs to provide the building blocks for future missile guidance computers with increased operational flexibility and reduced software/hardware cost and development time.

Work performed by.—The Air Force Systems Command's Space and Missile Systems Organization (SAMSO), Norton Air Force Base, California, is the Air Force agency responsible for program management. In-house facilities of the Central Inertial Guidance Test Facility at Holloman Air Force Base, New Mexico, will be used for test of inertial guidance components, and facilities at Kirkland Air Force Base, New Mexico, may be used for nuclear hardness testing of computer elements. Principal contractors are: Massachusetts Institute of Technology, Draper Laboratory, Cambridge, Massachusetts—Design, development, fabrication, and testing of advanced inertial instruments, platforms, and other guidance components; Honeywell, Inc., St. Petersburg, Florida—Advanced Inertial Reference Sphere/Improved Digital Computer Unit (AIRS/IDCU) Interface, fabrication of Specific Force Integrating Receiver (SFIR), Computer system design trade-off study; Northrop Corporation, Nortronics Division, Norwood, Massachusetts—Fabrication of Third Generation Gyroscope (TGG); CIRAD Corporation, Claremont, California—Software trade-offs and modification of the Space Programming Language (SPL) for more efficient use.

Fiscal year 1972 program.—The effort continues in the two project areas of Advanced Inertial Guidance Technology and Far Term Computer Technology. The guidance project includes the design refinement of the inertial instruments (gyroscopes and accelerometers) and the fabrication, test, and evaluation of four laboratory units of each type. The testing includes simulation tests on electronic modules, fluids, and prototype instruments. Commercial producibility of the inertial instruments is being established via industrial fabrication, using competitive procurement. The winners are under contract. Initiation of prototype design of the key AIRS (Advanced Inertial Reference Sphere) is included, along with interface and mechanization studies. The computer project emphasizes hardened metal oxide semiconductor and large scale integrated circuit design and development. This circuit technology promises greatly increased device densities that demand fresh approaches to computer design. This project continues the system trade-off studies including hardware and software, directed at optimum use of this circuit technology.

Fiscal 1973 planned program.—Planned effort is a continuation of the FY 1972 program. Industry will complete the first commercial fabrication of several Third Generation Inertial Instruments (TGII) and deliver them. These units will be performance tested and subjected to nuclear hardness verification testing. Industrial feedback of producibility-motivated design refinements will be accommodated in the Third Generation Inertial Instruments (TGII) design. Massachusetts Institute of Technology/Draper Laboratory will continue its design of the prototype AIRS (Advanced Inertial Reference Sphere), using the TGII, and will fabricate and test subassemblies. The computer effort will continue at a minimal level with some work in design of hardened metal oxide semiconductor and large scale integrated circuits.

Program to completion.—This is a continuing program.

Resources (In million of dollars):

R.D.T. & E. funds for fiscal year 1971, $6; fiscal year 1972, $8,400; fiscal year 1973, $8.400; additional to completion, continuing; total estimated cost, not available.

ADVANCED ICBM TECHNOLOGY

Chairman ELLENDER. How much of the total requested is for work to be performed in Air Force inhouse facilities?

General GLASSER. Approximately $25,000 will be spent at the central inertial guidance test facility (CIGTF) at Holloman Air Force Base, N. Mex. The first deliveries of commercially produced prototypes of third generation gyros will be performance tested at CIGTF.

Senator YOUNG. In fiscal year 1972, $8.4 million was provided for this program, and in fiscal year 1973, you are also requesting $8.4 million. Does the fact that you are requesting the same amount for fiscal

year 1973 indicate that this program is being continued at roughly the same level as in fiscal year 1972 or at a reduced level?

General GLASSER. The equal funding in fiscal years 1972 and 1973 does mean that the program effort will continue at roughly the same level. Minimum acceptable progress toward the specific program objectives can be maintained at this level.

Chairman ELLENDER. Please describe for the subcommittee some of the accomplishments achieved under this program.

General GLASSER. This program developed advanced hardened computer technology that led to engineering development for possible operational deployment of the improved digital control unit (IDCU) in Minuteman III. In propulsion, we have demonstrated component level feasibility of both solid and advanced liquid propellant post boost propulsion systems. We developed some of the silo hardening concepts now being implemented for Minuteman. Inertial guidance accomplishments include the design of advanced, third generation inertial instruments having high precision and inherent nuclear hardness and a conceptual design for an advanced inertial measurement unit that uses those instruments. The program has advanced the design technology related to nuclear hardened large scale integrated circuits and semiconductor memory components that promise great improvements in nearly all areas of missile and reentry vehicle guidance computer design.

ADVANCED BALLISTIC REENTRY SYSTEM

Chairman ELLENDER. $104 million is requested for the continuation of the advanced development program entitled "Advanced Ballistic Reentry System." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

ADVANCED BALLISTIC REENTRY SYSTEMS (ABRES)

CATEGORY: ADVANCED DEVELOPMENT

Description.—The Advanced Ballistic Reentry Systems (ABRES) program is the single Department of Defense program which provides for advanced development of reentry vehicles and penetration aids. ABRES provides a large base of reentry system technology to insure effective penetration of, and damage to, enemy targets by the strategic missile forces of the Navy and the Air Force. Potential penetration aids and countermeasures are analyzed and promising candidates undergo development The resulting improvement in reentry vehicle technology multiplies the flexibility and effectiveness of ICBMs/IRBMs without the attendant cost of a new missile system. The resulting mix of available penetration options precludes the use of singular defensive tactics, and imposes considerable technological and economic stress on the defending nation.

Currently, ABRES is pursuing technology in: maneuvering reentry vehicles for evading defenses, small multiple reentry vehicles, [deleted] reentry vehicles, decoys, electronic and optical countermeasures, advanced chaff, and technology studies for reentry subsystems. Laboratory, underground nuclear, and flight tests are performed as appropriate. ABRES also provides priority support to operational reentry systems for upgrading and system fixes. In addition, ABRES provides technology support to the intelligence community and to strategic defensive system programs.

The ABRES program may be separated into six broad categories: evasion technology, penetration aids, flight test payloads, development technology, systems engineering and laboratory support, and test support. Each of these areas is discussed in more detail in the accompanying project writeups, except for systems engineering and laboratory support and test support which are discussed below.

Systems engineering and laboratory support are provided by the Aerospace Corporation and Massachusetts Institute of Technology/Lincoln Laboratory. The Aerospace Corporation performs General Systems Engineering and Technical Direction and, with the assistance of its laboratory, performs "on call" studies and analyses where quick reaction and depth of expertise are required. The Massachusetts Institute of Technology/Lincoln Laboratory conducts applied research in the electromagnetic regime including optics, radar, and electronic countermeasures. It also assists in instrumentation development and provides extensive analysis of flight test data. Both organizations have acquired unique expertise in their respective areas of responsibility through years of support to ABRES. Test support funding provides for booster procurement and modification, launch services, software, sensors, and range support.

Work performed by.—The responsible Air Force agency is the Space and Missile Systems Organization (SAMSO), Norton Air Force Base, California. There are approximately 55 active ABRES contracts. The major contractors for this program are Aerospace Corporation, Los Angeles, California; Atlantic Research Corporation, Systems Division, Costa Mesa, California; AVCO Corporation, Wilmington and Everett, Massachusetts; General Electric Company, Philadelphia, Pennsylvania; Lockheed Missile and Space Company, Sunnyvale, California; LTV Electro Systems, Dallas, Texas; McDonnell Douglas Corporation, St. Louis, Missouri; MIT/Draper and Lincoln Laboratories, Cambridge, Massachusetts; Philco-Ford Aeroneutronics (Space and Reentry Systems), Newport Beach, California; TRACOR, Inc., Austin, Texas; TRW Systems Group, Redondo Beach, California.

Fiscal year 1972 program.—Primary emphasis is placed on the terminal evasion maneuvering vehicle program which addresses the possible threat of [deleted]. Flight test experiments have been conducted in [deleted] reentry, advanced decoys, advanced heat shield concepts, radar signature masking, advanced chaff, wake quenching, and advanced fuzing concepts associated with [deleted] reentry. Other planned experiments include additional flight testing of wake quenching, heat shields and nose tips, arming and fuzing, and radar signature masking, plus some experiments in optical emission characteristics, antenna breakdown during reentry, and optical [deleted] countermeasures [deleted]. The Athena H test vehicle development is expected to be completed this fiscal year. When the Athena H becomes operational it will be capable of carrying three times the payload of the standard Athena. It is planned for extensive use in the future by the Army, Navy, and the Air Force. The total ABRES flight test program for fiscal year 1972 consists of one Atlas, nine Athenas, and four sounding rockets. ABRES experiments will also be tested on three Minuteman III flights. Systems engineering and laboratory support funding is $16.5 million, while test support funding is $24.4 million. The fiscal year 1972 Supplemental Appropriation request of $8.0 million will be applied to the Evasion Technology project for the Evader Program.

Fiscal year 1973 program.—As in fiscal year 1972, the primary effort will be directed toward terminal evasion maneuvering technology. The first terminal evader vehicle will be flown. Other experiments will consist of flight testing nose tips, small multiple reentry vehicles, and various reentry vehicle subsystems and penetration aids. Test payloads will be flown on three Atlases and a number of Athenas and sounding rockets. Experiments will also be flown on boosters provided by other organizations. Systems engineering and laboratory support funding will be $14.4 million, while test support will be $19.3 million.

Program to completion.—This is a continuing technology program.

Resources (In millions of dollars):

R.D.T. & E. funds for fiscal year 1971, $100; fiscal year 1972, $95.8+8.0[1]=103.8; fiscal year 1973, $104; additional to completion, continuing; total estimated cost, not available.

ADVANCED BALLISTIC REENTRY SYSTEM

Chairman ELLENDER. Please provide a tabulation for the record listing each of the projects funded under this program, the amounts for fiscal years 1971 and 1972, and the request for fiscal year 1973.

General GLASSER. Yes, sir.

[1] Fiscal year 1972 supplemental appropriation request.

(The information follows:)

[In millions of dollars]

	Fiscal year—		
	1971	1972	1973
Evasion technology	8.5	22.6	[1] 45.5
Penetration aids	8.5	4.9	6.8
Flight test payloads	25.4	14.8	14.4
Development technology	10.0	12.6	11.6
Systems engineering/laboratory support	16.8	16.5	[2] 14.4
Test support	30.8	24.4	19.3
Total	100.0	95.8	112.0

[1] Includes $8,000,000 for fiscal year 1973 budget amendment.
[2] An additional $2,600,000 is funded in other elements of the program since specialized support and hardware are provided by MIT/Lincoln Laboratory for areas such as penetration aids.

Chairman ELLENDER. Does your request for fiscal year 1973 include funds for any new projects, and if so, please describe these new projects.

General GLASSER. Yes, sir. A number of new starts are planned for fiscal year 1973. Most of these either directly or indirectly support the evader technology effort and typically consist of integration of electronic components for an evader inertial measurement unit, development and flight testing of candidate evader nose tips, and initiation of [deleted] penetration aids for the evader. Other new efforts typically include design of decoys for the dual roles of decreasing radar and optical discriminants, development of rain erosion technology and improved heatshield materials, and the pursuit of several critical aspects associated with electronic countermeasures and wake quench.

Senator YOUNG. What Air Force agency is responsible for the management of this effort?

General GLASSER. Sir, the responsibility for the management of this tri-service program resides in the Air Force Systems Command, and more specifically, the space and missile systems organization. The systems program office for this effort is presently located at Norton Air Force Base in San Bernardino, Calif. This office will be moved to Los Angeles this summer.

Senator YOUNG. Who are some of the principal performers under this program?

General GLASSER. Sir, the principal performers in the ABRES program over the past few years have been such organizations as the Aerospace Corp., Atlantic Research Systems Division (now Celesco), AVCO, General Electric Co., Lockheed Missile and Space Co., McDonnell Douglas, Massachusetts Institute of Technology, and Philco-Ford Aeroneutronics, to name a few.

Chairman ELLENDER. On page 221 of the descriptive summary under the heading "1973 Program," I note the following statement: "As in fiscal year 1972, the primary effort will be directed toward terminal evasion maneuvering technology." Please elaborate on this statement.

General GLASSER. The prime current thrust of the ABRES program is towards developing and flight testing preprototype maneuvering reentry vehicles. These maneuvering vehicles are designed to evade an ABM by flying around the interceptor missile. This effort includes all associated technologies such as nosetips, heatshields and control systems. This effort is immediately applicable to the [deleted] program.

STRATEGIC BOMBER PENETRATION

Chairman ELLENDER. $1.5 million is requested for fiscal year 1973 for the continuing advanced development program entitled "Strategic Bomber Penetration." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

STRATEGIC BOMBER PENETRATION

CATEGORY: ADVANCED DEVELOPMENT

Description.—This Program Element is responsible for concept formulation and advanced development of new penetration aids that will counter both the increase in Soviet defensive capability postulated for the late 1970s, as well as technically feasible threats possible in the 1980s. The major system concepts currently under investigation are a short range bomber defense missile (SRBDM) to destroy enemy interceptors, a multi-purpose missile (MPM) with both an air-to-air capability against advanced airborne defenses and an air-to-ground capability against improved ground based defenses, a [deleted] system for bomber defense against airborne threats, and a system that provides the bomber with a defense against imprecisely located surface-to-air missiles (SAMs).

Work performed by.—The Aeronautical Systems Division, Air Force Systems Command, Wright-Patterson AFB, Ohio, has primary responsibility for this program. Contractors include Martin-Marietta Corporation, Orlando, Florida; Raytheon Corporation, Bedford, Massachusetts; Hughes/Aerospace Group, Culver City, California; Marquardt Corporation, Van Nuys, California; Texas Instruments, Inc., Dallas, Texas; United Aircraft Corporation, East Hartford, Connecticut; Autonetics, Anaheim, California; Motorola, Scottsdale, Arizona.

Fiscal year 1972 program.—Guidance technology program in support of a short range bomber defense missile; investigation of radome materials to determine the material composition which meets the performance requirements of both a short range bomber defense missile and a multi-purpose missile; guidance subsystem design analysis in support of a multi-purpose missile; and an investigation of missiles and airborne detection equipment that will meet a near-term requirement for bomber defense against an imprecisely located surface-to-air missile threat.

Fiscal year 1973 planned program.—Continuation of the short range bomber defense missile guidance technology program started in fiscal year 1972; completion of the short range bomber defense missile/multi-purpose missile radome materials investigation started in fiscal year 1972; completion of the multi-purpose missile guidance subsystem design analysis started in fiscal year 1972; and continuation of the air-launched missile air-slewing technology program started in fiscal year 1971.

Program to completion.—The program for fiscal year 1974 and beyond will continue to investigate technology areas that support the development of advanced penetration aids. This is a continuing program.

Resources (in millions of dollars):

R.D.T. & E. funds for fiscal year 1971, $1; fiscal year 1972, $1.3; fiscal year 1973, $1.5; additional to completion, continuing; total estimated cost, not available.

Chairman ELLENDER. I note that your request for fiscal year 1973 is $200,000 more than the funds provided in fiscal year 1972. Will you tell us why you need this $200,000?

General GLASSER. The fiscal year 1972 program consisted of a concept feasibility study, a system design analysis, and the initial phase of two technology tasks. The fiscal year 1973 program consists almost entirely of technology demonstration tasks. The increase in fiscal year 1973 is the natural result of program evolution from the study and design phase to the actual fabrication of hardware with attendant higher costs.

MAVERICK TACTICAL AIR-TO-GROUND MISSILE

Chairman ELLENDER. $8.3 million is requested for the continuation of the development and testing of the Maverick air-to-ground tactical missile. Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

TACTICAL AIR-TO-GROUND MISSILE (MAVERICK)

CATEGORY: ENGINEERING DEVELOPMENT

Background.—The Maverick (AGM–65A) air-to-ground missile is being developed for use against stationary or moving small, hard targets such as tanks, armored vehicles and field fortifications. The MAVERICK will achieve a low cost per kill by increasing aircraft survivability through launch and leave capability, multiple carriage on a sortie, and high probability of hit. This capability is not available with present weapons such as free fall bombs, dispensers and larger guided weapons. Effectiveness studies reveal that in a hostile environment, the MAVERICK is a good weapon for destroying tanks on the basis of cost per kill, sorties required and aircraft losses.

Description.—The Maverick is a rocket-boosted, short range air-to-surface missile equipped with automatic television homing guidance. The missile can be carried in clusters of up to three missiles per store station on the F–4D/E and A–7D aircraft. The Maverick is also planned to be carried on the AX aircraft. The missile has a good short range and low altitude capability to permit operations under low cloud ceilings, and a stand-off capability for launch at longer ranges when weather and target conditions permit.

Description.—Length, 98 inches; Diameter, 12 inches; Weight, 475 pounds; Warhead, 130 pounds, conical shaped charge; Rocket, solid propellant, boost-sustain; Motor, total impulse [deleted] lb.-sec.).

Work performed by.—The Missile Contractor is Hughes Aircraft Company, Canoga Park, California and Tucson, Arizona. The Aircraft/Missile Interface contractors are McDonnell-Douglas, St. Louis, Mo. (F–4) and Ling Temco Vaught, Dallas, Texas (A–7). Other contractors are: Warhead—Chamberlain Manufacturing Corp., Waterloo, Iowa; Rocket Motor—Thiokol Chemical Corp., Huntsville, Alabama; Hydraulic Actuation Subsystem—National Waterlift Co., Kalamazoo, Michigan; Primary Battery—Eagle Picher, Joplin, Missouri. The program manager is the Aeronautical Systems Division, Wright-Patterson AFB, Ohio.

Fiscal year 1972 program.—Production of the first option of 2,000 missiles was initiated in July 1971 under the present contract options. Category II testing was terminated early based on a highly successful demonstration. The last demonstration launch was 8 September 1971. Follow-on R. & D. exploratory testing is planned, such as extended range, water targets and AX compatability launches. An adverse weather test in Europe started on 23 November 1971. This test is to gather engineering data on the Maverick seeker performance. Category III testing by the Tactical Air Command will start in February 1972 and joint Air Force/Army operational testing will start in May 1972.

Fiscal year 1973 planned program.—The Maverick R.D.T. & E. contract will be completed in FY 73. Funding in the amount of $8.3 million is required to pay contract performance incentives, abnormal economic escalation and final contract costs. The second production option decision point is in October 1972. The DSARC is presently planned for September 1972 after the results of the Joint Operational tests are available.

Program to completion:

a. *Cost.*—The cost of the Maverick R.D.T. & E. program has shown a modest increase in the estimated total required for completion. Since last year the estimate has increased by $1.8 million to a total of $139.7 million primarily due to abnormal economic escalation covered in the contract (tied to labor and materiel indices of the Bureau of Labor Statistics) and the government's share of overtarget costs.

b. *Schedule.*—Since the start of engineering development in July 1968 the Maverick R.D.T. & E. program has adhered to its planned schedule rather closely. A slip of one month in the start of the Category I and II test pro-

grams occurred. The major schedule slip has occurred in the production program due to delaying production go ahead from FY 71 to FY 72. The impact of this slip is to delay the Initial Operational Capability (IOC) from December 1971 to [deleted].

c. *Performance.*—Category II demonstration testing by the Air Force was terminated in September 1971 based on [deleted] hits out of 27 launches. The demonstrated performance was probability of hit of [deleted] reliability of [deleted] and accuracy of [deleted] ft. against primary targets. Of the [deleted] Category II missiles and [deleted] Category II training missiles launched to date [deleted] were direct hits on the target. The results have shown that the missile meets or exceeeds all performance specifications.

Milestones	Date	Dollars (millions)
Contract award	July 1968	12.8
Cat I start	August 1969	56.4
Cat II start	January 1971	108.6
Cat II end	November 1971	131.4
Production start	July 1971	209.3
Initial operational capability	[Deleted.]	
Completion of approved program		349.9

Resources (In millions of dollars):
R.D.T. & E. funds for fiscal year 1971 and prior, $123.9; fiscal year 1972, $7.5; fiscal year 1973, $8.3; additional funds to completion, none; and the total estimated cost is $139.7.

MAVERICK TACTICAL AIR-TO-GROUND MISSILE

Senator YOUNG. As I read the tabulation on page 236, the $8.3 million requested will complete the planned development program for the Maverick missile. Am I correct about this?

General GLASSER. Yes; that is correct.

Chairman ELLENDER. I note that the total estimated cost for the R. & D. for the Maverick missile is now stated at $139.7 million. What was the original estimated cost of this R. & D. effort?

General GLASSER. The total estimated R. & D. cost at contract award in July 1968 was $123.1 million.

Senator YOUNG. Just what will be done with the $8.3 million you are requesting for fiscal year 1973?

General GLASSER. Approximately $3.5 million will be used to pay abnormal escalation claims for calendar years 1971 and 1972. Approximately $4.8 million is for final settlement of the R.D.T. & E. program; that is, the Government's share of the overtarget amount and remaining profit. The remaining $0.1 million is for mission support to complete the R. & D. exploration tests.

Chairman ELLENDER. On page 235 of the descriptive summary, I note that the schedule calls for the Maverick to become operational in [deleted]. How does this compare to your original initial operational capability schedule for the Maverick missile?

General GLASSER. The original initial operational capability was scheduled for December 1971. The Air Force intentionally exercised a [deleted] month delay in the program which adjusted the initial operational capability accordingly to [deleted].

Senator YOUNG. What operational aircraft will carry the Maverick missile?

General GLASSER. The F–4D/E and the A–7D.

Chairman ELLENDER. I note on page 233 that you intend to use the Maverick missile on the proposed A–X close air support aircraft. Give us some examples of the types of targets that could be attacked by an A–X aircraft with the Maverick missile.

General GLASSER. The Maverick is capable of attacking and destroying tactical targets, mobile or fixed, within the category of close support. Thus the following targets could be attacked by an A–X aircraft employing Maverick. The primary targets are tanks, armored personnel carriers, field fortifications, and reinforced bunkers. Secondary targets include revetted aircraft, trucks, POL tanks, artillery, port facilities, ammunition bunkers, SAM and radar sites, reinforced concrete igloos, and hangerettes.

HOUND DOG II MISSILE

Chairman ELLENDER. $15 million is requested for the continuation of the development of the Hound Dog II missile system. Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

HOUND DOG II

CATEGORY: ENGINEERING DEVELOPMENT

Background.—This program includes the development and test of a passive/active radar seeker for potential future installation on the Hound Dog (AGM–28B) which is currently carried on the B–52. This seeker together with other appropriate modifications will give our bomber force a near term capability to destroy the [deleted] will enhance our ability to penetrate and accomplish the missions and tasks assigned to the bomber force.

Description.—The objective of this program is to demonstrate the capability of the seeker and associated components installed in the Hound Dog. This demonstration will consist of approximately 160 hours of captive carry time during which all components can be tested and a minimum of ten live launches against a realistic target [deleted] will be accomplished.

The seeker will operate with the following characteristics: (a) long range passive detection and tracking in excess of 400 nautical miles; (b) midcourse and terminal passive tracking and ranging with passive fuzing; (c) back-up terminal active radar tracking, ranging and fuzing. Additionally, components will be developed for installation on the B–52 to permit manual target identification and discrimination, equipment monitor and test, and selection of missile mode of operation. The Hound Dog II equipment will provide an [deleted] capability in addition to the missile's present [deleted] capability, either mode being crew selectable in-flight prior to launch.

Work performed by.—This program is managed by the Hound Dog II Program Office, Aeronautical Systems Division, Wright-Patterson AFB, Ohio. North American Rockwell, Oklahoma (NAR–T) will be the missile contractor and The Boeing Company, Wichita, Kansas (TBC–W) will modify the B–52. Contractors for the seeker and the target have not yet been selected.

Fiscal year 1972 program.—The efforts for FY 72 include the evaluation, negotiation and award of the four segment contracts. The seeker and test support aircraft segments are competitive procurements, the test missile modification award will be sole source to NAR–T and the B–52 modification for test will be a sole source award to TBC–W. After contract award the seeker contractor will begin the analysis and design phase. NAR–T and TBC–W will provide the necessary interface information to the seeker contractor, and will begin preparation of the modification packages for the test hardware. The target contractor will prepare modification packages for converting [deleted] into realistic targets [deleted]. There has been a significant change in the program from that described in the FY 1972 Descriptive Summary. The previous program was essen

tially a feasibility demonstration which would have been completed with FY 72 funds of $12.1 million. The present program is a sequentially structured engineering development program which will go through a full operational capability demonstration prior to a commitment to production. This has increased the R.D.T. & E. funds requirement and has extended the schedule, however, it provides substantially higher confidence that the resulting equipment will be operationally capable.

Fiscal year 1973 planned program.—The plans for FY 73 are a continuation of the FY 72 efforts in each of the four program segments. The seeker contractor will continue seeker design and analysis, and will begin fabrication and ground testing of 15 prototype seekers and associated components. Based on risk assessment of seeker segment progress TBC–W will begin modification of a B–52 for the flight test program. NAR–T will inspect and repair 15 AGM–28A missiles which are presently in storage. The 15 AGM–28As will be modified to the AGM–28B configuration and the prototype seekers and components will be installed in the missiles. Test target modification will be completed. The captive flight phase of the flight test program will begin with seeker equipment installed in a test bed EC–135, and with B–52/Hound Dog II, being flown [deleted].

Program to completion.—The captive flight phase of the test program will continue to increase confidence that the seeker is performing as intended without having to expend test resources. When successful seeker performance is indicated, the live launch phase of the test program will begin. A ten launch program has been established. The successful accomplishment of the live launch phase will permit Air Force Systems Command to certify that the Hound Dog II system is operationally capable. The results of the R.D.T. & E. efforts will be briefed at the conclusion of the tests to obtain approval to modify [deleted] AGM–28Bs and [deleted] B–52s for the Strategic Air Command operational inventory.

MILESTONES

Event	Date	Estimated cost to reach milestones (millions)
Seeker contract award	January 1972	$0.2
Test missile mod contract award	March 1972	2.8
Test aircraft mod contract award	do	2.8
Target contract award	April 1972	3.7
Seeker analysis and design	September 1972	9.2
Seeker fabrication and ground tests	April 1973	18.3
System captive flight tests	November 1973	25.3
System launch test	July 1974	33.6
Approval for inventory modification	September 1974	37.2

Resources (In millions of dollars):

R.D.T. & E. funds for fiscal year 1971, $0.2; fiscal year 1972, $5.1; fiscal year 1973, $15; additional funds to completion, $16.9; and the total estimated cost is $37.2.

HOUND DOG II MISSILE

Chairman ELLENDER. As I understand this effort, it involves only the development of a new seeker for installation on existing Hound Dog missiles. Am I correct about this?

General GLASSER. You are correct.

Senator YOUNG. What is the additional capability you are seeking in this effort?

General GLASSER. The modification of the missile to accept the seeker will give an [deleted] capability in addition to the missile's present [deleted] capability. The air-to-air capability is intended to [deleted].

Senator YOUNG. Assuming that your R. & D. program is successful, how many of the existing Hound Dog missiles do you plan to modify?

General GLASSER. We plan to modify [deleted] Hound Dog missiles.

Chairman ELLENDER. Will you have to modify any of the B–52's, and if so, how many do you plan to modify?

General GLASSER. Yes; the B–52 will have to be modified to accept the appropriate controls and displays. We plan to modify [deleted] B–52's.

Chairman ELLENDER. Could you give us a rough estimate of the cost of the missile and B–52 modifications?

General GLASSER. Our present estimate of the cost to modify [deleted] missiles and [deleted] B–52's is approximately $30.3 million.

WESTERN TEST RANGE

Chairman ELLENDER. $62.7 million is requested for the management and support of the Western Test Range. Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

WESTERN TEST RANGE

CATEGORY: MANAGEMENT AND SUPPORT

Description.—The Western Test Range (WTR) is an Air Force operated National Range which provides range tracking data acquisition and flight safety support for all ballistic missile and space system launches from Vandenberg AFB, California. The WTR operates an integrated system of radars, optical tracking instruments, telemetry receivers, range safety command destruct transmitters, computers, and data transmission and display equipment. Operating sites include Vandenberg AFB and Pillar Pt, California; Wheeler AFB, Hawaii; Eniwetok Atoll, Marshall Islands; Oeno Island; the Phoenix Islands; and one instrumentation ship. This program provides for the pay and related costs of civilian personnel, travel, transportation, rents, utility costs, procurement of supplies and equipment, instrumentation ship operation costs, range improvement expenditures, and contractual support services used directly in support of the scientific and technical effort. All but the range improvement funds tend to be stable from year to year and constitute essentially the fixed costs associated with the range.

Work performed by.—Air Force management is under the Air Force Space and Missile Test Center, Vandenberg AFB, California. The Deputy Chief of Staff for Operations, Headquarters Air Force Systems Command, has central planning authority for the Air Force National Ranges. Major contractors are: Federal Electric Corporation, Division of International Telephone and Telegraph, Paramus, New Jersey, (the FY 72 incumbent contractor, this contract is being completed for FY 73) is responsible for operational maintenance of range instrumentation; Kentron-Hawaii, Limited, Honolulu, Hawaii, provides logistic support and base services at Eniwetok Atoll and Canton Island; Philco-Ford Corporation, Ft Washington, Pennsylvania, operates the Vandenberg AFB precision measurements laboratory; Consolidated American Services, Incorporated, Long Beach, California, (the FY 72 incumbent contractor, this contract is being completed for FY 73) operates the Vandenberg AFB component cleaning facility; Systems Development Corporation, Santa Monica, California, provides computer systems support; and Lear-Siegler Services, Incorporated, Los Angeles, California, conducts continuing range safety analysis for the Western Test Range.

Fiscal year 1972 program.—There are 80 launches scheduled for FY 1972. In addition to the continuing fixed costs the FY 1972 program provides for continued improvement to the Phoenix terminal site, tracking accuracy improvements to mid-course radars, for continued improvement to the range telemetry and data processing capability, and procurement of communications equipment for downrange and Vandenberg AFB locations.

Fiscal year 1973 planned program.—There are 86 launches tentatively scheduled for FY 1973. The FY 1973 program will fund the continuing fixed costs of operating the center and will provide for additional improvements to the Canton Island deployment position radar, completion of the modification to mid-course radars at Johnston Island, minor modification to telemetry equipment, additional

data processing software and minor technical modifications to range instrumentation ships and aircraft.

Program to completion.—This is a continuing program.

Resources (In millions of dollars) :

R.D.T. & E. funds for fiscal year 1971, $67.8; fiscal year 1972, $65.4; fiscal year 1973, $62.7; additional funds to completion, are continuing; and the total estimated cost is not available.

WESTERN TEST RANGE

Chairman ELLENDER. How many civilians are employed at the Western Test Range, and how much of the $62.7 requested is for their compensation and benefits?

General GLASSER. There are presently 484 Department of Defense civil service personnel assigned to the Air Force Space and Missile Test Center, which operates as part of its mission the Western Test Range. Manpower reductions are expected to reduce authorized SAMTEC civil service manning to 411 for fiscal year 1973. The fiscal year 1973 program contains $7.75 million for civilian pay.

Senator YOUNG. How many military personnel are assigned to this facility?

General GLASSER. There are presently 546 military personnel assigned to the Space and Missile Test Center, which operates the Western Test Range as part of its mission.

Chairman ELLENDER. Please comment on the anticipated activity at the Western Test Range during fiscal year 1973 and name some of the major systems that you expect to use these facilities during fiscal year 1973.

General GLASSER. During fiscal year 1973 we are presently forecasting that the Western Test Range will support 87 launches. Within this total the major systems and programs being supported are: Advanced ballistic reentry system, Minuteman II and III operational test, Minuteman II launches for the SAC emergency radio communications system, Minuteman I and Titan II launches for the Army safeguard systems test, Air Force space test program DoD space defense programs, NASA Thor Delta launches for the Nimbus meteorological satellite, improved Tiros operational satellite and the Canadian Telsat, and NASA Scout launches for the German research satellite and European satellite research organization satellite.

WESTERN TEST RANGE TELECOMMUNICATIONS

Chairman ELLENDER. $4.9 million is requested for the telecommunications support of the Western Test Range. Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

WESTERN TEST RANGE TELECOMMUNICATIONS

CATEGORY: MANAGEMENT AND SUPPORT

Description.—The Western Test Range (WTR) Communications program provides funds for essential communications services and equipment procurement to the Air Force managed WTR (Program Element 65301F) in support of U.S. missile and space programs and the Acquisition and Command Support (ACS) (Program Element 65806F) program. Leased services included base communications services (leased networks, nontactical radios, wire service, teletypewriter exchange (TWX) and toll services), long haul point-to-point leased/government own circuitry, material and facilities, including but not limited

to access lines for systems such as Automatic Voice Network (AUTOVON), Automatic Digital Network (AUTODIN), and other dedicated circuitry.

Work performed by.—Air Force management is under the Air Force Systems Command (AFSC). The funds are provided for actual services and procurements required by HQ AFSC and the following AFSC field units: Aeronautical Systems Division, Electronic Systems Division, Aerospace Medical Division, Space and Missile Systems Organization and Space and Missile Test Center. The majority of the circuits under this program are leased.

Resources (in millions of dollars):

R.D.T. & E. funds for fiscal year 1971, $5; fiscal year 1972, $4.9; fiscal year 1973, $4.9; additional funds to completion, are continuing; and the total estimated cost is not available.

Western Test Range Telecommunications

Chairman Ellender. Why is the request for telecommunications support of the Western Test Range separate from the request for the management and support of the range?

General Glasser. The separate program element and request for funds for telecommunications reflects the decision within OSD to provide added visibility of funds spent in that functional area. Funds within this element support both the Western Test Range and the acquisition and command support programs. These telecommunications funds were previously carried in these base program elements and have been extracted from the base elements and transferred to this expanded telecommunications program element.

Senator Young. What will the $0.9 million requested for fiscal year 1973 be used for?

General Glasser. The $0.9 million contained with the fiscal year 1973 $4.9 million request for the program will be used for the purchase of communications equipment for the Western Test Range. This equipment will provide augmentation to intrasite communications, the range communications control center, point-to-point communications, and the frequency control and analysis system.

Military Astronautics and Related Equipment

Chairman Ellender. $345.7 million is requested for the budget activity entitled "Military Astronautics and Related Equipment." How much was provided for this activity in fiscal years 1971 and 1972?

General Glasser. For prior years, the amounts made available for this budget activity, restructured for comparability with fiscal year 1973, were: $429,662,000 for fiscal year 1971 and $341,086,000 for fiscal year 1972.

Chairman Ellender. Would you comment generally on the nature of the projects funded under this budget activity?

General Glasser. The types of projects funded under this activity include research and development, test, and evaluation associated with the acquisition of new satellite systems and space boosters for the defense support program, defense systems applications program and the space test program. A piggyback communications package will be developed and placed on the Navy fleet satellite communications system. We plan in the near future to proceed with the development of a navigation satellite system. In addition, exploratory and advanced development projects are funded in such areas as space guidance, elec-

trical power, propulsion, computers, and space-borne sensor technologies.

Chairman ELLENDER. Please comment on any major reprograming increases or decreases for this budget activity and any emergency fund transfers to this budget activity.

General GLASSER. There have been no transfers from the appropriation "Emergency Fund, Defense" to this budget activity. Currently pending congressional approval is a reprograming request to increase this budget activity by $4,500,000. An increase of $6,500,000 to advanced surveillance technology is required to develop a dedicated background measurement satellite which previously had been planned to be launched with other experiments on a standard spacecraft. The complexity and increased size of this important experiment precludes that approach. The increase is partially offset by a $2 million reduction in instrumentation improvements planned for the Western Test Range.

DEFENSE SUPPORT

Chairman ELLENDER. The request includes $21.7 million for the continuation of the development of the defense support project. Has the committee been furnished with details on this request?

General GLASSER. Yes, sir. You have been furnished the details on this request.

DEFENSE SYSTEMS APPLICATIONS PROGRAM

Chairman ELLENDER. $5 million is requested for the program entitled "Defense Systems Applications Program." Has the committee been furnished with the details on this request?

General GLASSER. Yes, sir. You have been furnished the details on this request.

MILITARY SATELLITE COMMUNICATIONS SYSTEM

Chairman ELLENDER. $24.8 million is requested for the program entitled "Military Satellite Communications System." Selected paragraphs from the descriptive summary will be included at this point in the record.

(The information follows:)

MILITARY SATELLITE COMMUNICATIONS SYSTEM

CATEGORY: TELECOMMUNICATIONS

Background.—One of the most urgent DOD requirements to be satisfied is to provide reliable, secure communications, for command and control of the Single Integrated Operational Plan (SIOP) forces in a pre-, trans- and post-attack environment. Present command and control systems do not offer assurance of survivable communications beyond initial execution of the forces. Continued force direction and force reporting are vital communications requirements. The current Tactical Satellite Communication (TACSATCOM) Program demonstrated the feasibility of using spaceborne repeaters to provide reliable communications between selected mobile users. The present R&D satellites (TACSAT I and Lincoln Experimental Satellite #6) have been on orbit for sometime and their remaining lifetimes are a few years at the most. The present High Frequency (HF) network and ground relay do not satisfy the command and control requirements of nuclear strike forces; blanking of HF by nuclear detonation will render the HF network ineffective. Ground relay is susceptible to failure caused by nuclear effects. The Navy Fleet Satellite Communications (FLTSATCOM) System was approved in September 1971. Approximately 25 percent of the power of the FLTSATCOM synchronous equatorial satellites will be dedicated to Air

Force use, primarily for SIOP command and control; however, synchronous equatorial satellites do not provide either polar coverage [deleted]. The Air Force draft Development Concept Paper (DCP) for a Survivable Satellite Communication (SURVSATCOM) System recommends accomplishing the technology required to provide a highly survivable system in the 1980 time period and augmentation of the FLTSATCOM system by polar [deleted] for a near-term solution.

Description.—This program acquires the space and terminal hardware to support approved programs and develops the technology required to provide future satellite communications systems. The projects are: Project A—Satellite Communications Terminals—Ultra High Frequency (UHF) terminals will be developed and procured for use with the Navy FLTSATCOM System and the polar satellite communications [deleted]. Terminals will be installed on Airborne Command Post (ABNCP) and SIOP strike aircraft. This project was reported in P.E. 33601F, MILSATCOM in FY 72. An airborne terminal for Advanced Airborne Command Post (AABNCP) aircraft will be developed for use with the Defense Satellite Communications System (DSCS) Phase II satellites. This project was reported in FY 72 under P.E. 63708F, Airborne Catellite Communications Terminals—Strategic. Project B—Space Communications Technology will develop and demonstrate advanced space communications subsystems in the optical space communications and advanced microwave communications areas. The Lincoln Laboratory Experimental Satellites (LES) are supported by procurement of hardware and development of a [deleted] terminal. This project was reported in FY 72 under P.E. 63430F, Survivable Satellite and P.E. 63401F, Space Vehicle Sub-Systems. Project C—Satellite Support Systems will develop and demonstrate advanced techniques to enhance the survivability of satellites [deleted]. This includes masking of satellites to avoid [deleted] detection [deleted]. This project was reported in FY 72 under P.E. 63430F, Survivable Satellites and P.E. 64737F, On-Board Sensors. Project D—Polar Satellite Communications [deleted]. On-going satellite programs with suitable polar orbits have been selected to [deleted] that augment the coverage provided by the Navy FLTSATCOM program and will be compatible with the UHF terminals procured in Project A. Project E—Satellite Control Facility Communications. The Satellite Control Facility funding was reported in FY 72 under P.E. 35110F, Satellite Control Facility and P.E. 35151F, Satellite Control Facility, Defense Communications System. That portion of these program elements which fund leased line support has been combined into P.E. 33601F.

Work performed by.—The UHF Terminal Program (Project A) is not on contract. The Super High Frequency (SHF) terminal work is at Air Force Avionics Laboratory at Wright-Patterson AFB, Ohio. The Space Communications Technology (Project B) will be the responsibility of the Air Force Avionics Laboratory with contracts to Lockheed Missile and Space Company, Sunnyvale, California; and McDonnell-Douglas Astronautics Company, St. Louis, Missouri. The Satellite Survivability, On-Board Sensors (Project C) and Polar Satellite [deleted] (Project D) will be managed by the Space and Missiles Organization of Air Force Systems Command. Contractors have not been selected. The Satellite Control Facility Support (Project E) is on contract with commercial carriers for leased lines.

Fiscal year 1972 program.—Project A: The SHF ABNCP terminal development will be completed and the terminal installed on a test aircraft. The UHF Satellite Terminal (Project A) design specification and Request for Proposal (RFP) will be prepared and a contractor selected. Project B: The development of critical laser components will continue and components will be purchased for a brassboard laser demonstration. $2.0M was used to procure hardware for LES 8 and 9 to assure a [deleted] launch. Development was initiated for a [deleted] terminal to support the Survivable Satellite Communications System program. Project C: A firm base is being developed for technical requirements by technology reviews, preliminary designs and design comparisons. Program alternatives will be narrowed to those providing the greatest technological return. Project D: The Polar Satellite Communications [deleted] was added to the [deleted] System, P.E. [deleted]. [Deleted] polar elliptical satellites are scheduled to be launched in FY [deleted]. An additional transponder package was funded for a classified program launch in FY [deleted]. Host programs are being identified for further application of the [deleted] concept. Project E: The Satellite Control Facility support consists of leased lines costs.

Fiscal year 1973 planned program.—Project A: The SHF ABNCP terminal test program will be completed. The UHF terminal development will be completed and procurement of the terminals initiated. Project B: The optical laser brassboard system will be demonstrated to include an acquisition and tracking system. $3.0M will be used for LES 8/9 hardware. Fabrication and testing of components for the [deleted] terminal will begin. Project C: Selected [deleted] will be developed, tested and delivered for installation on Defense Support Program (DSP) satellites. Satellite models will be used to determine radar and optical cross sections and studies will be made [deleted] effectiveness. Project D: A polar satellite communications [deleted] will be developed for executing the forces. The [deleted] will be low cost, low weight and provide protection against a [deleted] electronic jamming threat. [Deleted] will be procured. Project E, Satellite Control Facility Communications, will be funded in O&M in FY 73.

MILESTONES

[In millions of dollars]

Program to completion	Date	Estimated cost to reach milestones
Polar [deleted] launch (project D)	April 1973	N/A
Laser brassboard demo. (project B)	May 1973	5.0
Terminal development completed (project A)	June 1973	21.4
Terminal production initiated (project A)	do	N/A
Terminal test with 1st satellite (project A)	July–August 1973.	N/A
Launch Lincoln lab (LES 8/9) satellite (project B)	September 1974.	N/A
Launch 1st FLTSATCOM satellite (PE 33109N)	[Deleted]	N/A
FLTSATCOM FOC (PE 33109N)	[Deleted]	N/A
Complete terminal installation (SIOP) (project A)	[Deleted]	171.5
Polar [deleted] launch (2) (PE)	[Deleted]	N/A
Laser space demonstration (project B)	June 1976	19.8

[In millions of dollars]

Resources	Fiscal year 1971 and prior	Fiscal year 1972	Fiscal year 1973	Additional to completion	Total estimated cost
R.D.T. & E. Funds:					
Project A—Satellite communication terminal (UHF)	3.0	5.3	11.1	2.0	21.4
Project B—Space communication technology	1.4	5.4	8.1	(1)	N/A
Project C—Satellite support system	0	4.4	3.6	(1)	N/A
Project D—Polar satellite communication [deleted]	3.8	1.2	2.0	0	7.0
Project E—Satellite control facility communications	3.4	3.3	0	0	(2)
Total	11.6	19.6	24.8	(1)	N/A

[1] Continuing.
[2] Continuing in O. & M.

MILITARY SATELLITE COMMUNICATIONS SYSTEM

Chairman ELLENDER. Please provide a tabulation for the record listing each of the projects funded under this program, the amounts for fiscal years 1971 and 1972, and the estimate for fiscal year 1973.

General GLASSER. Yes, sir.

(The information follows:)

[In millions of dollars]

	Fiscal year—		
	1971	1972	1973
Project A—Satellite com terminals	3.0	5.3	11.1
Project B—Space com technology	1.4	5.4	8.1
Project C—Satellite support subsystems	0	4.4	3.6
Project D—Polar satellite com	3.8	1.2	2.0
Project E—Sat cont facility	3.4	3.3	0
Total	11.6	19.6	24.8

Senator YOUNG. Does the fiscal year 1973 request of $24.8 million include funds for any projects which have not been funded in prior years?

General GLASSER. No, sir; each project was funded in fiscal year 1972.

Chairman ELLENDER. I note that your request includes $11.1 million for the project entitled "Satellite Communications Terminal." This is an increase of about $5.8 million over the sum provided for fiscal year 1972. What accounts for the large increase in this project?

General GLASSER. The fiscal year 1972 funding for the development of the ultrahigh frequency (UHF) satellite communications terminal is for the last 4 months of the year. The fiscal year 1973 funding is for 12 months; therefore, the increase in fiscal year 1973 funding.

SPECIAL ACTIVITIES

Chairman ELLENDER. Has the committee been provided with details on the request of $188.5 million for "Special Activities?"

General GLASSER. Yes, sir; it has.

SATELLITE CONTROL FACILITY

Chairman ELLENDER. $3.6 million is requested for the program element entitled "Satellite Control Facility." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

SATELLITE CONTROL FACILITY

CATEGORY: INTELLIGENCE AND COMMUNICATIONS

Description.—The Satellite Control Facility (SCF) is a world-wide network consisting of a Headquarters at Los Angeles, California, seven geographically dispersed tracking stations, a control center (the Satellite Test Center (STC) at Sunnyvale, California), and a satellite recovery group at Hickam AFB, Hawaii. The mission of the SCF is to provide tracking, commanding, real-time telemetry, and recovery of DOD space vehicles in a multi-satellite environment. The SCF simultaneously supports satellites of many programs operating in different orbital parameters to accomplish diversified test objectives. A complex instrumentation system consisting of antennas, communications, and data processing equipment provides the means for meeting the program requirements of the many space vehicles. This element provides only for the development and installation of R&D operational equipment.

Work performed by.—Air Force management of this National Range is under the Space and Missile Systems Organization, Los Angeles, California. Principal contractors are: Aerospace Corporation, El Segundo, California (General System Engineering and Technical Direction); Lockheed Missile and Space Company, Sunnyvale, California (Satellite Test Annex Development and Integration Contractor, Remote Tracking Station Operation and Maintenance Contractor), Philco-Ford Western Development Laboratories, Palo Alto, California (Remote Tracking Station Integration Contractor, Remote Tracking Station Operation and Maintenance Contractor, and Logistic Support Management Contractor); and Systems Development Corporation, Santa Monica, California (Software Integration Contractor).

Fiscal year 1972 program.—Work continued on the acquisition and installation of the 46-foot antennas with the completion of the New Hampshire antenna in December and installation progressing at Hawaii. Radomes for the communications satellite terminals at Antigua and the Indian Ocean Station were procured and the terminals modified to operate with the new Phase II Defense Satellite Communications System (DSCS).

Fiscal year 1973 planned program.—The 46-foot antenna effort will continue through completion of the third antenna. A competition for the next increment of standard antennas will be held. These antennas will be used to replace the rest of the 14-foot antennas in the network and the larger antennas as their useful life is completed. The communications system update for operation with the DSCS Phase II satellites will continue primarily in the planning stages. Funds are significantly lower than previous years since only Technical Acquisition funds are now retained in P3600. All Base Support and Other Contractual Services items have been transferred to P3400 Operation and Maintenance. Technical improvement and update of the network will be increasingly required as the network ages and the complexity of the satellites increases. Planning for very large increases in the amount of data handled by the system and for real time processing of that data must continue in order for the SCF to provide adequate support to the existing and planned satellite programs.

Program to completion.—This is a continuing program.

Resources (In millions of dollars):

R.D.T. & E. funds for fiscal year 1971, $32.4; fiscal year 1972, $31.6; fiscal year 1973, $3.6; additional funds to completion are continuing; and the total estimated cost is not available.

SATELLITE CONTROL FACILITY

Chairman ELLENDER. Last year we discussed the possibility of transferring funding of this facility from research and development to operation and maintenance, and I note in the descriptive summary that this has in part been done. Does this account for the very large difference between the $31.6 million provided for fiscal year 1972 and the $3.6 million you are requesting for fiscal year 1973?

General GLASSER. Yes, sir.

Senator YOUNG. How much are you requesting in the operation and maintenance budget for the support of the satellite control facility?

General DE LUCA. The operation and maintenance appropriation budget includes $29.8 million for support of the satellite control facility.

Chairman ELLENDER. On page 267 of the descriptive summary, I note the following statements: "Technical improvement and update of the network will be increasingly required as the network ages and the complexity of the satellites increases. Planning for very large increases in the amount of data handled by the system and for real time processing of that data must continue in order for the SCF to provide adequate support to the existing and planned satellite programs." Does this mean that you anticipate large increases in the funds needed to support the satellite control facility, regardless of whether they come through the R. & D. budget or the operation and maintenance?

General GLASSER. No, sir. The Air Force satellite control facility wideband configuration (AFSCF–WBC) provides for the technical improvement and update of the network deemed required in the descriptive summary. The wideband configuration is not yet approved. If approved, the wideband configuration estimated costs would be in the R.D.T. & E. appropriation and the other procurement appropriation for fiscal years 1973 through 1977. I am providing a tabulation for the record setting out these costs.

(The information follows:)

[In millions of dollars]

Fiscal year	R.D.T. & E., Air Force	OP-Air Force	Total
1973	0.8	2.3	3.1
1974	.6	2.0	2.6
1975	.6	3.4	4.0
1976	1.5	7.6	9.1
1977	1.3	7.4	8.7
Total	4.8	22.7	27.5

Senator YOUNG. Just what will you do with the $3.6 million you are requesting for fiscal year 1973?

General GLASSER. The $3.6 million for fiscal year 1973 will be used for technical acquisition items only. I will provide a list of these items for the record.

(The information follows:)

	Millions
Refurbishment and reliability	$0.6
Recovery	.5
46-foot antennas	.9
SGLS configuration switching	.1
RF signal patching	.3
Wideband configuration	.8
System readiness testing	.4
Total	3.6

Chairman ELLENDER. Is any of the work performed under this program performed by Air Force funded Federal contract research centers?

General GLASSER. No, sir.

SPACE BOOSTERS

Chairman ELLENDER. $1.8 million is requested for the space boosters program. Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

SPACE BOOSTERS (FORMERLY TITAN III SPACE BOOSTER)

CATEGORY: INTELLIGENCE AND COMMUNICATIONS

Description.—The Titan III program provides a single integrated space launch system to support diversified Department of Defense (DOD) and National Aeronautics and Space Administration (NASA) space missions in the 5,000 to 30,000 pound payload class for the next decade. The Titan III is being developed as a complete system of standardized vehicles and facilities, designed to enhance reliability and reduce costs through the use of production line techniques, re-

curring operations at an efficient launch rate, and simplified maintenance procedures. Four Titan III models have been developed and flown and a fifth is in development. (The Titan IIIM which was being developed for the MOL program was cancelled in 1969.) The Titan IIIA (no longer in use) consisted of modified Titan II first and second stages with a new storable propellant, inertially guided, upper stage (Transtage).

The Titan IIIC utilized essentially the "A" vehicle for a core to which are strapped in tandem two 120'' diameter solid rocket motors. The TIIIC weighs approximately 1,430,000 pounds, develops 2,300,000 pounds of thrust at liftoff, and is capable of placing a 28,000 pound payload into low earth orbit.

The Titan IIID consists of the first two stages of the core vehicle, two five-segment solid motors identical to those on the "C" and a radio guidance system.

The Titan IIIB is essentially the "A" configuration with the Agena upper stage substituted for the Transtage.

The latest Titan vehicle, the Titan IIIE is being developed to launch NASA payloads with the Centaur upper stage. The TIIIE is essentially a Titan IIID with the Centaur interface. This vehicle is guided by the Centaur inertial guidance system.

A two-pad Integrate-Transfer-Launch (ITL) facility supports Titan III operations at the Eastern Test Range (ETR) while conventional launch complexes support the Western Test Range (WTR) launches. This Program Element provides for development and support; follow-on production vehicles are included under the Program Elements of the various using programs which they support.

Work performed by.—Responsible Air Force agency is the Space and Missile Systems Organization, Los Angeles, Calif. Systems Engineering and Technical Direction is provided by Aerospace Corp., Los Angeles, Calif. Contractors include: Martin-Marietta Corp., Denver, Colo. (integration, core vehicle, transtage); Aerojet-General Corp., Sacramento, Calif. (liquid propulsion systems); United Technology Corp., Sunnyvale, Calif. (solid rocket motors); Delco Electronics Division, Milwaukee, Wis. (inertial guidance); and Western Electric Co., Winston-Salem, N.C. (radio guidance).

Fiscal year 1972 program.—A number of engineering improvements for all vehicles which had been underway in the Titan IIIM program were completed this fiscal year. Development of the Titan IIIE for the NASA Viking program continued on schedule. Refurbishment of the Launch Facilities/Aerospace Ground Equipment continued.

Fiscal year 1973 planned program.—The annual Eastern Test Range (ETR) launch support at the Integrate-Transfer-Launch facility and the refurbishment of the Launch Facility/Aerospace Ground Equipment will continue. Accomplishment of selected performance and engineering improvements is scheduled for completion in fiscal year 1973. The development of a new guidance system for the Titan IIIC will continue. First launch is expected in fourth quarter fiscal year 1973.

Program to completion.—Development of engineering improvements to the production model Titan IIIC and launch facility and equipment refurbishment are expected to continue as additional configuration or tasks are generated by user program requirements.

MILESTONES

Event	Date	Estimated cost to reach milestones
Program definition approval	October 1961	(1)
Program development approval	December 1962	(1)
First Titan III A launch (R. & D.)	September 1964	(1)
First Titan III C launch (R. & D.)	June 1965	(1)
Final Titan III C launch (R. & D.)	May 1969	$805,000,000

[1] Not available.

PRODUCTION PROGRAM[1]

	1971 and prior	Fiscal year 1972	Fiscal year 1973	To comp	Total approved
Quantity:					
AF	42	14	13	18	87
NASA	0	1	1	5	7
Costs (hardware and launch) (in millions):					
AF	$536.8	$108.7	$102.7	$153.7	$901.9
NASA	16.6	16.0	29.2	58.1	119.9

[1] All launch vehicle production is user funded as is the development effort on the Titan IIIE.

Resources (In millions of dollars):
R.D.T. & E. funds for fiscal year 1971 and prior, $1,061.5; fiscal year 1972, $3.4; fiscal year 1973, $1.8; additional funds to completion, are continuing; and the total estimated cost is not available.

SPACE BOOSTERS

Senator YOUNG. On page 269 of the descriptive summary, I note that one of the users of the Titan III space boosters is a joint program designated as "National Aeronautics and Space Administration/Federal Republic of Germany Helios." How much has the Federal Republic of Germany contributed to the program?

Secretary HANSEN. We understand that the Federal Republic of Germany is providing the Helios satellite to NASA. However, we are not aware of the financial arrangements between NASA and the Federal Republic of Germany.

Chairman ELLENDER. In fiscal year 1972, a large part of the funding for this effort was transferred from research and development to operation and maintenance. How much is being requested in the operation and maintenance accounts for this program in fiscal year 1973?

General GLASSER. There is $15.9 million requested in the operation and maintenance appropriation for this effort in fiscal year 1973.

Senator YOUNG. Is any of the work on this program performed by an Air Force-funded Federal Contract Research Center and, if so, how much of the $1.8 million being requested is for this work?

General GLASSER. Yes, sir; $1.1 million of the request is for Federal Contract Research Center support.

Chairman ELLENDER. Just what will you do with the $1.8 million you are requesting for fiscal year 1973?

General GLASSER. $1.1 million will provide for scientific, engineering, and technical direction support. This provides for failure analysis, proposal technical review, and advanced development planning. The remaining $700,000 will provide for contractor analysis of flight and/or ground checkout anomalies and reliability improvement affecting the entire Titan III family.

SATELLITE DATA SYSTEM

Chairman ELLENDER. The request includes $23 million for the project entitled "Satellite Data System." Has the committee been provided with details on this request?

General GLASSER. Yes, sir; the committee has been provided the project details.

SPACE VEHICLE SUBSYSTEMS

Chairman ELLENDER. $4.9 million is requested for a continuing advanced development program entitled "Space Vehicle Subsystems." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

SPACE VEHICLE SUBSYSTEMS

CATEGORY: ADVANCED DEVELOPMENT

Description.—This program is a consolidation of satellite subsystem technology projects. Its objective is to define, develop and demonstrate advanced space vehicle subsystems required for DOD space missions beyond 1974. The projects are: Project A—Advanced Space Guidance, Project B—Advanced Space Power Supply Technology, Project C—Advanced Satellite Secondary Propulsion System.

Project A—Advanced Space Guidance (formerly P. E. 63406F), will define and demonstrate performance capabilities of selected space guidance, navigation and control techniques. Efforts include development of a Space Precision Attitude Reference System (SPARS), development of a Flexible Guidance Software System (FGSS), study of autonomous navigation concepts to provide independence from ground station update, and development of advanced guidance and navigation subsystem components. This project will provide a factor of ten times improvement in inertial attitude reference accuracies for precise pointing capability; increased flexibility and autonomy to configure mission software at greatly reduced time and cost; and the capability for autonomous, non-radiating, self-sufficient navigation in space for low orbit missions.

Project B—Advanced Space Power Supply Technology, previously the only effort under P. E. 63401F, provides for substantially reducing the volume and weight of spaceborne power systems, increasing power level and lifetime capabilities, and to increase the nuclear survivability of space power systems. Efforts include development of the Large Retractable Solar Cell Array, Two Kilowatt Long-Life Battery, and Hardened Solar Cell Power System. The Large Retractable Solar Array will provide a sevenfold increase in power generation capability; the Two Kilowatt Long-Life Battery will provide twofold increase in efficiency and reduced volume; and the Hardened Solar Cell Power System will provide a tenfold increase in power system survivability to meet nuclear hardening criteria for military satellite systems.

Project C—Advanced Satellite Secondary Propulsion System (formerly P.E. 63422F) will demonstrate the capability of advanced concept propulsion systems to fulfill satellite vehicle requirements for long life, precise attitude control, station-keeping and orbit sustentation. System weight, electrical power availability, thrust level, total impulse requirements, and satellite configuration are important factors which determine the selection and design of an optimum secondary propulsion system. Technology will be directed toward thrust levels ranging from 100 micropounds to 100 millipounds with thrust duration exceeding one year. A charged particle or colloid electric thruster will be developed. The colloid thruster will provide a fourfold increase in specific impulse and 50 per cent reduction in propulsion system weight and volume for long-life satellite missions.

Work performed by.—This program is under the executive management of the Air Force Systems Command. The Air Force Space and Missile Systems Organization (SAMSO), Los Angeles, Calif., is the lead division and manager for Projects A and C. Project A (Space Guidance) contractors are Honeywell, Inc., Minneapolis, Minn.; IBM, Owego, N.Y.; TRW Systems, Redondo Beach, Calif.; and General Dynamics Convair Corp., San Diego, Calif. For Project C (Advanced Satellite Secondary Propulsion) the technology projects are accomplished by the Air Force Rocket Propulsion Laboratory, Edwards AFB, Calif. TRW Systems Group, Redondo Beach, Calif., has been selected to develop the colloid electric thruster. Project B (Advanced Space Power) is managed by the Air Force Aerospace Propulsion Laboratory with participation by SAMSO to provide future system requirements and mission analysis. Hughes Aircraft Co., El Segundo, Calif., is the contractor for the Large Retractable Solar Cell Array and the Hardened Solar Cell Power Systems projects. TRW Systems Group,

Redondo Beach, Calif., has been selected to develop the Two Kilowatt Long-Life Battery.

Fiscal year 1972 program.—In Project A, development of components for the Space Precision Attitude Reference System (SPARS) qualification model is continuing. SPARS integrated component tests will start during the third quarter fiscal year 1972. A Critical Design Review for the configurator element of the Flexible Guidance Software System (FGSS) will occur in late fiscal year 1972. Coding of elements of the software program will begin after a successful design review. Autonomous navigation conceptual studies will be continued, critical components defined, and engineering evaluations made. An ultraviolet sensor and an ion velocity vector sensor will be provided to the Space Test Program (STP), respectively, to investigate the ozone layer of the upper atmosphere as a reference horizon and to evaluate the ion sensor as a spacecraft attitude sensing instrument for space application. In Project B, orbital flight testing of the Large Retractable Solar Array will continue for a six-month period. Long-Life Battery critical component development will continue and accelerated life testing of a 1KW prototype will begin in late fiscal year 1972. Fabrication of Hardened Solar Cell Power System critical components will start for simulated environmental testing of components to begin in the third quarter fiscal year 1972. In Project C, colloid thruster critical component development and test will continue in fiscal year 1972. Life test of the breadboard model began in December 1971. Design and fabrication of a prototype thruster will start in the fourth quarter fiscal year 1972.

Fiscal year 1973 planned program.—In Project A, test of components for the SPARS qualification model will be completed and the limited qualification model assembled and tested. Production tests of the FGSS configurator software element will begin with a capability demonstration in late fiscal year 1973. Autonomous navigation conceptual studies and engineering evaluations will be completed in fiscal year 1973. Critical component development will begin in late fiscal year 1973. The ultraviolet radiometer will be orbited for flight test by STP launch 72-2 in early 1973. The velocity vector sensor will be flight tested in late 1973. In Project B, development of the Large Retractable Solar Array will be completed by 1 July 1972. Final design of the 2KW Long-Life battery will be completed in second quarter fiscal year 1973. Battery accelerated life testing will continue in fiscal year 1973. Space qualification and realtime life testing of prototype batteries will begin in late fiscal year 1973. Development of Hardened Solar Cell Power System critical components will continue in fiscal year 1973. Subsystem fabrication will start to support survivability tests planned in fiscal year 1974. In Project C, fabrication and test of the prototype colloid engine will be completed during the second quarter fiscal year 1973. Design and fabrication of the qualification units will start during the second quarter for qualification and life testing planned to start in late fiscal year 1973.

Program to completion.—This is a continuing program.

Resources (In millions of dollars) :

	Fiscal year—			Additional to completion	Total estimated cost
	1971	1972	1973		
R.D.T. & E. funds:					
A	$5.9	$3.4	$2.6	(1)	(2)
B	3.0	2.7	1.6		
C	1.1	1.1	.7		
Total	10.0	7.2	4.9		

[1] Continuing.
[2] Not available.

SPACE VEHICLE SUBSYSTEMS

Chairman ELLENDER. Would you provide a listing of the projects funded under this program and give us the objectives of each?

Secretary HANSEN. The projects are: Project A—Advanced space guidance, Project B—Advanced space power supply technology, and Project C—Advanced satellite secondary propulsion system.

The overall objective of the space vehicle subsystems technology program is to develop and demonstrate advanced space vehicle subsystems needed for DOD space missions beyond 1974. The specific project objectives are as follows:

Project A—Advanced space guidance will define and demonstrate the performance capabilities of selected space guidance, navigation, and control techniques.

Project B—Advanced space power supply technology provides for substantially reducing the volume and weight of spaceborne power systems, increasing power level and lifetime capabilities, and to increase the nuclear survivability of space power systems.

Project C—Advanced satellite secondary propulsion system will demonstrate the capability of advanced concept propulsion systems to fulfill satellite vehicle requirements for long life, precise attitude control, station keeping, and orbit sustentation.

Senator YOUNG. In fiscal year 1971, $1.4 million was provided for a project entitled "Space Data Relay Subsystem," and $3.6 million was requested in fiscal year 1972. No funds are requested for fiscal year 1973 for this project, and I was wondering what happened to it.

Secretary HANSEN. This project was transferred to the military satellite communications system program and included in the discussions for that program for fiscal years 1972 and 1973.

Chairman ELLENDER. In fiscal year 1971, $10 million was provided for space vehicle subsystems, in fiscal year 1972, $7.2 million was provided, and you are only requesting $4.9 million for fiscal year 1973. Can you give us a brief explanation of the causes of this continued reduction in funding for this program?

Secretary HANSEN. The reductions are partially related to the fact that certain efforts such as the large retractable solar array and the space precision attitude reference system are in the final phases of test. The funds required to complete these efforts are small and account for the reductions in fiscal years 1972 and 1973, for the advanced space guidance and space power supply technology projects. New starts within this program are being examined and priorities established relative to all our other urgent technology requirements. As a result of the examinations for fiscal year 1973, we have decided not to initiate any new major subsystem developments in this program for this fiscal year.

SPACE TEST PROGRAM

Chairman ELLENDER. $12.8 million is requested for the advanced development program entitled "Space Test Program." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

SPACE TEST PROGRAM

CATEGORY: ADVANCED DEVELOPMENT

Description.—Provides for test and evaluation of advanced development equipments and certain operational spacecraft, contributing to new or improved DOD space systems. It is a series of planned space missions, utilizing standard boosters and spacecraft configurations. The Air Force manages the program and reviews, approves and schedules payloads for flight. The Space Test Program provides centralized management and funding for booster and multipayload spacecraft procurements, consolidation and integration of payloads and launch services.

Work performed by.—Procurements and spaceflight operations are directed by the USAF Space and Missile Systems Organization, Los Angeles, Calif. Technical support is provided by the Aerospace Corporation. Some spaceflight contractors are: General Dynamics/Convair, Lockheed Missiles and Space Company, and Boeing Company.

Fiscal year 1972 program.—A refurbished Atlas F booster carrying the Lincoln Calibration Sphere-4 for Army Anti-Ballistic Missile (ABM) radar calibration plus eight other technological and research payloads was launched in August 1971. A Thorad-Agena was launched in October 1971 for the orbital test of: a USAF roll-out solar cell array space power supply, a USAF [deleted] sensor long-life test, a National Security Agency command and control subsystem, and a joint N.S. Navy-Defense Atomic Support Agency experiment investigating energetic particle effects on radar and communications systems. A refurbished Atlas F booster is scheduled for launch in April 1972 to carry Advanced Research Projects Agency equipment to monitor the [deleted] and a calibration cylinder for ABM radar tests. One piggyback payload is planned for two environmental science monitors. Four launches scheduled in future years will be funded.

Fiscal year 1973 planned program.—Two missions are scheduled for fiscal year 1973. A refurbished Atlas F will launch the Navy navigation satellite in December 1972. Another refurbished Atlas F will be used to launch in May 1973 a spacecraft carrying two [deleted] sensor systems for the Defense Support Program. Two launches to be made in fiscal year 1974 and one in fiscal year 1975 will be incrementally funded.

Program to completion.—This is a continuing program.

Resources (in millions of dollars):

R.D.T. & E. funds for fiscal year 1971, $17.0; fiscal year 1972, $18.7; fiscal year 1973, $12.8; additional funds to completion are continuing; and the total estimated cost is not available.

SPACE TEST PROGRAM

Chairman ELLENDER. $18.7 million was provided for this program in fiscal year 1972. Why is your request for fiscal year 1973 for only $12.8 million?

Secretary HANSEN. The funds requested in fiscal year 1973 are those which we will require to provide the DOD space launch support of satellites. The fiscal year 1973 request is $5.9 million less than fiscal year 1972. The decrease is due to differing satellite launch requirements and incremental funding for space boosters.

Chairman ELLENDER. I note in the descriptive summary that Aerospace Corporation is one of the contractors for this program. How much of the $12.8 million requested will go to the Aerospace Corp., and what is the nature of the work that they are performing in this program?

Secretary HANSEN. $2.3 million is budgeted for the Aerospace Corp. in fiscal year 1973. They will provide systems engineering for overall integration of the launch configurations, conduct design tradeoffs, define interfaces, perform analyses and supervise systems testing.

Senator YOUNG. Just what do you intend to do with the $12.8 million you are requesting for fiscal year 1973?

Secretary HANSEN. The funds will be applied to six space missions which are in various stages of acquisition for launches scheduled between July 1972 and September 1974. In addition, some funds will be budgeted for placing some secondary experiments as "piggyback" payloads on other DOD and NASA launches.

SATELLITE SYSTEM FOR PRECISE NAVIGATION

Chairman ELLENDER. $3 million is requested for a program entitled "Satellite System for Precise Navigation." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

SATELLITE SYSTEM FOR PRECISE NAVIGATION

CATEGORY: ADVANCED DEVELOPMENT

Background.—A concept has been developed for a satellite radio navigation system. The system will provide capability to accurately determine velocity and position in three dimensions for all surface, airborne and space system users. Existing and planned navigation aids such as LORAN, Omega and TACAN are designed for specialized functions with constrained accuracy and global coverage. Use of existing technology in a satellite system permits the definition of a single system to satisfy all user position/velocity requirements.

Description.—Studies, analyses and experiments indicate the system will consist of: (1) Ground Stations; (2) Satellites; and (3) User Receivers. The ground stations and satellites could provide a continuous world-wide navigation service to all users providing position accuracy within [deleted] feet and velocities within [deleted] per second. The system is passive and a user need only receive and process the satellite signals. A wide variety of complexity in equipment can be utilized to allow cost and performance trade-offs commensurate with user requirements.

Work performed by.—The Space and Missile Systems Organization (SAMSO), Los Angeles, California, is the Air Force Manager. The effort to date has consisted of small contracts with several companies: Grumman Aircraft Corporation (Hazeltine Corporation subcontracting), Bethpage, New York; Magnavox Corporation (Boeing Aircraft subcontracting), Torrance, California; Applied Information Industries, Moorestown, New Jersey; Philco-Ford, Mountain View, California; and TRW Systems, Redondo Beach, California.

Fiscal year 1972 program.—Fabrication of prototype user receiver equipment will continue and be delivered in January 1972. Flight tests at Holloman AFB, New Mexico, with a modified NC–135 test airplane will start immediately following delivery of receiver equipment. Transmitters will be deployed on the ground and suspended by a balloon. By overflying the transmitter configuration, reception from a satellite constellation can be simulated. A psuedorandom noise modulator was developed to be installed in a Navy navigation satellite. The modulator will provide a signal compatible with user receiver equipment under test at Holloman AFB, and permit demonstration precision maneuvers such as blind landing approaches.

Fiscal year 1973 planned program.—Flight tests will continue at Holloman AFB. Precision positioning and control of the test airplane will be demonstrated. A feasibility demonstration using repeater satellites will be defined.

Program to completion.—Procurement of a feasibility program to demonstrate Defense Navigation Satellite System capabilities will be initiated. Four repeater satellites will be deployed at synchronous altitude over the United States to provide regional coverage. These launches will occur late in FY 76 and confirm that navigational accuracies specified in the Joint Chief of Staff Master Plan for navigation are achievable, that signal structuring can be provided to deny access by the enemy, and that signal levels are possible to survive in the most severe jamming environment. The repeater satellite configuration is designed to satisfy all DOD and nonmilitary requirements.

Resources (In millions of dollars):

R.D.T. & E. funds for fiscal year 1971 and prior, $4.5; fiscal year 1972, $2.7; fiscal year 1973, $3; additional funds to completion, $125; and the total estimated cost is $135.2.

SATELLITE SYSTEM FOR PRECISE NAVIGATION

Chairman ELLENDER. Would you give us a brief outline of your plans for this program in fiscal year 1973 and tell us why you need an increase of $300,000?

General GLASSER. These funds will provide for the completion of flight tests of experimental navigation receiver equipment and application studies. We recently began flight tests of receiver equipment at Holloman AFB, N. Mex. Preliminary data confirms our studies that velocity and position can be determined in three dimensions for high

speed maneuvering users with extreme precision using satellite based signal sources. We are continuing to study the application of the precise positioning technology to define an operational concept. As an interim step and to provide for evaluation of full national potential of the concept, we are examining the merit of conducting a demonstration program with repeater satellites to permit test and evaluation in the operational environment with elements of DOD operational forces. The additional funding in fiscal year 1973 will provide these studies.

ADVANCED SURVEILLANCE TECHNOLOGY

Chairman ELLENDER. $24.9 million is requested for the continuing advanced development program entitled "Advanced Surveillance Technology." Could you give us a brief unclassified description of the work being done under this program?

General GLASSER. The program primarily consists of spaceborne surveillance technology development and demonstration. Equipment developed under this program is intended for use aboard satellites and will provide improved and new surveillance capabilities. Current efforts include measurements of background and targets, development of improved sensors and supporting equipment, and demonstration of improved and new capabilities aboard satellites.

The measurement of background and targets is being conducted with satellites, rocket probes, and aircraft. The technology efforts are directed at developing techniques for discrimination of targets from background and penetration aids, improvements in detectors, optics, baffling and electronics, and hardening the sensors against radiation effects.

Two key demonstrations are planned. The first of these is scheduled for [deleted] 1973 and will demonstrate subscale models of two system oriented sensor configurations. The second will demonstrate all the technology needed to develop a system and is planned for early calendar year [deleted].

In addition to the surveillance efforts, there is a new effort starting in fiscal year 1973. This effort is directed at developing a survivable CONUS nuclear detonation reporting system.

Chairman ELLENDER. In looking over the descriptive summary, I get the impression that this program will be carried on at roughly the same level in fiscal year 1973 as it was in fiscal year 1972. Am I correct?

General GLASSER. Yes; you are correct.

MISSILE AND SPACE DEFENSE CONCEPTS

Chairman ELLENDER. $8.1 million is requested for an advanced development program entitled "Missile and Space Defense Concepts." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

MISSILE AND SPACE CONCEPTS

CATEGORY: ADVANCED DEVELOPMENT

Background.—Projected increases in Soviet ICBM and SLBM threat levels will stress the viability of our strategic retaliatory capability. Air Force resources, in terms of existing and programed surveillance sensors and expertise in advanced sensor technology, have significant potential to improve our deterrent

posture by enhancing the effectiveness of our strategic forces. In order to realize the full value of these benefits an integrated approach to missile and space defense and surveillance must be taken which examines the functions of attack warning and assessment in total rather than in the context of considering individual resource capabilities separately. Improvements in timeliness, credibility, availability, and level of detail associated with surveillance information are achievable through integration of data from sensors based on diverse phenomenologies. Finally, we presently do not possess adequate data on which to base intelligent decisions regarding advanced methods to improve our future surveillance and defense capabilities. While [deleted] techniques offer the highest potential for improving the accuracy of present surveillance information, eventual decisions to develop costly systems must be based on hard data rather than on analytical extrapolations. By starting now to assimilate these data we can build our confidence to accurately assess the utility of future [deleted] surveillance systems candidates. By taking advantage of current opportunities for piggyback instrument installations, costly future measurement programs can be avoided.

Description.—Work contained in this element is under two activities directed to the above goals. The objectives of Project 1214, Attack Assessment System, are to improve capabilities of present and programed sensors through integration and correlation of data, to furnish timely, credible, detailed attack assessment information to the National Command Authority and other users. It will examine reduction of time lines associated with selection and implementation of present and future potential response options. This project is described separately under the corresponding Descriptive Summary. The other activity under this program element is Project II. The purpose of this effort is to establish a data bank of key [deleted] measurements [deleted]. An advanced sensor module is being developed for piggyback installation on an operational aircraft. It will be used to evaluate capabilities to acquire and track reentry vehicles, see through chaff, and discriminate reentry vehicles from tankage and decoys.

Work performed by.—AFSC (Space and Missiles Systems Organization, Norton AFB, CA) is managing the Attack Assessment System Program with assistance from SAC, ADC, and other AFSC Divisions. Contractors for the FY 73 program have not yet been identified. Project II is managed by the Space and Missile Systems Organization at El Segundo, CA. Current contractors are LTV Aerospace, Grand Prarie, TX (Integration) and Hughes Aircraft, Culver City, CA (Sensor development).

Fiscal year 1972 program.—Under Project II an advanced sensor is being designed and developed for piggyback installation on an operational aircraft. This sensor will gather [deleted] data on [deleted]. Since the ultimate performance potential for advanced missile defense and surveillance systems can be assessed based on Project II measurements, this effort will allow us to establish the utility and specifications for these systems with confidence.

Fiscal year 1973 planned programs.—Work will be initiated on Project 1214, Attack Assessment System (Proj 1214 Descriptive Summary). In December 1972 the Project II sensor installation will be completed and measurements will be conducted [deleted]. Sensor capabilities will be evaluated to acquire and track reentry vehicles, [deleted] see through chaff, and discriminate reentry vehicles from tankage and decoys.

Program to completion.—Complete development of a prototype Attack Assessment System. Continue Project II measurements for approximately two years. Apply Project II results to evaluate and develop specifications for advanced defense and surveillance concepts. Furnish supporting data for development of US [deleted] penetration aids. Conduct studies and analyses of additional concepts for missile and space defense as the need arises. This is a continuing program.

Resources (In millions of dollars):

	Fiscal year—			Additional to completion	Total estimated cost
	1971	1972	1973		
R.D.T. & E. Funds:					
Project 1214 attack assessment system			6.6	32.4	39.0
Project II	3.8	2.1	1.5	1.5	6.9
Total	3.8	2.1	8.1	(1)	(2)

[1] Continuing.
[2] Not available.

Chairman ELLENDER. I note that, of the total requested, $6.6 million is for what appears to be a new project entitled "Attack Assessment System." Could you give us a brief description of this project, and tell us what you hope to accomplish in fiscal year 1973 with the funds you have requested?

General GLASSER. The attack assessment system program will provide a means to integrate the correlated outputs from the wide range of diverse, missile attack warning sensors into the national command authority decisionmaking process. By this process of attack data correlation, the credibility of warning information can be vastly increased and the capability to derive an accurate assessment of the nature of an attack [deleted] will be attained. Information such as the identification of forces which are immediately threatened and the determination whether [deleted] is crucial to development and selection of potential responsive options. During fiscal year 1973 we will initiate the engineering and software developments to conduct these correlation and assessment processes and incorporate a test bed approach into NORAD, SAC, and the National Military Command Center. This will include simulated integration with the command and control elements of the strategic retaliatory forces.

Senator YOUNG. $1.5 million is for an effort simply identified as "Project II." Would you describe the objectives of this program.

General GLASSER. The attack assessment system previously discussed will develop capabilities to characterize an attack [deleted] in order to support intelligent selection of a response option. Raw attack data to do this job is generally obtainable from current state-of-the-art surveillance systems. Under project II we are also looking further into the future with respect to ultimate concepts of strategic force management, including furnishing detailed battle control information to commanders during a [deleted] period. Space-based [deleted] techniques appear to offer the greatest promise for exploitation to obtain survivable capabilities to derive the precise surveillance measurements needed. Prior to committing major resource levels to these developments we must examine these concepts to determine how well they will work against realistic threats and to examine their susceptibility to prospective countermeasures. Project II has therefore developed a prototype [deleted] surveillance sensor to measure [deleted] reentry vehicles [deleted]. During fiscal year 1973 it will be assembled and installed piggyback on an operational aircraft. We will be able to build an R. & D. data base to determine how well we can track reentry vehicles, to evaluate whether we can discriminate decoys, and to verify that we can see through chaff clouds. This information will be used to support decisions for future system implementations, to optimize concepts, and to derive specifications for equipment.

Chairman ELLENDER. How much of the work performed under this program is performed in Air Force facilities?

General GLASSER. During fiscal year 1973 approximately $30,000 will be spent on testing and calibration of the project II sensor in Air Force facilities.

SPACE DEFENSE SYSTEM

Chairman ELLENDER. $10.1 million is requested for the engineering development project entitled "Space Defense System." Has the committee been provided with details on this request?

General GLASSER. Yes, the details of the request have been provided to the committee.

AEROSPACE CORPORATION

Chairman ELLENDER. $13.5 million is requested for the Aerospace Corp., another of the Air Force-funded Federal contract research centers. Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

AEROSPACE CORPORATION

CATEGORY: MANAGEMENT AND SUPPORT

Description.—The Aerospace Corporation provides direct scientific and engineering assistance to the Space and Missile Systems Organization (SAMSO) of Air Force Systems Command. SAMSO is responsible for developing, monitoring and improving the U.S. capability in the fields of space and ballistic missiles.

The principal activities of the corporation are: *Systems Engineering/Technical Direction* (includes design and specification preparation; design verification; acquisition support and contract technical direction; design control; and test and evaluation); *Development and Operational Planning and Analysis* (includes studies on improving existing systems, exploring possible advanced systems and new concepts performing space mission analyses, and force utilization and effectiveness studies); *Research and Experimentation* (includes studies on such subjects as the space environment, atmospheric density changes, materials, orbital analyses, propulsion, etc.); *Space and Missile Technology Studies* (includes developing new technology and seeking out external technology developments which may have value in future space and missile systems; and *Analyses of Foreign Missile and Space Systems.* Of these major tasks, the Systems Engineering/Technical Direction efforts are generally funded from appropriate system funds. However, the work in planning and analysis, research and experimentation, technologies, and foreign technology are performed with funds provided under this program element. These efforts mutually support each other.

The Corporation provides personnel with outstanding technical capabilities in the fields of systems engineering, aeronautics, chemistry, structures, electronics, astronautics, systems analysis and costing and technical management.

Work performed by.—The responsible Air Force management agency is the Space and Missile Systems Organization, Los Angeles Air Force Station, California. All work is performed by the Aerospace Corporation, El Segundo, Calif.

Fiscal year 1972 program.—Four main areas are funded from this program elements: Development and Operational Planning and Analysis, Research and Experimentation, Space and Missile Technology Studies, and Analysis of Foreign Missile and Space Systems. The Planning and Analysis area includes such projects as Midcourse Surveillance Studies, Navigation Satellite System planning, Space Applications Studies and analysis of the Space Applications of Lasers. Examples of some research and experimentation projects are development and demonstration of techniques for high data rate optical communications systems, examination of the behavior of materials and components in simulated space environments, and experimental measurements and theoretical analysis of the earth's radiation belts and the radiation environment in space. Technology studies are centered on such areas as missile and space guidance systems, nuclear weapons effects on satellite materials, advanced propulsion systems, sensors, and survivability. In the area of Foreign Technology, Aerospace technical analysis of foreign missile and space systems and developments provides direct support to the Space and Missile Systems Organization (SAMSO) staff and Air Force weapons systems development offices.

Fiscal year 1973 program.—Funds are requested under this program element in fiscal year 1973 for the same areas described for fiscal year 1972. The following three proposed projects serve as typical examples of programs the Aerospace

Corporation will be working on: (1) Sensor Satellite Relay Study. The purpose of this study is to determine the feasibility from technical, cost, and performance standpoints of putting a satellite in the sensor surveillance system to delay data from ground-placed sensors to sensor reporting posts. Both the tactical and strategic aspects of the program are to be studied. (2) Air Mobile Missile Systems. This is an assessment of the concept of air mobile basing of ICBMs in terms of effectiveness and technological risks. It will include demonstration of critical technology necessary before such a system can proceed to engineering development. (3) An in-house program on Satellite Measurements of the Atmospheric Structure. This program is to further define the density and composition of the upper atmosphere through observation of satellite drag and through direct measurements from satellites. Physical and chemical processes occurring in the atmosphere will be isolated, identified and measured.

Program to completion.—This is a continuing program.

Resources (In millions of dollars):

R.D.T. & E. funds for fiscal year 1971, $19.5; fiscal year 1972, $15; fiscal year 1973, $13.5; additional funds to completion are continuing; and the total estimated cost is not available.

AEROSPACE CORPORATION

Senator YOUNG. Please comment on the nature of the work performed with these funds by the Aerospace Corp.

General GLASSER. The nature of the work performed with these funds by the Aerospace Corp. involves assistance to the Air Force in converting its requirements into systems concepts and systems planning for the development of future space and ballistic missile systems. This is a process which entails establishing requirements, preparation of preliminary design of systems, conducting research on critical problems, focusing technological developments on new component needs, and performing special enemy threat analyses to see that a proposed system will effectively counter a specified threat.

Senator YOUNG. Why couldn't this work be performed using Air Force inhouse capabilities?

Secretary HANSEN. To perform the types of work accomplished at Aerospace, we must have a pool of highly qualified, objective, and industrially experienced people skilled in several technical areas, particularly systems engineering. The organizational structure must be able to maintain long-term continuity and yet be flexible enough to adjust resources to changing Air Force needs. This skill level, flexibility, and objectivity could not be totally duplicated inhouse.

Chairman ELLENDER. With respect to the funds requested for the aerospace basic program, provide for the record a listing of each of the studies performed in fiscal year 1971, fiscal year 1972, and the planned program for fiscal year 1973.

General GLASSER. Yes, sir; I will be glad to do so.

(The information follows:)

AEROSPACE FISCAL YEAR 1971

Development Planning:

High Power/Energy Gas Lasers. Task 11, Midcourse Surveillance, Defense Demonstration, 621B, Sensor Readout Satellite, TAC 70/85, Satellite Survivability Mission Analysis, DOD Space Transportation System Definition, Transporter/Launcher Hardness, and Hard Point Defense.

Space and Missile Technology:

ICBM Guidance, Weapon Command and Control, Advanced Computer, Accuracy Studies, Propulsion, Facilities, Advanced Space Guidance, Survivability, Advanced Targeting, Spaceborne Computation Program Element Coordinator (PEC) Support—Space and Program Element Coordinator (PEC) Support—Missile.

Research and Experimentation:
Aeromechanics and Propulsion Research:
Aeromechanics, Aerothermodynamics, Aerophysics, and Chemical Propulsion.
Plasma Research:
Reentry Plasma Effects, Plasma Diagnostics, and Exploratory Studies in Plasma Applications.
Electronic Research:
Propogation Measurements, Radio Frequency Interference at Orbital Altitudes, Solidstate Electronics, and Quantum Electronics for Potential Aerospace Applications.
Materials Sciences Research:
Metallurgy and Ceramics, Space Environmental Effects, Space Weapons Effects, and Reentry Effects on Materials.
Space Physics:
Satellite Measurements of Atmospheric Structure, and Energetic Particle Radiation in Space.
Foreign Technology:
Categories: Foreign Missile Systems Analysis, Foreign Missile Guided Systems, Foreign Space and Missile Facilities and Ground Support Equipment, Foreign Space Launch Systems, Foreign Spacecraft Systems, Foreign Anti Ballistic Missile Systems Analysis, Foreign Advanced Reentry Systems, Missile Systems Support, Space Systems Support, Intelligence Analysis, and Computer Support; Studies: Design and Capabilities of the Soviet [deleted] System, Accuracy of the SS–9 and SS–11 ICBM, the SS–9 Threat to Minuteman, Design and Performance of the SS–9 and S–11 Multiple Reentry Vehicle System, and Vulnerability of Missile Facilities.

AEROSPACE FISCAL YEAR 1972

Development Planning:
Advanced Laser Applications, Task 11, Project SPIKE, 621B, Space System Survivability Enhancement, Space Data Processing, Spacetrack Augmentation System, Survivable Burst Reporting System, DOD Space Transportation System, Advanced Missile Options, and Attack Assessment System.
Space and Missile Technology:
Advanced ICBM Technology Program, Advanced Ballistic Missile Guidance Techniques, Advanced Space Guidance, Aerospace Defense Program, Survivable Satellites, Laser Communications, Technology Program Planning, Technology Needs and Support, PEC Support—Space, PEC Support—Missile, Technical Support—General, Space Propulsion, Proposal Evaluation, Despin Mechanical Assembly, Advanced Composites, Computer Technology, Advanced Surveillance Technology, Project 11, Space Test Program, and Survivability.
Research and Experimentation:
Aeromechanics and Propulsion Research:
Aeromechanics, Aerothermodynamics, Aerophysics, and Chemical Propulsion.
Plasma Research:
Reentry Plasma Effects, Plasma Diagnostics, and Exploratory Studies in Plasma Applications.
Electronic Research:
Propogation Measurements, Radio Frequency Interference at Orbital Altitudes, Solidstate Electronics, and Quantum Electronics for Potential Aerospace Applications.
Materials Sciences Research:
Metallurgy and Ceramics, Space Environmental Effects, Space Weapons Effects, and Reentry Effects on Materials.
Space Physics:
Satellite Measurements of Atmospheric Structure, and Energetic Particle Radiation in Space.

Foreign Technology:
Categories: Foreign Missile Systems Analysis, Foreign Missile Guided Systems, Foreign Space and Missile Facilities and Ground Support Equipment, Foreign Space Launch Systems, Foreign Spacecraft Systems, Foreign Anti Ballistic Missile Systems Analysis, Foreign Advanced Reentry Systems, Missile Systems Support, Space Systems Support, Intelligence Analysis, and Computer Support; Studies: Accuracy of the SS–9 and SS–11 ICBM, Vulnerability of Missile Facilities, the Threat to Equitorial Synchronous Satellites, and Capabilities of the Soviet ABM Defense Against Minuteman.

AEROSPACE FISCAL YEAR 1973

Development Planning:
Project SPIKE, 621B, Satellite Survivability, Spacetrack Augmentation System, Survivable Burst Reporting System, Surveillance System for Attack Assessment, Strategic Survivable Communications Systems, General Purpose Communication, Attack Assessment System Phase I, and Air Mobile Missile Systems.
Space and Missile Technology:
Advanced ICBM Technology Program, Advanced Ballistic Guidance Techniques, Advanced Space Guidance, Aerospace Defense Program, Survivable Satellite, Advanced Satellite Secondary Propulsion, Laser Communications, Technology Planning, PEC Support—Space, PEC Support—Missile, Despun Mechanical Assembly, Advanced Composites, Plume Radiation, Technical Support, Proposal Evaluation, Space Propulsion, Computer Technology, Modular Spacecraft Computer, Flexible Guidance Software System, Advanced Surveillance Technology, Project 11, and Survivability.
Research and Experimentation:
Aeromechanics and Propulsion Research:
Aeromechanics, Aerothermodynamics, Aerophysics, and Chemical Propulsion.
Plasma Research:
Reentry Plasma Effects, Plasma Diagnostics, and Exploratory Studies in Plasma Applications.
Electronic Research:
Propogation Measurements, Radio Frequency Interference at Orbital Altitudes, Solidstate Electronics, and Quantum Electronics for Potential Aerospace Applications.
Materials Sciences Research:
Metallurgy and Ceramics, Space Environmental Effects, Space Weapons Effects, and Reentry Effects on Materials.
Space Physics:
Satellite Measurements of Atmospheric Structure, and Energetic Particle Radiation in Space.
Foreign Technology:
Categories: Foreign Missile Systems Analysis, Foreign Missile Guided Systems, Foreign Space and Missile Facilities and Ground Support Equipment, Foreign Space Launch Systems, Foreign Spacecraft Systems, Foreign Anti Ballistic Missile Systems Analysis, Foreign Advanced Reentry Systems, Missile Systems Support, Space Systems Support, Intelligence Analysis, and Computer Support; Studies: Design and Performance of any New Soviet ICBM System, Vulnerability of any New Missile Facilities, Accuracy of any New ICBM, Accuracy of the SS–9 and SS–11 ICBM, Design and Performance of any New or Improved Satellite [deleted] design and Performance of any New ABM System against Minuteman, and Design and Performance of Chinese Ballistic Systems.

Chairman ELLENDER. I note on page 303 of the descriptive summary that, for fiscal year 1971, a total of $19.5 million was provided for the aerospace basic program; this decreased to $15 million in fiscal year 1972; and as we stated earlier, the request for fiscal year 1973 is $13.5 million. Please comment on this decreasing trend in funds for the aerospace basic program.

General GLASSER. The decrease in funding support for the aerospace basic program has been as a result of prioritization of efforts within a tight overall research and development budget.

ORDNANCE, COMBAT VEHICLES, AND RELATED EQUIPMENT

Chairman ELLENDER. $100.6 million is requested for the budget activity entitled "Ordnance, combat vehicles, and related equipment." How much was made available for this budget activity in fiscal years 1971 and 1972?

General GLASSER. For prior years, the amounts made available for this budget activity, restructured for comparability with fiscal year 1973, were: $89,239,000 for fiscal year 1971 and $92,525,000 for fiscal year 1972.

Chairman ELLENDER. Would you comment generally on the types of programs funded under this activity?

General GLASSER. Programs that are funded under this budget activity include advanced weapons, conventional munitions, conventional weapons, advanced radiation technology, chemical/biological defense equipment, armament/ordnance development and improved aircraft gun systems. Some examples of efforts in this area include studies and experiments in advanced weapons concepts, project for control of noxious effluents, evaluaton of new incendiary/flame agents, improved gun propellants, increased guided weapon capabilities, chemical/biological protection devices, optimized munitions for attack of airfields, 30-millimeter close air support gun system and the 25-millimeter aerial gun system.

Chairman ELLENDER. Please comment on any significant reprograming increases or decreases involved in this budget activity and any emergency fund transfers to this budget activity.

General GLASSER. There have been no emergency fund transfers associated with this budget activity. Development of the fiscal year 1973 budget request resulted in adjustments to the fiscal year 1972 program. A reprograming action reflecting these adjustments is currently pending congressional approval. The reprograming action seeks approval of $5,780,000 of increases and $14,662,000 of decreases in this area. The increases are related to transfer of personnel and functions from programwide management and support budget activity to advanced weapons, $3,670,000 and conventional munitions, $2,110,000. The decreases are associated with minor reductions to 12 separate programs.

ADVANCED WEAPONS

Chairman ELLENDER. $24.6 million is requested for a program entitled "Advanced Weapons." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

ADVANCED WEAPONS

CATEGORY: EXPLORATORY DEVELOPMENT

Description.—This program element provides the Air Force with a sound technology base for the development of advanced weapons and the adaptation of these weapons to Air Force systems. A wide variety of studies and experiments are conducted in [deleted] weaponry, survivability/vulnerability analysis, fuzing of

nuclear weapons, advanced weapon concepts, nuclear weapon environment definition and control of noxious effluents. This program element (previously 62301F, Advanced Weapons) includes operation and maintenance of the Air Force Weapons Laboratory (AFWL).

Work performed by.—The Air Force Weapons Laboratory (AFWL) at Kirtland AFB, New Mexico, manages the work performed under this program element. About 75 percent of the AFWL program is performed in-house using advanced computers, high energy lasers and nuclear radiation simulators that include electromagnetic pulse generators, flash X-ray machines, and stress wave generators. The largest efforts currently under contract are as follows:

Electro Optical Systems, Pasadena, California—$1,927,200, development of an advanced electro-optical system; AVCO-Everett Research Labs, Everett, Massachusetts—$1,000,000, development of a high power laser; Texas Instruments, Dallas, Texas—$246,100, logic circuits for electronic components study; Rocketdyne Corporation, Canoga Park, California—$245,000, development of high power laser resonator components; University of New Mexico, Albuquerque, New Mexico—$176,800, study of conical bodies and sensor materials for hypervelocity impact fuzing; General Electric Corp., Philadelphia, Pennsylvania—$142,400, theoretical study of clutter discrimination for active fuzing; University of Texas at El Paso, El Paso, Texas—$120,000, assessment of visual acuity in high risk environments; University of Arizona, Tucson, Arizona—$98,000, study of the generation and propagation of intense radiation; Cornell Aeronautical Laboratory, Inc., Buffalo, N.Y.—$97,000, development of a chemical flow laser; Aerojet General, Azusa, California—$91,000, design of a radiation hardened space sensor.

Additional support has been made available to the following systems: B–1, Subsonic Cruise Armed Decoy (SCAD), Bomber Defense Missile (BDM), AGM–28C (Hound Dog), B–52, EC–135, F–106, Short Range Attack Missile (SRAM), Airborne Warning and Control System (AWACS), Advanced Airborne Command Post (AABNCP) and the Multi-Purpose Missile (MPM).

Fiscal year 1972 program.—A solid state laser is [deleted] being installed at the Air Force Weapons Laboratory (AFWL). Much of current emphasis is placed on development of new electron beam laser technology with high pressure laser gases. Work is continuing in development of a laser fuze for reentry vehicles to improve height-of-burst accuracy. A [deleted] has been assembled and tested on Sandia Tramway and will soon be flight-tested at the Air Force Armament Laboratory. Experiments will be performed to find ways of increasing output of the coaxial plasma gun for potential use as a nuclear weapons effect simulation device. The AFWL Impact Facility is being used to evaluate the response of representative heatshield materials for reentry vehicles. Nuclear criteria are being developed and reviewed for AWACS, AABNCP and the B–1 and presented to the HQ USAF Nuclear Criteria Group. Support is being provided to the MINUTEMAN System Program Office (SPO) on the Silo Hardness Upgrade, Command Data Buffer, Propulsion and Ordnance, MM II and III Guidance and Control, and other systems. Gust, thermal, and overpressure models are being developed for the EC–135, B–52H, C–5, 747, L–1011, and the DC–10. Theoretical studies of nuclear weapon output and electromagnetic pulse phenomenology in the upper atmosphere are also being performed.

Fiscal year 1973 planned program.—Development will continue and feasibility of [deleted] techniques. Much of this work was funded in previous years under [deleted]. Development of high power, [deleted] lasers will continue. Development of new chemical laser systems will proceed and an examination made of storable fuels to replace cryogenically stored hydrogen and fluorine. The development and testing of candidate conventional and fluidic inertial fuzes will continue, and in-house studies will be made of advanced antenna concepts for possible application as windowless antennas for reentry vehicles. Survivability/vulnerability analyses will be extended to latest developments in advanced weapons, and nuclear criteria investigations pursued for new Air Force Weapons systems. Further experiments are planned to yield higher outputs from the coaxial plasma device, augmented by computer methods of predicting [deleted] interactions. Further theoretical studies of shock hydrodynamic and thermal effects of nuclear weapon output are scheduled. A Noxious Effluent Control Project will be initiated to provide a technology base to assess and properly control the effects of aircraft engine emissions, noise, fuel dumping and venting, sonic boom and electromagnetic radiations during Air Force operations.

Program to completion.—This is a continuing program.

Resources (in millions of dollars):
R.D.T. & E. funds for fiscal year 1971, $10.2; fiscal year 1972, $15; fiscal year 1973, $24.6; additional funds to completion are continuing; and the total estimated cost is not available.

ADVANCED WEAPONS

Chairman ELLENDER. Please provide for the record a tabulation listing each of the projects funded under this program, the amounts for each fiscal years 1971 and 1972 and the estimate for fiscal year 1973.

General GLASSER. Yes, sir; I will be glad to.

(The information follows:)

[In millions of dollars]

Project	Fiscal year 1971	Fiscal year 1972	Estimate, fiscal year 1973
06CB—AF weapons lab operations	5.9	9.8	10.2
1900—Control of noxious effluents			1.5
3326—Aerospace [deleted] weaponry	1.8	2.7	10.1
5791—Arming and fuzing technology	0.8	0.6	0.5
8809—Nuclear vulnerability and hardening technology	1.6	1.9	2.3
Total	[1] 10.2	15.0	24.6

[1] Difference in sum due to rounding.

Chairman ELLENDER. Of the total requested for "Advanced Weapons," $10.2 million is for the support of the Air Force Weapons Laboratory. Would you comment briefly on the basic mission of this laboratory and tell us where it is located?

General GLASSER. The mission of the Air Force Weapons Laboratory is to solve engineering problems and develop new concepts in [deleted] weaponry, nuclear survivability, nuclear weapons, and civil engineering. The laboratory is located at Kirtland Air Force Base, Albuquerque, N. Mex.

Senator YOUNG. How many civilians are employed at the weapons laboratory, and how much of the $10.2 million requested for its support is for the compensation and benefits of these civilians?

General GLASSER. The Weapons Laboratory employs 443 civilians. Of the $10.2 million requested for lab operations, $7.7 million is for civilian pay and benefits.

Senator YOUNG. How many military personnel are assigned to the laboratory, and how many of those assigned are officers and how many are enlisted personnel?

General GLASSER. There are 779 military personnel assigned to the laboratory—502 officers and 277 enlisted men.

Chairman ELLENDER. In fiscal year 1972, $2.7 million was provided for a project entitled "Aerospace [deleted] Weaponry," and for fiscal year 1973, you are requesting $10.1 million for this project. This is a very sizable increase. Has the committee been provided with information on this project?

General GLASSER. Yes, sir; the project is described on pages 310–312 of the descriptive summary, section 2. The large increase for fiscal year 1973, is due to a restructuring of work presently done under the [deleted] program. This work is more properly identified as exploratory development support to the [deleted] advanced development pro-

gram. The sum of this project and the advanced development program has increased only slightly as the technology matures.

Chairman ELLENDER. Please comment on the $1.5 million requested for what appears to be a new project entitled "Control of Noxious Effluents."

General GLASSER. The purpose of this project is to provide the technical base necessary for the Air Force to competently execute its environmental assessments and actions required by Public Law and DOD directives. Our efforts are directed toward developing measurement and estimation techniques to determine environmental effects of Air Force systems, and development of new technology to alleviate adverse environmental effects of Air Force operations. The project will emphasize aircraft engine emissions technology including fuel dumping and venting. The $1.5 million fiscal year 1973 proposed program involves a joint program with Department of Transportation in aircraft stratospheric pollution evaluation, engine test cell pollution control, and biomedical effects of sonic booms.

CONVENTIONAL MUNITIONS

Chairman ELLENDER. $13.2 million is requested for the continuing exploratory development program entitled "Conventional Munitions." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

CONVENTIONAL MUNITIONS

CATEGORY: EXPLORATORY DEVELOPMENT

Description.—This program covers the development of conventional munitions technology required to meet long range ordnance objectives of the Air Force. The objective is to continuously advance the state-of-the-art and technology required to develop significantly improved air delivered non-nuclear munitions and weapons. Concepts and techniques are explored, advanced studies are conducted to identify future weapons applications, and the most promising items are continued in appropriate advanced development programs. This program also includes operation and management of the Air Force Armament Laboratory (AFATL) Eglin AFB, Florida. Projects include incendiary munitions agents, anti-personnel and anti-materiel munitions, area denial munitions, submunition dispensers, aircraft gun technology, target illumination and marking, weapons and systems analyses, ballistics, lethality and vulnerability studies, fuze technology, etc.

Work performed by.—The program is managed by the Air Force Armament Laboratory, Eglin AFB, Florida. Contracted efforts identified for the ten largest contracts signed in FY 72 are: *Amron Corp.*, Orlando, Florida ($50K)—Unpowered sensor for mines; *Goodyear Corp.*, Akron, Ohio ($100K)—Demonstration of aerodynamic spin dispersion of clusters; *Louisiana State University*, Baton Rouge, La. ($64K)—Air-to-air gunnery system study; *Thiokol*, Brigham City, Utah ($70K)—Smoke/flame pyrotechnic compounds; *Honeywell Inc.* Hopkins, Minn ($50K)—Feasibility of directional warheads; *Dow Chemical*, Midland, Mich. ($90K)—Application of flow cast flare composition; *RCA Corp.*, Van Nuys, Calif ($50K)—Monolithic optical module for fuzes; *Auburn University*, Auburn, Ala. ($64K)—Aerodynamic interface study; *Westinghouse Corp.*, Baltimore, Md. ($100K)—Mine field mapping study; *North American Rockwell Corp.*, Anaheim, Calif. ($85K)—Advanced gun propellants. The time required to complete the various programmed efforts will vary with the nature of the effort which ranges from parametric analyses to development and testing of concepts on new munitions items (fuzes, gun mechanisms, dispensers, etc.). Past experience indicates that the average effort is completed in 18 to 24 months. For instance, the feasibility study of the externally powered non-rotating gun

concept required 19 months while development of the active optical proximity fuze required 18 months.

The Air Force Armament Laboratory relies on the Arnold Engineering Development Center for wind tunnel experimentation and aerodynamic data. Several facilities are in full operation at the Eglin AFB, Fla., for in-house work. They are: Pyrotechnic Laboratory; Relative Motion Laboratory; Precision Measuring Facility; Ballistics Analysis Research Facility System (BARS); Explosives Test Preparation Facility; Hydrodynamics Evaluation Facility; Incendiary Materials Laboratory; Flame Evaluation Laboratory, etc.

Fiscal year 1972 program.—Typical efforts in representative work areas are: (1) investigation of reactive incendiary particles which when used in explosively ignited and disseminated systems will ignite the target, study of binary and trinary pyrophoric and/or hypergolic systems, in-house work on flame fuel formulation, dissemination and ignition; (2) evaluation of an anti-armor warhead utilizing a mass focusing mechanism for greater penetration, trade-off studies to define an improved dispenser/submunition family for future use, feasibility of aerodynamically spinning a dispenser to obtain optimum dispersion of submunitions, evaluation of pattern control techniques; (3) improved active optical techniques for air-to-air and air-to-ground proximity fuzing, application of fluidics to fuzing, minisensors that can determine absolute range to the target, development of systems parameters for an underwater target activated sensor; (4) investigation of binary explosive systems for safer munitions, low detenation velocity explosives to disperse submunitions, impact insensitive plastic bonded explosives stable at high temperatures, explosive materials to be used as ignitors in fire bombs, dispersal techniques using low detonation velocity explosives, investigation of improved fuel-air explosives; (5) new and improved methodologies and evaluation techniques pertaining to: aerial gunnery effectiveness, air-to-surface guns, aircraft survivability, fuze and warhead effectiveness, flame and incendiary weapons effectiveness, target activated munitions effectiveness, delivery accuracy, guided bombs simulations; (6) new bomblet aerodynamic dispersal techniques, in-house work on terminal ballistics, improved ballistics instrumentation; (7) feasibility of a new electro chemical machining method for economically rifling refractory barrel liners, develop advanced techniques for blast and gun recoil forces attenuation, new gun propellants exhibiting a low flame temperature for greater barrel life, new high energy propellants, low cost plastic cased ammunition; (8) development and evaluation of new binders for the castable illumination flare composition, development of simultaneous smoke/flare compositions for improved target marking; (9) wind tunnel techniques and prediction techniques to forecast the temperature of munitions in flight, economically estimate aerodynamic loads on weapons/carriage systems/launchers in flight, predict effects of external stores on the performance and stability of the aircraft, predict flutter in aircraft, etc. The cost of each contracted effort varies from $40,000 to $100,000.

Fiscal year 1973 planned program.—The FY 73 program will address all of the technical areas active in FY 1972. Many of these include continuing programs. Of the $12.8 million requested for FY 73 $7.6 millions will be required for Project 06CD: Air Force Armament Laboratory Operation. Details on this project are given in attached Descriptive Summary.

Planned, representative development tasks include: evaluation of new incendiary/flame agents designed for optimum effect on the target regardless of temperature or delivery speed, dual drain rate battery for fuzes to increase the time for long duration fuzes or target activated munitions, demonstration of an advanced target activated anti-tank munition, evaluation of thermally stable explosives, exploration of approaches for optimized fuel-air explosive weapons, aerial gunnery effectiveness methodology, aeroballistic testing, determination of vulnerable areas of air targets, improved gun propellants including synthesis of high energy binders, high energy oxdizers and moldable polymers for extrudable gun propellants, evaluation of improved cast flare binders and smoke/flame compositions for improved target markers, weapon carriage and release technology addressing aircraft and munitions structural integrity, aerodynamic heating and other related areas.

Program to completion.—Continuing program.

Resources (In million of dollars):

R.D.T. & E. funds for fiscal year 1971, $10.2; fiscal year 1972, $12.2; fiscal year 1973, $13.2; additional funds to completion are continuing; and the total estimated cost is not available.

Chairman ELLENDER. Please provide a tabulation for the record listing the projects funded under this program, the amounts for each for fiscal years 1971 and 1972 and the estimate for fiscal year 1973.

General GLASSER. Yes, sir.

(The information follows:)

The listing of projects funded under this program and the amounts for each for fiscal years 1971 and 1972 and the estimate for fiscal year 1973 are as follows:

[In thousands of dollars]

Project No. and title	Fiscal year—		
	1971	1972	1973
06CD: AF armament laboratory operation	5,188	7,335	7,930
1082: Flame and incendiary munitions	488	515	600
2502: Antipersonnel/antimateriel munitions	485	480	450
2508: Fuzing technology	400	325	350
2510: Target activated munition technology	384	360	500
2511: Development and evaluation of new explosives	175	200	250
2513: Warheads and physics of explosives	170	200	400
2543: Weapons effectiveness methodology	551	540	500
2547: Ballistics technology	814	630	350
2549: Target system vulnerability for weapon development	124	275	450
2560: New gun concepts	627	625	700
2563: Illumination and target marking technology	180	175	200
5066: Aerial dissemination technology	180	----	----
2567: Weapon carriage and release	467	530	500

Senator YOUNG. Of the total requested for conventional munitions, I note that $7.9 million is for the support of the Air Force Armament Laboratory. Please comment briefly on the basic mission of this laboratory.

General GLASSER. The Air Force Armament Laboratory is responsible for the exploratory, advanced and engineering development programs associated with all conventional munitions. The laboratory provides analytical services and technical support for current and future systems. Included in the field of responsibility of the laboratory are free fall munitions, guns and rocket systems, target systems, and guided weapons, flares and target markers.

Chairman ELLENDER. How many civilians are employed at the armament laboratory, and how much of the total requested for the support of the laboratory is for their compensation and benefits?

General GLASSER. The armament laboratory employs 422 civilians. Of the total requested, $6.608 million is for compensation and benefits.

Chairman ELLENDER. How many military personnel are assigned to this laboratory?

General GLASSER. 274 military personnel are assigned to the armament laboratory.

Senator YOUNG. What is the need for the increase of almost $1 million requested for conventional munitions for fiscal year 1973?

General GLASSER. About $380,000 is required to cover the increase in pay and benefits granted civilian employees by the latest pay act. Approximately $215,000 will be required to cover increases in cost and requirements for supplies and equipment, rental of equipment, purchase of utilities, maintenance, and minor construction required for operation of the laboratory. The balance of $395,000 is to increase the

level of effort on contract work in several areas, such as flame and incendiary munitions, target activated munitions and warheads.

CONVENTIONAL MUNITIONS

Chairman ELLENDER. $11.1 million is requested for the program entitled "Conventional Weapons". Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

FISCAL YEAR 1973 R.D.T. & E. DESCRIPTIVE SUMMARY—CONVENTIONAL WEAPONS

CATEGORY: ADVANCED DEVELOPMENT

Description.—The Conventional Weapons Technology program is a consolidation of three previously separate programs: Program Element (PE) 63601F, Close Air Support Weapon Systems; PE 63603F, Conventional Weapons; and PE 63302F, Advanced Weapon Guidance Technology. All three are associated with the development of conventional weapons. These programs will be described under the following projects: 670A, Conventional Weapons; 670B, Close Air Support Weapon Systems; and 679A, Weapon Guidance Technology. The total Air Force advanced development effort for conventional munitions and weapon guidance is conducted under this program. The cost effectiveness and operational value of new weapon technology, techniques or concepts from exploratory development conducted by the Air Force, industry or other Services are verified by ground and flight test of prototype hardware before proceeding into the engineering development phase. This program consists of the following work areas: hard structure warhead and fuze; anti-personnel and anti-materiel munitions; suspension, release and ground handling equipment; flame/incendiary, and stand-off munitions; air delivered area denial munitions; guns and rockets, warheads, and battlefield illumination; air-to-ground missiles and automatic guidance techniques for use under day, night and adverse weather.

Resources (in millions of dollars):

R.D.T. & E. funds for fiscal year 1971, $25.9; fiscal year 1972, $8.7; fiscal year 1973, $11.1; additional funds to completion are continuing; and the estimated total cost is not available.

CONVENTIONAL WEAPONS

Chairman ELLENDER. Please provide for the record a listing of the projects funded under this program, the amounts for each fiscal years 1971 and 1972 and the estimate for fiscal year 1973.

General GLASSER. Yes, sir.

(The information follows:)

[In millions of dollars]

Projects	Fiscal year—		
	1971	1972	1973
Conventional weapons	18.610	2.935	3.800
Close air support weapon system	2.000	2.000	2.600
Weapon guidance technology	5.300	3.800	4.700
Total	[1] 25.910	8.735	11.100

[1] In fiscal year 1971 $11,000,000 of the $25,900,000 for conventional weapons technology was utilized on the development and testing of the 25 mm. GAU-7A gun system.

Senator YOUNG. In fiscal year 1971, $25.9 million was provided for the conventional weapons program, and $8.7 million was provided for fiscal year 1972, a substantial decrease. Now, for fiscal year 1973, you are requesting $11.1 million. Would you explain the need for the $2.4 million increase in your request for fiscal year 1973?

General GLASSER. There are a number of problem areas in the conventional weapons field that deserve increased R. & D. efforts to provide solutions. Primary among these operational voids is a requirement for all-weather weapon delivery. A portion of the $2.4 million increase is required to develop all-weather terminal guidance systems for air-launched weapons. Lack of precise all-weather delivery capability, that is, terminally guided weapons, is the second most critical R. & D. problem area identified by CINCPAC. The additional guidance funds will allow viable development efforts to demonstrate feasibility of all-weather guidance in a reasonable time scale. In addition, since this program is the backbone of the Air Force conventional weapons development, increased funding will be allocated to upgrading of warheads, fuzes, and other related disciplines from both a performance and a cost reduction point of view.

ADVANCED RADIATION TECHNOLOGY

Chairman ELLENDER. $21.8 million is requested for a continuing advanced development program entitled "Advanced Radiation Technology." Has the committee been provided with details on this program and the request for $21.8 million?

General GLASSER. Yes, a descriptive summary which gave the current status and program plans for this program was provided to the committee.

CHEMICAL AND BIOLOGICAL DEFENSE EQUIPMENT

Chairman ELLENDER. $500,000 is requested for the continuing engineering development program entitled "Chemical and Biological Defense Equipment." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

CHEMICAL/BIOLOGICAL DEFENSE EQUIPMENT

CATEGORY: ENGINEERING DEVELOPMENT

Description.—This program will develop chemical/biological defensive equipment and materials that will enhance our nuclear and chemical retaliation capability. In addition, the program element covers any development efforts designed to achieve operational airborne delivered chemical warfare munitions, riot control munitions and vegetative control devices.

Work performed by.—By agreement, the U.S. Army Materiel Command, conducts the USAF chemical/biological development program. The USAF program is justified and monitored by Headquarters, Air Force Systems Command. Contractors in this area of development are: Dalmo-Victor Company, Belmont, California and Honeywell Incorporated, Hopkins, Minnesota.

Fiscal year 1972 program.—Development of a modification kit for providing chemical/biological defense for building structures. Development of an aircraft overlay to give protection against chemical agents. Development of a standardized system of filters, blower, etc., with main emphasis on packaging and adapting to existing shelters.

Fiscal year 1973 planned program.—Continued development of the aircraft overlay device for protection of aircrew during entry to the cockpit. Fiscal year 1973 efforts will include production of prototype hardware and evaluation of the effectiveness of the equipment as well as the concept. Continued development of a nerve agent long path infrared detection system for advanced warning of air base attack from chemical munition. The fiscal year 1973 efforts will include modification of components to minimize maintenance procedures, and the conduct of reliability test on prototype items. Development of an area type chemical

agent detection and alarm system will continue. This system will provide the USAF with the capability to detect and provide warning for minute concentration of a broad range of chemical warfare agents. The fiscal year 1973 efforts will include resolution of some technical deficiencies, configuration decision, system evaluation, and preparation of a data package. A chemical/biological protection and disposable overgarment development will be initiated based upon other Army and Air Force related developments. The overgarment will provide 30–60 minutes of protection against chemical warfare agents.

Program to completion:

Resources (in millions of dollars) :

R.D.T. & E. funds for fiscal year 1971, $0.5; fiscal year 1972, $0.5; fiscal year 1973, $0.5; additional funds to completion are continuing.

Chemical and Biological Defense Equipment

Chairman Ellender. What are your plans for the $500,000 you are requesting for fiscal year 1973?

General Glasser. The $500,000 in fiscal year 1973 funds provide for continued development of a point sampling chemical agent detection system ($350,000), completion of development of a long path chemical agent detection system ($100,000), and development of a chemical and biological protective overgarment ($50,000). The two detection systems are complementary and necessary for an aspect of air base chemical and biological defense that does not now exist. The protective overgarment will provide short-term protection against chemical agents but not impair necessary job performance.

Armament Ordnance Development

Chairman Ellender. $7.6 million is requested for the continuing engineering development program entitled "Armament ordnance development." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

Armament/Ordnance Development

CATEGORY: ENGINEERING DEVELOPMENT

Description.—This program is the primary development source for aerial delivered conventional weapons. It also supports developments for hardware associated with nuclear weapons other than the warhead. The program contributes significantly to the overall Air Force conventional capability for both the tactical and strategic operational forces. The objective of this program is the development, test and evaluation of all types of armament and munition hardware necessary to meet the requirements of the operational commands. The program includes conventional and guided bombs and bomb fuzes; bomblets optimized for use against personnel, material and vehicles; target activated mines, dispensers for these bomblets and mines, flares, target markers, airfield attack weapons and ground handling equipment. Projects are completed with formal standardization of munitions and a release for procurement.

Work performed by.—This program is accomplished primarily by the Armament Development and Test Center (ADTC) Eglin AFB, Florida. Nuclear support efforts are accomplished by the Air Force Weapons Laboratory, Albuquerque, New Mexico. This is a multi-project program. Portions of the program are accomplished "in house" at the ADTC and at the Arnold Engineering Development Center, Tullahoma, Tennessee. Most hardware efforts are contracted to industry. The following is a representative group of contractors: Aerojet General Corporation, Downey, Calif.; AVCO Corporation, Richmond, Indiana; Honeywell Inc., Hopkins, Minnesota; General Dynamics, Pomona, Calif. and Fort Worth, Texas; North American Rockwell, Columbus, Ohio, Texas Instruments Inc., Dallas, Texas; FMC Corporation, Santa Clara, Calif.; Motorola Inc., Scottsdale, Arizona; Goodyear Aerospace Corp., Akron, Ohio; Chamberlain Corporation, Waterloo, Iowa.

Fiscal year 1972 program.—The FY 72 program is primarily a continuation of FY 70 and 71 efforts initiated to meet the long range requirements of the Air Force. These include such projects as continuation of efforts on three new bomb fuzes and associated sensors, completion of development of a popup bomblet, continuation of a new cluster for improved bomblet dispersion, development of weapons for use against airfields, continuation of the antimateriel mine program, continuation of world wide qualification for electro optical and laser guided bombs and completion of a program on target acquisition aids for electro-optical weapons. Programs on supersonic carriage and release of munitions will be continued. Programs which entered this line from P.E. 64604F, Truck Interdiction, such as the SUU–51 dispenser, the CBU–58 cluster and the laser guided dispenser will be completed.

Fiscal year 1973 planned program.—The FY 73 program will complete world wide qualification of the electro optical and laser bomb guidance kits. Development of the supersonic capable SUU–45 linear dispenser will be completed. This dispenser will replace the subsonic, limited SUU–13 dispenser in inventory. Development of the all altitude spin projected cluster (ASP) which will greatly improve bomblet dispersion will also be completed. Development efforts on new antimaterial/antivehicular target activated munitions (TAMS) will continue. Development of a short delay fuze with modular superquick and proximity sensors for bombs will continue along with development of a new high altitude proximity fuze for functioning of cluster munitions. Development of optimized munitions for attack of airfields will continue along with continued development of improved ground handling equipment.

Program to completion.—This is a continuing program.

Resources (In millions of dollars):

R.D.T. & E. funds for fiscal year 1971, $14.1; fiscal year 1972, $7.7; fiscal year 1973, $7.6; additional funds to completion are continuing; and the total estimated cost is not available.

ARMAMENT ORDNANCE DEVELOPMENT

Chairman ELLENDER. Please provide a tabulation for the record listing each of the projects funded under this program, the amounts for each for fiscal years 1971 and 1972, and the estimate for fiscal year 1973.

General GLASSER. Yes, sir; I will be glad to.

(The information follows:)

[In thousands of dollars]

Element and project No.	Title	Fiscal year—		
		1971	1972	1973
64602:	Armament/ordnance development	14,096	7,700	7,600
1118	Nuclear Walleye	50	0	0
1120	Truck interdiction	[1] 5,156	665	0
1254	Forward firing target marker	0	20	0
1256	BLU–62 fragmentation bomb	100	400	0
1815	Worldwide qualification EOGB	184	1,000	300
2517	Multipurpose bomb fuzes	600	150	0
2532	Aircraft/flare dispenser	0	75	200
2573	Surface look-alike mine systems (SLAMS)	679	300	1,700
2586	All-Altitude spin projected munitions (ASP)	700	400	400
2592	Airfield attack munitions	1,320	800	900
3122	Advanced target activated munition	650	685	1,200
3133	FMU–X selectable and modular fuzes	850	900	1,500
3322	Infrared guided bombs	50	0	0
3792	Advanced wide area antipersonnel mine	150	0	0
4432	Electronic countermeasures hardened cluster	0	300	500
5064	F111 supersonic weapons separation	80	0	0
5113	Antipersonnel/Antimaterial bombs and equipment	100	300	300
5555	Ground handling equipment	350	25	100
5558	Improved long duration target marker	0	100	200
5601	Suspension and release equipment	71	0	0
5607	20mm high density round	250	0	0
5613	Supersonic delivery capability	400	300	100
5708	Nuclear weapons support	100	180	200
5971	Target acquisition aids for electro-optical weapons	2,256	1,100	0

[1] PE 64604F in fiscal in year 1971.

Senator YOUNG. The request for fiscal year 1973 is $100,000 less than the amount provided for fiscal year 1972. Does this indicate that you have completed some of the major efforts undertaken under this program?

General GLASSER. The reduction of $100,000 in fiscal year 1973 is not directly attributable to project completions; however, several were successfully completed using fiscal year 1972 funds. The Air Force in preparing the budget submission critically reviews all programs. Within the constraints of overall R. & D. fund ceilings, program priorities, and the requirements of the Air Force, fund allocations are made to the various programs. These actions resulted in an allocation to this program which was $100,000 less than the previous year.

Chairman ELLENDER. I note that you are requesting increases of any size for only three of the projects funded under this program. For surface look-alike mine systems, known as SLAMS, you are requesting an increase of $1.4 million; for advanced target activated munition, you are requesting an increase of $515,000; and for FMU–X selectable and modular fuzes, you are requesting an increase of $600,000. Would you comment briefly on the need for these increases?

General GLASSER. The surface look-alike mine system (SLAMS) project was a new start in fiscal year 1972. The project was initiated in December 1971, for a 6-month design and component development effort. Increased funding is required in fiscal year 1973 to cover a 12-month contract effort and to cover costs of hardware for R. & D. testing. Increased costs are inherent in such programs as design proceeds into the hardware test stages.

With regard to the advanced target activated munitions, prior year development has been limited primarily to overall design and component testing. We are now ready to integrate these components into an all up system for test. Again cost of hardware for test quantities increases the program fund requirements in fiscal year 1973.

With regard to the project on the FMU–X selectable and modular fuzes (project 3133), in previous years each fuze program was individually funded by a separate project number. In fiscal year 1973 most major fuze efforts were consolidated as tasks under the FMU–X selectable and modular fuzes project. This is the reason for the $600,000 increase in this area. You will note that project 2517 for multipurpose bomb fuzes has been terminated. One task from this project was transferred to Project 3133.

IMPROVED AIRCRAFT GUN SYSTEMS

Chairman ELLENDER. $21.8 million is requested for the project entitled "Improved Aircraft Gun Systems." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

IMPROVED AIRCRAFT GUN SYSTEMS

CATEGORY: ENGINEERING DEVELOPMENT

Background.—The 20mm M–39 and M–61 guns were developed in the early 50s utilizing technology of the late 40s. Since that time the potential enemy has developed high performance aircraft such as the MIG–21, powerful antiaircraft defenses and powerful tanks such as the T–55. The Air Force is developing the

F–15 optimized for the air superiority role and the A–X for the close air support role to cope with the capabilities developed by the enemy. Improved gun systems are required to achieve maximum effectiveness of the F–15 and A–X in their operational role. Analytical studies and systems analyses were accomplished to arrive at optimum characteristics for the gun systems included in the program. An advanced development program was undertaken under PE 63601F: Conventional Weapons Technology to develop the technology required. The major tasks were: development of an aluminum cartridge case for the close air support gun and development of the caseless round for the air-to-air gun system.

Related activities.—Initially the GAU–7/A development program was accomplished under PE 63601F: Conventional Weapons Technology. The 30mm aluminum cartridge case for the GAU–8/A gun was developed under PE 63601F. Developments in support of the GAU–7/A and GAU–8/A systems such as improved gun barrel design and design of high density penetrators for better armor penetration are being accomplished under PE 63601F. Gun system effectiveness analyses are accomplished under PE 62602F: Conventional Munitions.

The gun and ammunition development programs are coordinated with the other Services through Tri-Service Joint Technical Coordinating Groups. The Oerlikon 30mm gun 304RK (Swiss design) is being procured for evaluation to determine whether or not it can meet any of the Air Force requirements. This task is funded partly by PE 64603F utilizing FY 71 funds and partly by PE 64736F: Foreign Weapons Evaluation utilizing FY 72 and FY 73 funds.

Work performed by.—The Armament Development and Test Center (ADTC), Eglin AFB, Florida has engineering responsibility for the GAU–7/A and GAU–8/A programs. The F–15 System Project Office and the A–X System Project Office, both located at Wright-Patterson AFB, Dayton, Ohio have management responsibility for the GAU–7/A and GAU–8/A programs, respectively. The contractors tasked to develop the two gun systems are identified in the Descriptive Summaries on Projects 4697 and 2583, following. The 30mm Oerlikon gun 304RK will be evaluated by ADTC. The test articles (guns, ammunition and test stands) are being procured from the Hughes Tool Co., Culver City, California, who is the US licensee for the Oerlikon Company.

Fiscal year 1972 program.—Competive evaluation including a shoot-off of the competing 25mm gun system GAU–7/A was completed on schedule and full scale development was initiated. Design and development of the 30mm gun system GAU–8/A was continued. Contract for the purchase of the 30mm Oerlikon gun 304RK and test ammunition was signed with the Hughes Tool Co., Culver City, California. A test report is being prepared on the 20mm improved rounds. Analysis of the findings will determine final action.

Fiscal year 1973 program.—Full scale development of the 25mm gun system GAU–7/A will be continued and testing on the ground will be initiated. Test quantities of the 30mm gun system GAU–8/A will be delivered to the test site, Eglin AFB, Florida for the competitive evaluation scheduled for January 1973–April 1973. This will be followed by a full scale development program.

Program to completion.—This is a continuing program. Other developments pertaining to guns or ammunition may be added in future years to satisfy newly established requirements. The following is a brief resume pertaining to the two currently active gun programs which are covered in more detail in following Descriptive Summaries:

25 mm. gun system GAU–7/A.—The program is expected to continue until [deleted] 75 at which time production systems are expected to be available. Extensive ground firing by the gun contractor, the Armament Development and Test Center, McDonnell-Douglas Co. (in an F–15 test bed) followed by extensive air firing at Edwards AFB, California will be undertaken to qualify the gun, feed system and combat rounds and to establish compatibility of the gun, caseless round and F–15 airframe. Release to production is expected to occur in [deleted] 74.

30 mm. gun system GAU–8/A.—The program schedule calls for release to production of the gun system in May 1974 and delivery of production guns one year later (May 1975). The gun pod program will reach similar milestones one year later. Optimization and improvement of the system and combat round, development of a high density armor piercing incendiary round, development and fabrication of test gun pods, qualification of the ammunition and air test of the gun system and pod will be accomplished.

Resources (in millions of dollars):

R.D.T. & E. funds for fiscal year 1971, $9.6; fiscal year 1972, $20.3; fiscal year 1973, $21.8; additional funds to completion are continuing program; and the total estimated cost is not available.

IMPROVED AIRCRAFT GUN SYSTEMS

Chairman ELLENDER. I note that $9 million of the total requested is for the continuation of work on the 30 millimeter close air support gun system. Is this gun being developed primarily for use on the proposed A–X aircraft?

General GLASSER. The 30 millimeter close air support gun system is being developed primarily for the proposed A–X aircraft; however, it is being developed also for carriage in pods on the F4 and A7 aircraft. Development of the pod is included in the gun program.

Chairman ELLENDER. On page 336 of the descriptive summary, I note the following statement: "The gun system is externally powered and is optimized for high effectiveness against the entire spectrum of ground targets, including tanks". Just how effective would this weapon be against an enemy tank that has basically the capabilities of the Army's M–60 tank?

General GLASSER. A comparison of the features of the M–60 and the T–55 Russian tank such as top armor thickness, ammunition carried, and arrangement of the ammunition inside the tanks indicates that the vulnerability of the two tanks is approximately equal. Our current estimate is that the 30 mm. gun will have a kill probability of [deleted] under the following conditions of attack: aircraft speed of 300 knots, dive angle of 40°, aiming error of 5 mil CEP (Circular Error Probable), range of 3,000 feet and burst length of 2 seconds.

Senator YOUNG. When do you expect this 30 mm. gun to be developed to the point that you can make a production decision?

General GLASSER. The 30 mm. close air support gun is scheduled to be released to production in May 1974.

Senator YOUNG. Of the $21.8 million requested for improved aircraft gun systems, $12.8 million is for the continuation of the "Improved Aerial Gun System, GAU–7A." Now, is this the program for the development of a 25 mm. caseless round gun system for use on the F–15?

General GLASSER. Yes, sir, that is correct.

Senator YOUNG. What is the current status of this development program?

General GLASSER. The development program is on contract with the Philco-Ford Corp. The contract for the full-scale engineering development was awarded in December 1971 after a competitive shoot-off and evaluation of two competing systems, one by Philco-Ford and the other by the General Electric Co.

OTHER EQUIPMENT

Chairman ELLENDER. $501,992,000 is requested for the projects funded under the budget activity entitled "Other equipment." How much was provided for this budget activity in fiscal years 1971 and 1972?

General GLASSER. For prior years, the amounts made available for this budget activity, restructured for comparability with fiscal year

1973, were: $374,583,000 for fiscal year 1971 and $419,403,000 for fiscal year 1972.

Chairman ELLENDER. Describe for us briefly the kinds of projects funded under this budget activity.

General GLASSER. The types of efforts which are funded under "Other equipment" are primarily associated with electronics reconnaissance, intelligence, communications, sensors, detection systems, and other operational equipment. Some of the major programs supported herein are the Conus over-the-horizon early warning radar system and its related technology tasks, a new initiative program to begin development of a self-contained adverse weather night attack, SCANA prototype capable of detecting and striking targets in high threat areas, continued development of an advanced airborne command post for the National Military Command System, a cooperative effort with the Federal Republic of Germany to develop a side-looking airborne radar and continued R. & D. on the airborne warning and control system, AWACS. Also included in this budget activity are the funds for the electromagnetic compatibility analysis center, the Lincoln Laboratory, and the MITRE Corporation which provide technical support to the Department of Defense in accomplishing the previously mentioned activities.

Chairman ELLENDER. Please comment on any significant reprograming increases or decreases for this budget activity, and any emergency funds transfers to this budget activity.

General GLASSER. Congress recently approved the transfer of $5 million from the emergency fund appropriation to surface defense suppression in this budget activity. These funds will permit the Air Force to develop a time-of-arrival, TOA, system for determining precise location of electromagnetic emitters and to develop an improved guided glide weapon which will increase the standoff attack distance. There is before the Congress a reprograming action which reflects adjustments made in the fiscal year 1972 program. That reprograming action contains a minor reduction of $1,400,000 in this budget activity. The reduction is associated with a rephasing of fiscal year funding requirements on Tactical Loran without a change in the scope of effort.

STRATEGIC AIR COMMAND COMMUNICATIONS

Chairman ELLENDER. $4.4 million is requested for the program entitled "Strategic Air Command Communications." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

STRATEGIC AIR COMMAND COMMUNICATIONS

CATEGORY: STRATEGIC FORCES

Description.—The RDT&E previously under PE 11311, SAC Communications Control Network (SACCON); PE 11313F; Emergency Rocket Communications System (ERCS); and PE 33131F, Minimum Essential Emergency Communications Network (MEECN) is consolidated under this program element. This restructuring is part of the Department of Defense (DOD) Consolidated Telecommunications Program.

SACCON.—The purpose of this effort is to provide system improvements to Strategic Air Command (SAC) communications to accommodate anticipated growth into the 1980s. This effort will result in the integration of the current

SAC communication systems into a single system that will be capable of growing with the increasingly complex weapon systems, will increase capacity and service, and will permit a reduction in operation and maintenance costs.

Project 616A, Air Force Support of MEECN.—The objectives of Air Force Support of the (DOD) Minimum Essential Emergency Communications Network (MEECN) are to (a) assure compatibility of Air Force assigned MEECN elements with other MEECN assets; (b) develop the changes/improvements to existing Air Force subsystems of MEECN which result from DOD guidance and direction; and (c) provide for research, development, and acquisition of new MEECN facilities as specifically assigned. The MEECN concept combines various service communications facilities into a last ditch communications network to authorize weapons release. The specific objective of the current effort on this program is to develop the changes necessary to meet DOD requirements for integration of the 487L Very Low Frequency/Low Frequency (VLF/LF) Communications System into the MEECN. The MEECN would employ VLF/LF to pass Single Integrated Operations Plan (SIOP) execution orders to the strategic forces of all Services during and after a nuclear attack.

Project 494L, ERCS.—ERCS is a rocket launched communication package designed to provide a capability to broadcast to airborne elements of the SAC bomber fleet in a nuclear environment. The communications payloads would be launched into ballistic trajectories by Minuteman missiles to provide [deleted] ultra-high frequency (UHF) communications to the nuclear forces. The system can be activated from the ground command operations center or the airborne command post, and its transmissions can be received at SAC's missile sites and wing command posts. The objectives of the current research and development effort are to improve the reliability and survivability of the communications payloads by updating them to operate in the currently postulated nuclear environment, consistent with the improved hardening of Minuteman. [Deleted.]

Work performed by.—Responsible Air Force agencies are Electronic Systems Division, L. G. Hanscom Field, Massachusetts; Rome Air Development Center, Griffiss AFB, New York; and Aeronautical Systems Division, Wright-Patterson AFB, Ohio (all organizations of Air Force Systems Command). Contractors include: (1) MITRE Corp., Bedford, Massachusetts for SACCON; (2) Westinghouse Corp., Baltimore, Maryland; Analytical Systems Corp., Burlington, Massachusetts; and Batelle Memorial Institute, Long Beach, California for Project 616A with other contractors remaining to be selected, and (3) Bendix Corp., Ann Arbor, Michigan for Project 494L.

Fiscal year 1972 program:

SACCON.—The FY 1972 program provides for engineering and test support for SAC communication improvements under a program called SATIN IV (SAC Automated Total Information Network).

Project 616A.—The FY 72 program includes development of prototype model modems, improvements to the airborne antennas, increasing the bandwidth of the transmitting antenna, high power airborne transmitter development, propagation analysis for performance prediction, improving the system survivability/vulnerability, miniaturization of receivers for airborne use, and continuing system engineering efforts. These efforts will provide for both short and long range improvements.

Project 494L.—Phase III of the program continued in FY 1972. Development of a suitable shield to protect the ERCS payload from dust and pebbles during launch (per the criteria established for Minuteman/ERCS) was started.

Fiscal year 1973 planned program:

SACCON.—SATIN IV will continue. Improvements to SAC communications will be defined.

Project 616A.—The tasks started in FY 72 will be continued. However, due to fund limitations, this effort will be limited to $2.0M in FY 73 by deferring continuation of some tasks until FY 1974.

Project 494L.—The shield development started in FY 1972 will be completed. In addition, requalification testing of the payload will be conducted; the existing spare modules will be modified to the new survivability level of the Minuteman; and new component parts will be purchased. These actions will complete Phase III of the program.

Program to completion.—This is a continuing program.

Resources (In millions of dollars) :

	Fiscal year 1971 and prior	Fiscal year 1972	Fiscal year 1973	Additional to completion	Total estimated cost
R.D.T. & E. funds	31.7	4.1	4.4	Continuing	(1)
SACCON		(.5)	(1.7)		
Project 616A	(1.1)	(2.3)	(2.0)		
Project 494L	(30.6)	(1.3)	(.7)		

[1] Not available.

STRATEGIC AIR COMMAND COMMUNICATIONS

Chairman ELLENDER. I note that the funds requested for this program are for three separate projects. Would you give us a brief description of each of these projects?

General GLASSER. Consolidated under this program element is the R.D.T. & E. previously under program element 11311, SAC communications control network or SACCON; 11313, emergency rocket communications system or ERCS; and program element 33131F, Air Force support of the minimum essential emergency communications network, generally referred to as MEECN.

The purpose of SACCON is to provide system improvements to SAC communications to accommodate anticipated growth into the 1980's. This effort will result in the integration of the current SAC communication systems into a single system that will be capable of growing with our increasingly complex weapon systems, will increase capacity and service, and will permit a reduction in operation and maintenance costs.

Project 616A supports the DOD's minimum essential emergency communications network which will combine various service communications facilities into a last ditch communications network to authorize weapons release. Project 616A's objectives are to: (a) assure compatibility of Air Force assigned MEECN elements with other MEECN assets and (b) develop those changes or improvements to existing Air Force subsystems of MEECN which result from DOD guidance and direction and provide for research, development, and acquisition of new MEECN facilities as specifically assigned. The specific objective of the current effort is to develop the changes necessary to meet DOD requirements for integration of the 487L very low frequency/low frequency communications system into MEECN.

Project 494L, ERCS, is a rocket launched communication package designed to provide an ultra-high frequency broadcast capability to airborne elements of the SAC bomber force in a nuclear environment. The communications payloads would be launched into ballistic trajectories by Minuteman missiles to provide [deleted] communications to the nuclear forces. The objectives of the current research and development effort are to improve the survivability and reduce the vulnerability of the communications payloads by updating them to operate in the currently postulated nuclear environment, consistent with the improved hardening of Minuteman.

Senator YOUNG. The $4.4 million requested for fiscal year 1973 is an increase of $338,000 over the amount provided for fiscal year 1972. Why do you need this increase?

General GLASSER. The net increase in the fiscal year 1973 request over the amount provided for fiscal year 1972 occurs primarily in the SACCON project. In fiscal year 1972, an effort was initiated called Satin IV for SAC automated total information network. The fiscal year 1972 effort will provide definition and concept of operation for a single, command-wide digital communications system for SAC. In fiscal years 1973 and 1974, full development of system performance specifications and hardware specifications will be accomplished. The increase in funds, therefore, reflects the increase in activity from a minimum initial effort to that of the complete program as presently envisioned.

CONUS OVER-THE-HORIZON (OTH) RADAR SYSTEM

Chairman ELLENDER. $4.4 million is requested for the program entitled "Conus Over-the-Horizon Radar System." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

CONUS OVER-THE-HORIZON (OTH) RADAR

CATEGORY: STRATEGIC FORCES

Background.—The Conus Over-The-Horizon (OTH) backscatter radar system will provide a distant detection zone to alert national command authorities to potentially hostile aircraft in airspace approaches to North America in the late 1970's and 1980's. These radars were approved by the Secretary of Defense in November 1967 as a part of continental air defense modernization plan.

Description.—The CONUS OTH System will provide long range surveillance [deleted] nautical miles), detection, tracking, and identification of aircraft. The OTH system will provide detection of aircraft from the surface to the ionosphere which corrects a deficiency of existing line of sight radars. If a total [deleted] site system is acquired, it is anticipated that the Dew Line radars will be deactivated.

Work performed by.—The Conus OTH Radar System is managed by the Air Force Electronic Systems Division, L. G. Hanscom Field, Bedford, Massachusetts. Preliminary System Design Contractors include: General Electric, Syracuse, New York; Sylvania, Bedford, Massachusetts; and ITT, Paramus, New Jersey. Analysis of OTH backscatter radar technology will be performed by: Naval Research Laboratory, Washington, D.C.; Air Force Electronic Systems Division, L. G. Hanscom Field, Massachusetts; and the Advanced Research Projects Agency, Washington, D.C. Engineering Support provided by Air Force Rome Air Development Center, Griffiss Air Force Base, New York.

Fiscal year 1972 program.—In-house System Definition, supporting studies and RFP preparation will be completed during FY 72. Polar Cap III equipment acquisition will be completed, checked out and relocated at [deleted].

Fiscal year 1973 planned program.—Conclude the site preparation and installation of Polar Cap III equipment at [deleted] and initiate the experiment. Initiate CONUS OTH [deleted] site facilities design and plan site construction. Award contract for design development and hardware acquisition for initial radar site. It is anticipated that the selected development/acquisition contractor will conduct design studies prior to fabricating the system under a phased implementation program. The phased implementation will lead to an Initial Operational Capability of the [deleted] and a Full Operational Capability [deleted].

Program to completion.—Complete the acquisition of the [deleted] Conus OTH radar systems and the Polar Cap III experiment. If the feasibility of OTH radar operation in auroral regions is established by the Polar Cap III experiment, it is anticipated that [deleted]. The program for acquisition of the [deleted] Conus OTH sites is scheduled for completion [deleted].

MILESTONES

Event	Date	Estimated cost [1]
System definition complete	May 1972	10.3
Begin equipment fabrication	April 1973	14.7
[Deleted]	[Deleted]	66.6
		67.5

[1] Estimated cost to reach milestones R.D.T. & E. funds only.

Resources (In millions of dollars):
R.D.T. & E. funds for fiscal year 1971 and prior, $7.7; fiscal year 1972, $2.6; fiscal year 1973, $4.4; additional funds to completion, $52.3; and the total estimated cost is $67.

CONUS OVER-THE-HORIZON (OTH) RADAR SYSTEM

Senator YOUNG. The $4.4 million requested for fiscal year 1973 is $1.8 million more than the amount provided for fiscal year 1972. Why do you need such a large increase?

General GLASSER. The increase in fiscal year 1973 funds will be used primarily for startup costs associated with radar hardware contract award now scheduled for late fiscal year 1973.

Chairman ELLENDER. If I read the descriptive summary correctly, when this system is fully operational, it is intended to replace the DEW line radars now in operation. Am I right about this?

General GLASSER. Yes, sir. Provided the Polar Cap III experiment is successful in demonstrating aircraft detection and tracking in the Auroral Zone and approval is given for [deleted], we would anticipate deactivation of the DEW line radars. Associated communications used by various U.S. agencies would probably be retained.

Senator YOUNG. What exactly will you do with the $4.4 million you are requesting for fiscal year 1973?

General GLASSER. The fiscal year 1973 funds will be used to move the Polar Cap III equipment to [deleted] and initiate the experiment; provide engineering support for request for proposal preparation and evaluation; and contract award for radar hardware development.

TACTICAL AIR CONTROL SYSTEM

Chairman ELLENDER. $2.8 million is requested for a program entitled "Tactical Air Control System." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

TACTICAL AIR CONTROL SYSTEM

CATEGORY: GENERAL PURPOSE FORCES

Background.—This program element contains the organization and equipment necessary for the Tactical Commander to plan, direct, and control all tactical air operations such as counter-air, air interdiction, close air support, tactical air reconnaissance, tactical airlift, and other air operations. Effective performance of these functions requires immediate and continuously available personnel, facilities, aircraft, and communications/electronic equipment for communications, detection, tracking, and identification of all aircraft over the battle area; positive and quick-reaction support of Army requirements for air support; and readily available support of combat air units upon arrival at a bare base.

Description.—Tactical Air Control System RDT&E and Procurement Programs are to provide improved, modernized, mobile electronics and other operational facilities into the Tactical Air Control System (TACS) to support the requirement for the control of tactical forces of the United States Air Force. Development effort provides for the design and test of: combat operations centers and surveillance and control radars to guide friendly attack forces.

Work performed by.—Air Force management is provided by Electronic Systems Division (ESD), L. G. Hanscom Field, Massachusetts. The MITRE Corporation, L. G. Hanscom Field, Massachusetts, provides technical support to ESD for systems design and definition studies. Major contractors include: Collins Radio, Cedar Rapids, Iowa; International Telephone & Telegraph Co., Nutley, New Jersey; Westinghouse, Baltimore, Maryland; North Electric, Galion, Ohio; Hughes Aircraft Co., Fullerton, California; and System Development Corporation, Santa Monica, California.

Fiscal year 1972 program.—RDT&E will be directed towards continuing the implementation of the TACS/TADS interface test support and to initiate hardware modification and software development. TSEF support for the Combat Reporting Center/Combat Reporting Post (CRC/CRP) improvement effort are provided. This includes evaluation of the CRC/CRP computer (HM–4118) relative to growth capability and radar simulator/training capability for the CRC/CRP. A system engineering contract for the TACS/TADS effort will be competitively negotiated.

Fiscal year 1973 planned program.—RDT&E will be directed towards continued support for the TACS/TADS program, specifically for software development and test support.

Program to completion.—Specific follow-on tasks have been identified. These efforts relate to continued work on TACS/TADS Implementation and initiation of efforts for CRC/CRP Improvements. All changes in funding were due to more definitive costs available for the TACS/TADS Implementation Program.

Milestone schedule

Event:	Date
TACS/TADS hardware delivery	September 1972.
TACS/TADS software delivery	June 1973.
TACS/TADS testing	July 1975.

Resources (in millions of dollars):

R.D.T. & E. funds are fiscal year 1971 and prior, $19.1; fiscal year 1972, $4.3; fiscal year 1973, $2.8; additional funds to completion, $26.8; and the total estimated cost is $49.

TACTICAL AIR CONTROL SYSTEM

Chairman ELLENDER. Is any of the work on this program being performed by one of the Air Force funded Federal contract research centers?

General GLASSER. $243,000 was contracted with the MITRE Corp. in fiscal year 1972. No MITRE support will be procured with the $2.8 million in fiscal year 1973.

Senator YOUNG. I note that the $2.8 million requested for fiscal year 1973 is $1.5 million less than the amount provided for fiscal year 1972. What caused this rather large reduction?

General GLASSER. Due to the need for other higher priority programs, the Air Force reduced the tactical air control system R.D.T. & E. program to the $2.8 million level. This allowed continuation of the essential TACS and TADS interface program.

Chairman ELLENDER. Just what do you plan to do with the $2.8 million you are requesting for fiscal year 1973?

General GLASSER. Continuation of the TACS and TADS interface program. Specifically continuation of contracts for hardware/software and system engineering and support for the test site.

JOINT TACTICAL COMMUNICATIONS PROGRAM (TRI-TAC)

Chairman ELLENDER. $2.9 million is requested for a program entitled "Joint Tactical Communications Program (TRI-TAC)". Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

JOINT TACTICAL COMMUNICATIONS PROGRAM (TRI-TAC)

CATEGORY: OTHER

Description.—The Joint Tactical Communications Program (TRI-TAC) is a joint service, DOD directed, effort to develop and acquire joint communications equipment for the tactical forces. This program will be addressed to certain urgent tactical communications requirements in the areas of trunking and switching; systems control facilities; local distribution equipment; terminal devices; and interfaces. Addressing primarily multi-channel equipments for tactical communications, the effort seeks to achieve economy through joint participation and centralized acquisition, to resolve technical interoperability problems and to insure that the most effective state of the art tactical equipments are fielded in a timely manner. It will also undertake certain systems analysis, cost effectiveness studies, and R&D to integrate service requirements and TRI-TAC developed concepts and equipment. Major improvements are required in communications switching and high speed tropospheric scatter radio capabilities to advance the Air Force into the high speed, digital, secure communications of the 1980's.

Work performed by.—The Air Force Systems Command manages the Air Force portion of this program through the Electronics Systems Division, L. G. Hanscom Field, Mass., and their systems engineering contractor, MITRE, Burlington, Mass.

Fiscal year 1972 program.—In a related activity the Air Force completed a Mission Analysis on Command and Control Communications for Theater Air Operations. Promising subsystem concepts resulting from this analysis are being integrated into a Baseline System Design Concept for Combat Theater Ground Communications to satisfy Tactical Communications requirements in the 1980's. The baseline program addresses system engineering factors and the necessary subsystems; switching, trunk-transmission, access subsystems (including end instruments), system control, interfaces, and Communications Security (COM SEC). The design concept will be developed in coordination with affected Air Force elements and the TRI-TAC office preparatory to issuance of contracts to optimize the system design.

Fiscal year 1973 planned program.—Two contractors will be selected to initiate detailed system design efforts against Baseline Concepts and propose alternative Combat Theater Ground Communication system designs. Engineering support, evaluation of alternatives based upon cost effectiveness trade off analysis, and the preparation of advocacy documentation, will be continued. These evaluations will also identify specialized areas of high technical risk requiring further study. Study, test, and modeling efforts will be initiated in the transmission equipment, tropospheric scatter radio (TROPO) Interleaver and message buffer areas. Initiation of engineering developments on a high speed TROPO modulator/demodulator and light weight TROPO radio set are planned.

Program to completion.—This is a continuing program. Other tasks will be added as necessary to satisfy Air Force TRI-TAC requirements.

Resources (in millions of dollars):

R.D.T. & E. funds for fiscal year 1971, $0.8[1]; fiscal year 1972, $0.5[1]; fiscal year 1973, $2.9; additional funds to completion are continuing; and the total estimated cost is not available.

TRI-TAC

Chairman ELLENDER. Just what do you plan to do with the $2.9 million you are requesting for fiscal year 1973?

General GLASSER. Two contractors will be selected to initiate detailed system design efforts against baseline concepts and propose alternative

[1] Funded under P.E. 64703F.

combat theater ground communication system designs. Engineering support, evaluation of alternatives based upon cost effectiveness trade-off analysis, and the preparation of advocacy documentation, will be continued. These evaluations will also identify specialized areas of high technical risk requiring further study. Study, test, and modeling efforts will be initiated in the transmission equipment, tropospheric scatter radio (TROPO) interleaver and message buffer areas. Initiation of engineering developments on a high speed TROPO modulator/demodulator and lightweight TROPO radio set are planned.

Senator YOUNG. Is any of the work being performed on this program by a Federal contract research center?

General GLASSER. Yes, the MITRE Corp., Bedford, Mass. is providing technical support on this effort.

Chairman ELLENDER. In fiscal year 1972, $500,000 was provided for this program, and now for fiscal year 1973, you are requesting $2.9 million. Why do you need such a large increase?

General GLASSER. The joint tactical communications program (TRI-TAC) is actually being identified as a separate program element for the first time in fiscal year 1973. As such, it is a consolidation of both program elements carried separately in prior years and individual projects in other program elements. The expenditures in fiscal year 1972, while a part of program element 63706F, advanced command and control capabilities, were for costs associated with initial build up, technical support, and baseline design efforts. The funding for fiscal year 1973 represents the total Air Force R.D.T. & E. effort in this multichannel tactical communication area.

CLASSIFIED PROGRAM

Chairman ELLENDER. On page 33 of the project listing, I note a reference to approximately $3.8 million for a classified program. Has the committee been provided with the details on this request?

General GLASSER. Yes, sir; the committee has been provided the details.

SPECIAL RECONNAISSANCE VEHICLES

Chairman ELLENDER. $9 million is requested for a program element titled "Special Reconnaissance Vehicles." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

SPECIAL RECONNAISSANCE VEHICLES

CATEGORY: INTELLIGENCE & COMMUNICATIONS

Description.—This program has been established to provide a family of high and low altitude reconnaissance drones [deleted]. Current capability includes high and low altitude photo and high altitude signal intelligence (SIGINT) vehicles. Development efforts will provide a very long endurance, high altitude, unmanned platform for use with a variety of sensors.

Work performed by.—The Aeronautical Systems Division of the Air Force Systems Command manages all development and procurement for this program. The following contractors are or have been working on this program: Teledyne-Ryan Aeronautical, San Diego, Calif., Airframe-System Integration; Boeing Company, Seattle, Wash., Airframe; Univac Division, Sperry Rand Corp., Salt Lake City, Utah, Command and Guidance; Melpar, Inc., Falls Church, Va., Sensors; Teledyne CAE, Toledo, Ohio, Engines; Fairchild Camera and Instrument Corp., Syosset, New York, Cameras; All American Engineering Co., Wilmington, Del., Recovery Equipment; Pioneer Parachute Co., Hartford, Conn., Recovery Para-

chutes; Sikorsky Aircraft, Stratford, Conn., Recovery Equipment; Lockheed Air Systems, Ontario, Calif., Launch Equipment.

Fiscal year 1972 program.—This program includes competitive prototype demonstration of a new high altitude, long endurance, multipurpose, unmanned platform (COMPASS COPE) by the Boeing Company and by Teledyne Ryan Aeronautical. Also under development is an improved navigation/avionics subsystem to be used in existing and future low altitude drones. This project will demonstrate the extremely accurate navigation capability required for the low altitude photo mission. In support of the Defense Special Projects Group (DSPG), this project has been expanded to also demonstrate accurate sensor delivery from an unmanned vehicle. A new camera is being modified and tested which will capitalize on the low altitude, high speed performance of the photo drones and provide the cycle rates and motion compensation required at very low altitude. Continued development of improved components and subsystems is being conducted, with special emphasis placed on increased reliability so as to increase effectiveness and reduce losses.

Fiscal year 1973 planned program.—Demonstration of the high altitude long endurance system (COMPASS COPE) and the navigation/avionics subsystem will be continued in FY73. Development of a next generation drone launch and recovery system will be initiated. This effort is intended to provide hardware and techniques which will ultimately replace the current DC–130 aircraft launch system and/or the helicopter midair recovery system, which fills an operational need but is expensive to operate. A continuing project will be started to adapt existing state of the art self defense electronic countermeasure devices to the low altitude drones. The purpose of this project is to reduce combat attrition through use of simple electronic countermeasure techniques.

Program to completion.—This is a continuing program.

Milestones

Event:	*Date*
Avionics update contract award	Dec. 30, 1971.
LORAN demonstration complete	July 1973.
TERCOM demonstration complete	September 1973.
Low altitude camera test complete	October 1972.

Resources (in millions of dollars):

R.D.T. & E. funds fiscal year 1971, $7.9; fiscal year 1972, $6.4; fiscal year 1973, $9; additional funds to completion are continuing; and the total estimated cost is not available.

SPECIAL RECONNAISSANCE VEHICLES

Chairman ELLENDER. One of the projects funded under this program is entitled "Compass Cope" for which you are requesting $6.2 million. Please give us a brief description of this project and tell us why you need $6.2 million for it.

General GLASSER. This program is to develop a prototype of a high altitude, long endurance drone sensor platform. The new drone will be capable of carrying a variety of payloads such as photo sensors, side looking radar, time of arrival receivers, communications relays, or signal intelligence receivers. The vehicle design will also incorporate a runway launch and recovery capability which will substantially decrease operating costs over existing air launch systems. The compass cope program is cost-shared between the Air Force and the two contractors. Development and procurement of this program will be managed by the Aeronautical Systems Division of the Air Force Systems Command. The two contractors competing in the program are the Boeing Co. and Teledyne Ryan Aeronautical. The fiscal year 1973 planned program is to complete the Boeing prototype flight demonstration and initiate Ryan prototype flight demonstration.

Senator YOUNG. Of the total requested for "Special reconnaissance vehicles," $2.8 million is for "Other efforts below $3 million each." Give some examples of the efforts funded under this project.

General GLASSER. I would like to furnish that for the record.
(The information follows:)

Fiscal year 1973 effort

	(Millions)
Complete navigation update demonstration	$0.5
Initiate level of effort on self-defense ECM for low altitude photo drones (Buffalo Hunter)	.5
Emergency test activities level of effort	.3
Initiate advanced launch-recovery-docking program, follow-on to present MARS (mid air recovery system)	1.1
DC-130 radar-computer prototype for launch point determination	.4

Chairman ELLENDER. The $9 million requested for fiscal year 1973 is $2.6 million more than was provided for fiscal year 1972. Just why do you need this increase?

General GLASSER. This increase is required to fund the initial effort of one of the competing contractors, Teledyne Ryan Aeronautical.

AIR FORCE COMMUNICATIONS

Chairman ELLENDER. $3.9 million is requested for the program entitled, "Air Force communications." Selected paragraphs from the descriptive summary will be included in the record at this point.
(The information follows:)

AIR FORCE COMMUNICATIONS (DEFENSE COMMUNICATIONS SUPPORT)

CATEGORY: INTELLIGENCE AND COMMUNICATIONS

Description.—AIRCOM-DCS (Air Force Communications-Defense Communications System) is the Air Force program to provide point-to-point communications equipment for use in the DCS. The DCS is the single worldwide complex comprising all long-haul, point-to-point, common-user communications facilities within the Department of Defense. The DCA (Defense Communications Agency) has tasked the Air Force to provide research and development support by developing equipment for the DCS. This equipment increases communications capacity, adapts to the trend toward increased digital users, and improves technical control over the various devices which funnel traffic through DCS control points. Millimetric Wave Communications development (which will permit efficient simultaneous transmission of numerous secure video signals) and the Time Division Multiplexer (which combines multiple digital data signals for more efficient transmission) are representative efforts. All efforts are directed by the DCA, and are fully coordinated with that agency prior to contract award.

Work performed by.—The Air Force Systems Command manages this program through the Electronic Systems Division, L. G. Hanscom Field, Mass., and the Rome Air Development Center, Griffiss Air Force Base, N.Y. Current contractors include Raytheon, Norwood, Mass. (Millimetric Wave Communications); Martin-Marietta, Orlando, Fla. (Time Division Multiplexer); and Honeywell, Tampa, Fla. (Group Data Modem and Automated Technical Control).

Fiscal year 1972 program.—A follow-on contract was awarded to Honeywell for engineering development of Automated Technical Control facilities. DCA cost-effectiveness analyses indicate that selective automation of technical control facilities is an economical method of increasing DCS data-handling capabilities. Four subsystems capable of independent operation will be designed, fabricated, and tested commencing in FY 1972, and design work will be initiated on the automated technical control system which will incorporate these subsystems. Fabrication of two developmental Millimetric Wave Communications radio sets will be completed. Eight developmental models of the Time Division Multiplexer will be delivered for testing. Design of the Group Data Modem will be completed and developmental models will be fabricated. The test program is under consideration at this time.

Fiscal year 1973 planned program.—Test and evaluation of Millimetric Wave Communications, Time Division Multiplexer, and Group Data Modem develop-

ments will be completed. Subsystem development for the Automated Technical Control system will be completed, and system development will proceed into in-plant testing.

Program to completion.—This is a continuing program. Other tasks will be added as directed by the Defense Communications Agency.

Milestones

Event:	Date
Millimetric wave communications R.D.T. & E. complete	June 1973.
Time division multiplexer R.D.T. & E. complete	October 1972.
Group data modem R.D.T. & E. complete	January 1973.
Automated technical control R.D.T. & E. complete	September 1974.

Resources (In millions of dollars):

R.D.T. & E. funds for fiscal year 1971, $2.5; fiscal year 1972, $1.4; fiscal year 1973, $3.9; additional funds to completion are continuing; and the total estimated cost is not available.

AIR FORCE COMMUNICATIONS

Chairman ELLENDER. I note that, of the $3.9 million requested for "Air Force communications," $3.8 million is for a project entitled, "Automated technical control." Please give a brief description of this project and tell us what you intend to do with the $3.8 million you are requesting for fiscal year 1973.

General GLASSER. The objective of the automated technical control project is to improve technical control capability and thus increase the reliability of the Defense Communications System (DCS). DCS technical control facilities, organic elements of DCS stations, function as the points of interface between the transmission elements of the system and the users of that system. These facilities must be configured and engineered to enable technical controllers to exploit the full capabilities of the DCS through the efficient performance of such daily functions as coordination, technical direction and supervision, circuit restoral, and status reporting.

The automated technical control capabilities being developed include performance trend assessment, permitting recognition of impending failures in time to avoid outages; system fault isolation, facilitating rapid identification and repair of defects; and automation of selected coordination and status reporting functions, reducing manpower required. Approximately $3.8 million, actually $3.745 million, is required in fiscal year 1973 for fabrication and in-plant test of four automated technical control subsystems capable of independent operation; for field installation and evaluation of these four subsystems; for preparation of performance specifications suitable for competitive reprocurement of these four subsystems; and for continuation of system development, including system equipment fabrication and preliminary software design, leading to start of system in-plant testing at the end of the fiscal year.

Senator YOUNG. Give a few examples of the items to be funded under "Other efforts below $3 million each" for which you are requesting $155,000.

General GLASSER. The entire $155,000 requested for fiscal year 1973 in the category of "Other efforts below $3 million each" is required to complete development of the group data modem, a device which will facilitate efficient transmission of digital data over existing analog circuits.

COMMUNICATIONS SECURITY

Chairman ELLENDER. $1.2 million is requested for a program entitled "Communications Security." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

COMMUNICATIONS SECURITY (COMSEC)

CATEGORY: INTELLIGENCE AND COMMUNICATIONS

Description.—The purpose of this program is to accomplish Communications Security (COMSEC) Research, Development, Test and Evaluation (R.D.T. & E.) efforts, including engineering and testing related to compromising emanations (Nickname: TEMPEST) of Air Force Systems Command developed systems, and providing COMSEC engineering assistance to USAF Command, Control and Communications systems. The efforts are primarily directed at ensuring that all systems being developed by the Air Force meet the requirements of current policy on the control of compromising emanations, with emphasis placed on correcting existing Air Force deficiencies and performing research and development necessary to maintain a state-of-the-art Air Force test and analysis capability in TEMPEST. The COMSEC program also includes the research and development associated with the equipment for a local office terminal that will permit secure writer-to-reader service in the proposed Local Digital Message Exchange (LDMX) system.

Work performed by.—All R. & D. tasks under this program are managed through the Air Force Systems Command's Electronics Systems Division, L. G. Hanscom Field, Mass. Contractors are South West Research, San Antonio, Tex.; International Business Machine Corp., Kingston, N.Y.; GTE Sylvania, Inc., Needham Heights, Mass.; CBS Laboratories, Stamford, Conn.; Hughes Aircraft, Culver City, Calif; and National Scientific Laboratories, McLean, Va.

Fiscal year 1972 program.—Fiscal year 1972 emphasis includes upgrading on COMSEC engineering laboratory and in-house capability, developing preliminary design and breadboard models of COMSEC devices, and evaluating new COMSEC and interface equipment. Research into TEMPEST phenomena and development projects will continue in order to improve Air Force testing techniques and equipment. Developments of high-speed digital recording techniques and voice-operated coder testing techniques will be completed. The Advanced Tactical Air Command and Control COMSEC mission analysis was completed, indicating the COMSEC requirements of future tactical systems. Extensive study was conducted on destruct systems to prevent compromise.

Fiscal year 1973 planned program.—R. & D. associated with developing an intercom system with improved security for the B–1 and advanced airborne command posts will continue. A conceptual/validation phase of a program to provide an integrally secured radio for air-to-air and air-to-ground communications will be started. COMSEC engineering support will be provided to Air Force command, control, and communication systems development. R. & D. will be done to develop criteria to minimize the TEMPEST hazards associated with intercommunication systems. These hazards result from clear-text microphone pick-up of classified acoustic signals and electromagnetic cross-coupling of red (secure) line signals with black (non-secure) lines. The results of this effort will benefit all voice communications systems. As a result of the above work, a specification will be developed for TEMPEST free intercom systems and this system will be fabricated and evaluated. An advanced development program for two types of secure terminal communications systems suitable for local office environment will be started. The terminals will provide writers and readers with a cryptographically secure mode of communication with Local Digital Message Exchange systems and later with multi-processing resource sharing information management systems and other terminals. The development is intended to solve the problems of physical security, compromising emanations and secure operations from a business office environment.

Program to completion.—This is a continuing program.

Resources (in millions of dollars):

R.D.T. & E. funds for fiscal year 1971, $1.2; fiscal year 1972, $1.2; fiscal year 1973, $1.2; additional funds to completion are continuing; and the total estimated cost is not available.

COMMUNICATIONS SECURITY

Chairman ELLENDER. Just what will you be doing with the $1.2 million you are requesting for fiscal year 1973?

General GLASSER. The fiscal year 1973 COMSEC program is made up of three major efforts. $300,000 will be spent on the measurement of unintentional emissions from newly developed equipment. In-house and contractor efforts aimed at eliminating the source of these Tempest signals as well as projects directed at minimizing the Tempest problem by alterations to system design will use $500,000. Development and initial acquisition of local digital message terminals (LDMX) to be used for classified message transfer, point to point, 24 hours a day, into an unoccupied office will require $400,000 in fiscal year 1973. This will provide equipment designed to satisfy all security requirements for the protection of classified information.

TRAFFIC CONTROL APPROACH AND LANDING SYSTEM

Chairman ELLENDER. $11.8 million is requested for a program entitled "Traffic control approach and landing system." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

TRAFFIC CONTROL APPROACH AND LANDING SYSTEM (TRACALS)

INTELLIGENCE AND COMMUNICATIONS

Background.—The Air Force has long recognized the requirement for a single central management office to oversee the modernization of the many related pieces of airborne and ground electronics equipment which comprise the total Air Traffic Control and Landing System. To satisfy this requirement, the TRACALS Program Office was established.

Description.—Traffic Control and Landing System (TRACALS) is a program aimed toward the development of the technology and equipment necessary to modernize the Air Force's tactical air traffic control, approach and landing capability. TRACALS consists of the worldwide systems of air traffic control, approach and landing aids supporting the USAF mission in either fixed or mobile configurations. Air Force equipments must interface with both National (FAA) and International systems (ICAO). Current R&D efforts include a tactical radar for bare base operations (AN/TPN–19), contributing toward the development of a National Microwave Landing System and investigation of Collision Avoidance equipments. The AN/TPN–19 will replace obsolete M–series radars and give considerably better performance especially in rain. The Microwave Landing System will come into service in the late seventies and will provide guidance to permit true zero-zero landing capability. Several commercial manufacturers offer Collision Avoidance Equipment. These will be evaluated to determine their suitability to military missions.

Work performed by.—The Air Force Electronic Systems Division, L. G. Hanscom Field, Massachusetts, is responsible for management of the projects included under this program. Contractors: General Precision Laboratories, Pleasantville, New York; International Telephone and Telegraph, Nutley, New Jersey; Raytheon, Waltham, Massachusetts; Atlantic Research, Alexandria, Virginia; and others (this number will vary annually).

Fiscal year 1972 program.—Work on the AN/TPN–19 has progressed to the point where limited Category I testing under field conditions has begun. Limited funds have been applied to the Microwave Landing System (MLS) in order to attack the most critical issues. (Separate descriptive summary on MLS is provided.) Collision Avoidance investigations will begin during this fiscal year.

Fiscal year 1973 planned program.—The AN/TPN–19 R&D effort will be completed during this fiscal year with the end of Category I and II testing. These funds will also cover Target to Ceiling Costs and Engineering Change Orders (ECOs). The Microwave Landing System program will continue efforts

addressing Air Force peculiar requirements. Modification of microwave equipments to support laboratory, field and flight tests will provide needed answers to verify feasibility of Air Force operational concepts.

Program to completion.—This is a continuing program to support USAF global aerospace operations.

MILESTONES FISCAL YEAR 1973

I. *AN/TPN-19.*—
Training (USAF Maintenance), June 1972–November 1972.
Prepublications Review, January 1973–February 1973.
Spares Provisioning, February 1972–May 1973.
AGE, Organizational, February 1972–March 1973.
AGE, Depot, February 1972—December 1973.
Category I Test Complete, May 1972.
First Article Configuration Inspection, August 1972.
Category II Test, October 1972–March 1973.

II. *Microwave landing system.*—Specific start-stop dates are not possible to show since these activities are interdependent and continuous.
Technique Investigations (July 1972–June 1973): Signal Format, Low Angle Ground Effects, Geometry Effects, Data Rates.
Application to USAF Needs (July 1972–June 1973): Processor Development, Command and Display.
Flight Test and Evaluation (July 1972–June 1973): Aircraft Modification, Airborne Testing, Systems Support.

III. *Collision Avoidance.*—(Development Acquisition Plan and available at the time of this preparation.)

Resources (In millions of dollars):
R.D.T. & E. funds for fiscal year 1971, $7.3; fiscal year 1972, $2.6; fiscal year 1973, $11.8.

TRAFFIC CONTROL AND LANDING SYSTEM

Chairman ELLENDER. I note that, of the $11.8 million requested for "Traffic control approach and landing system," $5.6 million is for a project entitled "Landing Control Center—TPN-19." In fiscal year 1972, only $1.9 million was approved for this project. Will you give us a brief description of your objectives in this project, and tell us why such a large increase in funds is being requested.

General GLASSER. The project objective for fiscal year 73 is to test and evaluate the AN/TPN-19 surveillance and precision approach radar system. The equipment is in contractor test at the present time with completion expected in November of this year. Air Force testing will then start in early 1973, and continue to mid year. The increase in cost is the Government's share of an increase in program cost. These increases were brought about by antenna and transmitter redesign plus the stretch out of the Category I test effort.

Chairman ELLENDER. I note that you are requesting $5.7 million for a project called microwave landing system, and I also note that only $636,000 was provided in fiscal year 1972. Will you please describe this project and tell us why you need such a large increase in funds?

General GLASSER. This project is tied to the Federal Aviation Administration's 5-year national plan for the development of a new landing system, which is expected to be operational in the late 1970's. The Department of Defense is a signator to the plan and has participated in its development from the start. Under the plan, the Air Force, as well as the Army and Navy, was assigned certain investigative tasks relating to its own particular needs. The performance of these tasks will assure us that the final systems proposed by industry will in fact meet all of our operational requirements. Further, it provides us with a technical base for evaluating the industry's proposals. The $5.7 million is needed by the Air Force to keep pace with the plan not only by

performing those tasks which are part of our fiscal year 1973 effort but also making up for our rather low level of effort last year.

Senator YOUNG. Give us some examples of what the $500,000 will be used for that you are requesting for "Other efforts below $3 million each."

General GLASSER. This amount will be used to initiate a program of aircraft collision avoidance systems investigations. We have a draft DOD plan in coordination which will allow the three services to jointly test and evaluate those collision avoidance systems currently available from industry. This evaluation will provide a baseline from which the services can ultimately define the requirements for a common DOD collision avoidance system.

GROUND ELECTRONICS

Chairman ELLENDER. $40.8 million is requested for the continuing exploratory development program entitled, "Ground electronics." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

GROUND ELECTRONICS

CATEGORY EXPLORATORY DEVELOPMENT

Description.—This element provides technology to meet Air Force missions for observing all objects in aerospace which have military significance; for producing intelligence information which will aid in developing superior military weapons and technology; for communicating reliably in all environments; and for processing and displaying command and control information. It provides techniques for improving reliability and compatibility of electronic equipment. It also provides the technological foundation on which the work of the Rome Air Development Center (RADC), Griffiss AFB, New York, is based, such as over-the-horizon radar systems, tactical air control systems, technical sensor collection, intelligence data handling system, traffic control, approach and landing systems. Over 60% of the funds are used by Project 06DM, which provides funds for all the civilian salaries and the operating costs of the Center. The element also includes a project for instrumentation, integration and testing facilities maintained by the Center and twenty-three other projects of the Center in seven technical domains which are: transmission and reception, information processing, information displays, reliability and vulnerability, ground based surveillance, ground communications and intelligence.

Work performed by.—The Center manages the work, in coordination with the Air Force Avionics Laboratories and the Air Force Cambridge Research Laboratories. About 40% of these funds support contracts with industry, universities and nonprofit organizations. Representative contractors are: General Electric, New York, New York, for the G.E. 635/645 general purpose computer and work on a short pulse radar antenna; Philco-Ford, Bluebell, Pennsylvania, for development of a large scale tactical display; Radio Corporation of America, Moorestown, New Jersey, for integrated circuit and communication switching development; Bendix, Detroit, Michigan, for work on advanced correlation techniques; Syracuse University, Syracuse, New York, for large scale information processing systems development; Westinghouse, Baltimore, Maryland, for mobile communications control switching concepts; Signatron, Lexington, Massachusetts, for mathematical modeling of radio interference; Ling-Temco-Vought, Greenville, Texas, for facilities for the High Power Test Laboratory; Auerbach, Philadelphia, Pennsylvania, for development of the DM–1 (Data Management) Information Processing System; Cornell University, Ithaca, New York, for the development of microwave generation techniques. Contract duration averages about eighteen months.

Fiscal year 1972 program.—Areas of emphasis included wide-band real time signal processing, wide-band, multi-function information transfer, solid state signal generation, amplification and control techniques, satellites communication techniques, adaptive radar techniques and digital equivalent circuit techniques. Higher order computer programming languages, data management, on-line pat-

tern analysis and recognition were emphasized in the technology of information processing. Work on displays pointed toward development of a low cost large screen display technique suitable for tactical environments as well as techniques for fixed sites and for reconnaissance. The physics of reliability was emphasized. A major effort continued in radio interference analysis and a new effort in intrasystem analysis was begun. Application areas included over-the-horizon detection, counter-insurgency detection techniques, space surveillance, digital techniques and survivability for communications. On-line intelligence analysis and related techiniques were developed.

Fiscal year 1973 planned program.—In FY 73, the areas of transmission and reception will include development of digital signal processors and adaptive radar techniques, the "Time-of-arrival" location of nonpulse emitters and a parametric frequency selective limiter for LORAN C/D to reduce CW interference. To obtain higher power and increased efficiency for microwave transmitting equipment new modes of oscillation and amplification in sources such as traveling wave tubes, and solid state diodes will be studied. Microwave acoustic devices will be developed. In Information Processing, emphasis will be placed on associative processing and modeling to improve the efficiency and through-put of large digital computer systems. Another effort will be devoted to mathematical techniques for design of computer systems. The display area will be concluding several related efforts in plasma displays, including large flat panels, with color capability. An effort will be in its final phases in intrasystem management of electromagnetic compatibility. This effort could be described as a computer assisted program to aid in balancing the electrical noise budget of a system by mathematically modeling the system. In communications, emphasis will be placed on wideband data terminals and modems. In cartography, automatic techniques for photographic data reduction will be nearing completion.

Program to completion.—Continuing program.

Resources (in millions of dollars):

R.D.T. & E. funds for fiscal year 1971, $37.0; fiscal year 1972, $39.3; fiscal year 1973, $40.8; additional funds to completion are continuing; and the total estimated cost is not available.

GROUND ELECTRONICS

Chairman ELLENDER. Please provide a tabulation for the record listing each of the projects funded under this program, the amounts for each for fiscal years 1971 and 1972, and the estimate for fiscal year 1973.

General GLASSER. Yes, sir.

(The information follows:)

[In thousands of dollars]

Project number	Title	Fiscal year— 1971	1972	1973
06DM	Rome Air Development Center operations	22,115	24,450	25,280
2801	Information systems design methodology	200	180	150
3176	Spaceborne computation and control	300	270	220
4027	Electronic warfare data processing techniques	140	50	170
4506	Electromagnetic surveillance techniques	1,400	1,450	1,410
4519	Surface and long-range communication techniques	1,220	1,150	1,110
4540	Electromagnetic vulnerability reduction	750	740	865
4557	Instrumentation, integration, and test	200	200	180
4594	Nonnumerical data processing	760	910	960
4600	Electromagentic radiation techniques	180	180	170
4610	Information processes for communications	100	100	100
4641	Advanced data processing technology	100	90	95
5519	Reliability and maintainability techniques for electronics	850	900	1,070
5534	Special-purpose sensing techniques	365	430	460
5556	Advanced recognition and detection techniques	125	165	185
5569	Advanced targeting and charting techniques	800	700	685
5573	Microwave tubes and devices	950	950	1,025
5581	Information processing development	2,750	2,660	2,605
5597	Display techniques for command and control	800	720	750
6244	Reconnaissance interpretation techniques	825	950	1,020
6512	Space surveillence sensors	280	285	270
6515	Lightweight radar technology	255	290	295
6519	Electromagentic counter-countermeasures for contingencies	295	250	270
6523	Applied ground communications techniques	1,000	960	1,085
6527	Optical surveillance techniques	240	290	325
	Total	37,000	39,320	40,800

Senator YOUNG. Of the $40.8 million which you are requesting for fiscal year 1973, I note that $25.3 million is for the support of the Rome Air Development Center. What is the basic mission of this center?

General GLASSER. The mission of the Rome Air Development Center (RADC) includes exploratory and advanced development of systems and operational support equipment in the areas of ground-based electronics and electromagnetic applications. This encompasses communications, surveillance, intelligence and reconnaissance systems. It also includes work in Air Force-wide support areas such as electronic data processing techniques, displays, electromagnetic compatibility, and equipment reliability. The descriptive summary for Project 06DM, RADC operations, lists some of the more than 60 program elements in which the center is active, such as over-the-horizon radar, air traffic control, and intelligence/reconnaissance equipment. The total financial responsibility of the center is about $110 million annually.

Senator YOUNG. How many civilians are employed at this center, and how much of the $25.3 million you are requesting is for their compensation and benefits?

General GLASSER. The center is authorized 1,095 manning spaces for fiscal year 1973. The $25.28 million of operating expenses includes $21.535 million for pay and benefits.

Senator YOUNG. How many military personnel are assigned to this center?

General GLASSER. The authorized military strength is 276 man-years.

Chairman ELLENDER. The amount you are requesting for fiscal year 1973 is $830,000 more than was provided in fiscal year 1972. Why do you need this increase?

General GLASSER. The project listing shows a requested increase of $830,000 for Project 06DM, Rome Air Development Support, primarily because of the civil service pay raise, in-grade increases and other pay and benefit items, which are expected to increase $785,000. The remaining $45,000 increase is distributed among cost of supplies, printing, purchased maintenance of equipment and education service.

Chairman ELLENDER. Please comment on the project entitled "Reliability and maintainability techniques for electronics" for which you are requesting $1.1 million for fiscal year 1973. Why do you need the increase of almost $200,000 you are requesting?

General GLASSER. The project "Reliability and maintainability techniques for electronics" pursues the elusive goal of insuring that all Air Force electronic systems/equipment procurements will be able to minimize total life-cycle costs and improve mission performance. To do this, we must understand the physics of failure. We must be able to improve and specify reliability design and testing techniques, and have confidence in life-time reliability predictions on which maintenance costs and strategies are based. These predictions must be available early in system design while flexibility for design trade-offs still exists. Finally, we must have management tools to make all this sophistication readily available to Air Force system offices and to their contractors. Recent analyses convince us that there are potentially immense savings in overall life cycle costs if we can only succeed in the above goals. Accordingly, we are requesting the increased fund-

ing to augment the prediction and design techniques and the reliability physics work.

Chairman ELLENDER. Would you also comment briefly on the project entitled "Reconnaissance interpretation techniques" for which you are asking $1,020,000 for fiscal year 1973?

General GLASSER. The objectives of this exploratory development program are to investigate and develop improved hardware and techniques which will increase the quality, quantity and timeliness of military intelligence, and to evaluate reconnaissance systems from the imagery and displays they produce to determine sensor capabilities. Present efforts are directed to the exploitation of the photometric properties of color imagery to gain additional intelligence information from the photograph. One effort is exploring the concept of an advanced analysis system for interpreting multispectral information recorded on magnetic tape.

Senator YOUNG. Please comment briefly on the project entitled "Applied ground communication techniques" for which you are requesting $1,085,000.

General GLASSER. The purpose of this project is to enhance the capabilities, reliability, flexibility, and survivability of Air Force command and control communications. The approach is to demonstrate and test new technology in experimental units. An example of recent accomplishments is the testing of a feasibility model of an integrated circuit and message switch. The Defense Communications Agency and all the services reviewed the results, and this technical approach to switching has been selected for the Army-led triservice tactical (TRITAC) communications switching program. Another unit, a new voice digitizer, was tested for improved secure voice transmission. This project is of interest not only to the Air Force, but to the National Security Agency and the Defense Communications Agency. In fiscal year 1973, heavy emphasis will be placed on security, secure voice, and the transition to digital communications. Other efforts will seek improvements for tactical communications, for survivable strategic communications and for low-cost microwave systems.

Chairman ELLENDER. The $40,800,000 requested for ground electronics is an increase of $1,480,000 over the sum provided for fiscal year 1972. Just what is the need for this increase?

General GLASSER. Increased in-house costs of $830,000, mainly for the civilian pay raise, were mentioned previously, as was an increase of $170,000 for reliability and maintainability techniques. The reconnaissance interpretation techniques discussed earlier is being increased by $125,000. Other projects being increased significantly include electronic warfare data processing techniques, $120,000 and electromagnetic vulnerability reduction, $125,000. Both of these projects are now capitalizing on our ability to do practical complex analyses at high speed that were impossible to do in the past.

HUMAN RESOURCES

Chairman ELLENDER. $7,360,000 is requested for the continuing exploratory development program entitled "Human resources." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

HUMAN RESOURCES

CATEGORY: EXPLORATORY DEVELOPMENT

Description.—This program element provides for exploratory development for which the Air Force Human Resources Laboratory (AFHRL) is responsible. Work areas include design and development of techniques and procedures for: airman/officer selection, classification, and assignment, career development, occupational analysis, and personnel management systems; methods devices, and procedures for training and education of Air Force personnel, simulation techniques for training; personnel, training and manning factors in aerospace systems; improvement of training (pilot, navigator, aircrew training, technical training; improvement of Air Force professional education), evaluation of DoD manpower development programs. The AFHRL, with headquarters at Brooks AFB, Texas, is composed of the following divisions: Personnel Research Division, Lackland AFB Tex; Advanced Systems Division, Wright-Patterson AFB, Ohio; Flying Training Division, Williams AFB, Ariz; Technical Training Division, Lowry AFB, Colo; Professional Education Division, Air Force Academy, Colo, and Air University, Maxwell AFB, Ala; and Manpower Development Division, Alexandria, Va.

Work performed by.—The program is managed by the AFHRL. Some typical contractors are: Ralph E. Manns Co., Wilmington, Calif.—$51,527 for Operational Combat-Ready Pilot Proficiency Measurement; Goodyear Aerospace Corp., Akron, Ohio—$15,000 for Design of a Low Cost Formation Trainer; McDonnell Douglas Corp., St. Louis, Mo.,—$78,000 for Relationship between Subsystem Design, Training Difficulty, Training Cost and Maintenance Performance; Applied Sciences Associates, Inc., Valencia, Pa—$70,000 for Development of Job Performance Aids for Jet Engines; Southwestern Computering Service, Inc., Tulsa, Okla.—$15,000 for Validation of Background and Interest Tests.

Fiscal year 1972 program.—Efforts to provide improved techniques for identification of people, skills, and aptitudes essential to the Air Force Personnel system and more effective training programs such as: technological advances for the use of computers in the management of Air Force personnel; continued effort in the development of methodology for describing, analyzing, and structuring Air Force airman, officer, and civilian job and occupations and methodology for utilizing this information in establishing experience records for individuals, job difficulty indices, and training programs; improved tools, and methods for selection, classification, utilization and evaluation of Air Force personnel; drug abuse; the development of technology and training devices for improvements in flying and technical training programs directed toward greater computer-based individualized training and increased utilization of simulation in training; investigations to determine the full potential of non-decision job performance aids and methods to automate the aids; methodology for providing means for improvements in the Air Force Professional Education Program; assistance to OSD in its manpower development programs; and technology to improve the development of weapon systems by better and earlier use of human resources data in such developments.

Fiscal year 73 Planned Program: Efforts directed toward improved techniques and procedures for more effective utilization of available manpower resources and more effective training programs will continue in the following areas: advanced assignment system for more effective career progression and better man-job match; anticipated problems in zero-draft conditions to provide greater flexibility in adjusting to changes in the manpower pool; continue occupational analysis particularly related to exploitation of measures of job difficulty and transfer of skills from one specialty to another; continue drug abuse studies; development of individualized flight training programs; development of computer-based system for automated technical training performance monitoring; continue efforts on effects of human resources data on design, operation, and manning factors in weapons system development; development of a resolution-limited wide-angle segmented visual simulation; effectiveness of various individualized instructional techniques as student aptitudes and ability varies; selection techniques for post-UPT and post-UNT assignment; field evaluation of job-oriented tests;

continue work with Air University and Air Force Academy on techniques to improve professional military education.

Program to Completion.—Continuing program.

Resources (in millions of dollars):

R.D.T. & E. funds for fiscal year 1971, $4.4; fiscal year 1972, $5.1; fiscal year 1973, $7.4; additional funds to completion are continuing; and the total estimated cost is not available.

HUMAN RESOURCES

Chairman ELLENDER. Please provide a tabulation for the record listing the projects funded under this program, the amounts for each for fiscal years 1971 and 1972, and the estimate for fiscal year 1973.

General GLASSER. Yes, sir, I will.

(The information follows:)

[In thousands of dollars]

Project number	Title	Fiscal year 1971	1972	1973
06EH	Air Force Human Resources Laboratory operation	3,247	3,847	5,730
1121	Technical training development	185	295	350
1123	Flying training development	211	305	350
1124	Human resources in system development and operation	46	100	190
1125	Air Force professional education	50	58	50
1710	Training for advanced Air Force systems	168	190	250
4499	Evaluation of DOD manpower development programs	82	100	0
6114	Simulation techniques for Air Force training	235	205	260
6323	Personnel management R. & D.	75	0	55
7719	Air Force personnel system development	35	10	65
7734	Development of methods for structuring Air Force occupations	86	0	60

Senator YOUNG. Are funds being requested for any new projects in fiscal year 1973?

General GLASSER. No new projects are planned for fiscal year 1973, but there is to be increased effort on existing projects to exploit and expand the technology base of the laboratory.

Chairman ELLENDER. I note that of the $7.4 million requested for human resources, $5.7 million is for the support of the Air Force Human Resources Laboratory. Please comment briefly on the basic mission of this laboratory.

General GLASSER. The Air Force Human Resources Laboratory conducts exploratory and advanced development to provide techniques and approaches for obtaining maximum value from Air Force personnel resources through improved personnel selection, classification, assignment, utilization, and training—flying, technical, and on-the-job training.

Chairman ELLENDER. How many civilians are employed by the laboratory, and how much of the $5.7 million requested is for their compensation and benefits?

General GLASSER. There are 173 civilians employed by the laboratory, and $4.2 million are for their compensation and benefits.

Chairman ELLENDER. How many military personnel are assigned to the laboratory?

General GLASSER. There are 136 military personnel assigned to the laboratory.

Senator YOUNG. What is the need for the $1.9 million increase you are requesting for this laboratory for fiscal year 1973?

General GLASSER. The largest part of this increase is to provide funds for a computer needed to conduct research on more effective use of Air Force personnel resources. Other increased costs are civilian compensation and benefits and other operating expenses.

Senator YOUNG. Just what is the need for the increase of $2.3 million being requested for human resources for fiscal year 1973?

General GLASSER. Increased military manpower problems—reduced manpower, reduced budgets, increasing training and other personnel costs—requires increased effort to meet these needs. The requested increase will provide added in-house capability, supplemented by contract funds, to develop new techniques and procedures for effective utilization of available Air Force personnel resources.

OVER-THE-HORIZON RADAR TECHNOLOGY

Chairman ELLENDER. $2.2 million is requested for the continuing advanced development program entitled "Over-the-Horizon Radar Technology." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

OVER-THE-HORIZON RADAR TECHNOLOGY

CATEGORY: ADVANCED DEVELOPMENT

Description.—This program provides the development and test of both forward and backscatter over-the-horizon (OTH) radar techniques operating in the high frequency band. Forward scatter OTH radar measures disturbances in the ionosphere and employs a distant receiver. Backscatter OTH radar measures reflections from a target and employs a collocated receiver and transmitter. Work being performed will minimize the areas of uncertainty in the subsequent procurement of Over-The-Horizon (OTH) radar systems for the defense of the United States against manned aircraft.

Work performed by.—Air Force management is provided by the Rome Air Development Center, Griffiss Air Force Base, New York. Contractors are: General Electric, Syracuse, New York; Raytheon Company, Massachusetts; and Sylvania West, Mt. View, California.

Fiscal year 1972 program.—Work is oriented primarily toward supporting the CONUS OTH radar, Program Element 12417F, although the technology developed is also applicable to any future OTH system. Efforts include development of a low cost, easily erectable antenna array, RFI investigations, auroral backscatter investigations and the experimental evaluation of the FM/CW bistatic radar concept, emphasizing areas of detection and tracking as well as real time management and control.

Fiscal year 1973 planned program.—The Over-The-Horizon (OTH) Radar Technology program will continue to emphasize those areas having immediate application to the CONUS–OTH radar. In the technology area, this includes continuation of RFI investigations, auroral experiments and investigation of the characteristics of the Beverage array for use in OTH systems. Experimental evaluation of the FM/CW bistatic radar concept will continue to have priority emphasis in order to completely evaluate this technology for application to the CONUS–OTH program. Polar Cap III will be supported to evaluate the feasibility of deploying an operational radar within the Polar Cap region and the design requirements of the radar. The test and evaluation effort supports the 673A field test instrumentation and data reduction requirements. A new effort to support the investigation of techniques to improve detection performance of the 440L forward scatter OTH system will be initiated. This effort was previously carried out under OTH Radar Program, P.E. 12425F.

Program to completion.—Major effort as now planned will be the continued support of the CONUS OTH program until final design is approved. This is a continuing program.

Resources (In millions of dollars):

R.D.T. & E. funds for fiscal year 1971, $1.5; fiscal year 1972, $1.2; fiscal year 1973, $2.2; additional to completion are continuing; total estimated cost is not available.

OVER-THE-HORIZON RADAR TECHNOLOGY

Chairman ELLENDER. What relationship has this program to the Conus over-the-horizon radar system for which you are requesting $4.4 million and which we discussed earlier?

General GLASSER. The technology program is responsible for the investigation and evaluation of techniques in support of the CONUS system as well as all of our other over-the-horizon radar programs. The proposed technical concept for the CONUS system was developed under this program.

Senator YOUNG. Just what are you planning to do with the $2.2 million you are requesting for fiscal year 1973, and why do you need the increase of $1 million over the sum provided for fiscal year 1972?

General GLASSER. During 1973, we will continue to emphasize those areas of over-the-horizon technology which have immediate application to the CONUS radar system. Areas of continued investigation include: development of techniques which will eliminate or minimize radio frequency interference, development of real time operational radar management techniques, auroral experiments, and investigation and verification of the characteristics of the proposed antenna array. The $1 million increase in fiscal year 1973 provides support for the Polar Cap III experiments and for an investigation of techniques to improve the detection performance of the 440L forward scatter over-the-horizon system.

RECONNAISSANCE AND INTELLIGENCE

Chairman ELLENDER. $4.2 million is requested for the continuing advanced development program entitled "Reconnaissance and Intelligence". Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

RECONNAISSANCE INTELLIGENCE

CATEGORY: ADVANCED DEVELOPMENT

Description.—This program addresses advanced developments in reconnaissance and intelligence to meet Air Force needs in producing tactical, strategic, and technical intelligence. The program also addresses advanced developments in photogrammetric and cartographic technology for the improved exploitation of reconnaissance source material. Improvements are needed to exploit the products of new collection systems and realize their full potential in rapidly generating intelligence or cartographic products. Data extraction, interpretation, analysis methodologies, and compilation techniques unique to each new type of sensor are investigated to determine directions for improvement. Automation of some intelligence and cartographic production functions in the exploitation process will reduce manpower requirements and will shorten production time for targeting materials for tactical and strategic operations. The objective is the improved production of geodetic target data and related cartographic products (maps, charts, map supplements and graphics). This capability will help compensate for manpower reductions in reconnaissance technical squadrons which produce target materials and will insure timely dissemination of products to operational users. The production and revision of target materials is fundamental to the delivery accuracy of the nuclear and non-nuclear delivery systems. This program addresses development of intelligence subsystems for use in the fixed facilities of major air commands which provide the interface between mobile

systems such as the Tactical Information Processing and Interpretation (TIPI) system and national intelligence data systems.

Work performed by.—Program management is by the Air Force Rome Air Development Center (RADC), Griffiss AFB, New York, a facility of the Air Force Systems Command, Andrews AFB, Maryland. Contractors include: Control Data Corporation, Minneapolis, Minnesota (radar change detection); KMS Industries, Inc., San Jose, California (graphic displays); Bausch and Lomb, Inc., Rochester, New York (photo rectifier); Bendix Research Laboratories, Southfield, Michigan (stereoplotter); Texas Instruments, Inc., Dallas, Texas (coherent light viewers); Radiation, Inc., Melbourne, Florida (digital data storage); Douglas Aircraft Corp., Long Beach, California (photo projection systems); Informatics Incorporated, Bethesda, Maryland (intelligence system analysis); United Aircraft Corp., Windsor Locks, Connecticut (data file analysis); and others.

Fiscal year 1972 program.—Advanced development of subsystems for the TAFIC are continuing, including a major effort in the development of a Human Readable/Machine Readable Mass Memory. This includes a laser recorder/reproducer, together with conventional microfiche equipment that will produce the digital equivalent of textual and graphic information on the microfiche record together with human readable information. Update and dissemination of data base materials will be greatly simplified in this format. Subsystem components for the high resolution imagery exploitation system are being investigated. Development of an automated radar reconnaissance exploitation system for side-looking airborne radar (SLAR) has been undertaken. A single channel prototype system is being developed which will use advanced digital correlation techniques to detect changes in radar reconnaissance imagery. Efforts in automated cartography will emphasize experimentation with the color coded cartographic data base and its interface with automated color scanner and graphic plotter equipments. Development of an optical orthophoto device to produce distortion free photomaps is in progress and will provide a highly flexible device that will yield a new and more economical form of map substitute product. This device will complement projected advances in the stereoplotting and rectification development which are continued efforts.

Fiscal year 1973 planned program.—Efforts to develop an advanced stereoplotter and special purpose rectifier will be completed. Following completion of engineering tests, the rectifier will be placed in an operational environment for further evaluation and operational use thereby reducing production costs. The system to record digital data on microfiche records will also be completed and subjected to extensive tests to determine size, cost and time reduction in file data revision. Remaining subsystem components of the TAFIC which require advanced development efforts will be completed. The single channel radar change detection device for automatically extracting target information from side looking airborne radar imagery will be subjected to extensive tests using the most advanced radar systems available. These tests will establish design criteria for a full scale exploitation device and development will be initiated to provide near-real-time readout and significantly reduce manpower required to exploit the all weather imagery of SLAR. This type of capability is critically needed in Europe where poor weather predominates. Based on efforts addressing critical subsystem components, a complete prototype of a high resolution imagery interpretation station will be started. The high resolution optical orthophoto printer will be continued as well as efforts addressing automated chart compilation directly from stereoplotting instrumentation to provide an inexpensive but accurate map substitute, and further reduce the cost and time needed to produce line maps.

Program to completion.—This is a continuing program.

Resources (in millions of dollars):

R.D.T. & E. funds for fiscal year 1971, $4.2; fiscal year 1972, $4.3; fiscal year 1973, $4.2; additional to completion are continuing; total estimated cost is not available.

RECONNAISSANCE AND INTELLIGENCE

Chairman ELLENDER. I note that the $4.2 million requested for fiscal year 1973 is $100,000 less than the sum provided in fiscal year 1972. Have you completed some project which makes possible this reduction in funds needed for this development program?

General GLASSER. One effort will be completed through prototype development using fiscal year 1972 funds. The effort is the Human Readable/Machine Readable (HRMR) Microfilm Memory System. The objective of this development is high-density storage of analog and digital data on microfilm. The system will record and provide easy access to high volume intelligence data within our national intelligence data handling system.

RECONNAISSANCE AND ELECTRO WARFARE TECHNOLOGY

Chairman ELLENDER. $15.2 million is requested for the continuing advanced development program entitled "Reconnaissance and Electro Warfare Technology." Will you provide the committee with a brief unclassified description of the program for the record?

General GLASSER. Yes, sir.

(The information follows:)

The program encompasses three areas: electro-optical countermeasures, radar countermeasures and reconnaissance sensors. Each of these areas has been addressed under separate program elements in prior years. They have been combined into one program element, 63718F, for fiscal year 1973 and subsequent years. The element is divided into the following programs: (1) Program 431G—Electro-optical warfare. This program addresses techniques and equipment to counter visually aimed systems and weapon systems that employ electro-optical sensors. (2) Program 691—electronic warfare. This encompasses studies to evaluate proposed countermeasures and tactics, the development of electronic countermeasures for radar controlled systems and the development of techniques and sensors for tactical electronic reconnaissance. (3) Program 665A—advanced reconnaissance and target acquisition capability. The program is concerned with the development of optical sensors, airborne data recorders/processors, infrared and photo sensors for the reconnaissance mission.

ELECTRONIC DEGRADATION

Chairman ELLENDER. Of the total requested, I note that $4.2 million is for a project entitled "Electronic Degradation." For fiscal year 1972, $4.1 million was provided for this project. Please describe the objectives of this project, and tell us why you need the increase of $100,000 for fiscal year 1973.

General GLASSER. The objective of this project is to develop, test and evaluate the worth of new jammer techniques, equipment and devices. The quality, quantity and diversity of enemy air defense radars and weapon systems dictate a need for jamming equipment that can simultaneously degrade multiple radars, that has higher effective radiated power than current equipment, and that can [deleted] on the radar frequency of defense weapon systems that pose an imminent threat. To meet these needs high power amplifiers that will cover a broad frequency band, electronically steerable high gain antennas (phased array antennas) and techniques for generating multiple false targets on radar scopes are under development; $4.1 of the $4.2 million programed for this project in fiscal year 1973 will be used to continue these tasks. An additional $100,000 is needed to initiate a task to develop countermeasures for [deleted] type radars. We anticipate that the [deleted].

Senator YOUNG. The largest part of this request, $11 million, is for "Other Efforts Below $3 Million Each." Give us some examples of the efforts funded under this title.

General GLASSER. A total of $3.0 million is allocated to six projects in the electro-optical warfare area. Tasks under these projects include: [deleted] to decoy infrared seeker missiles, electro-optical camouflage

techniques such as light absorptive and nonreflective coatings that can be applied to aircraft to make them less visible, an optical countermeasures pod [deleted] and the simulation, analysis and evaluation of various visual deception techniques; $9.9 million is allocated to the radar countermeasures area. $4.2 million of the $9.9 million is programed for the project, electronic degradation, that I previously discussed; The remaining $5.7 million is divided among six projects. Tasks under these projects include: techniques to minimize the radar cross section of aircraft thus reducing their radar visibility, expendable jammers and associated systems to deliver and deploy these jammers, studies and analysis to evaluate potential countermeasures and tactics, techniques to reduce jammer interference to radar warning equipment and an automated mission planner to provide operational units a means for effectively planning the employment of their countermeasures resources in conjunction with various tactics. $2.3 million is allocated to the reconnaissance and target acquisition area. These tasks include a high resolution electronic camera, covert night reconnaissance equipment and techniques and equipment to digitally process side-looking radar data in flight and present the data to the air crew.

Chairman ELLENDER. For fiscal year 1972, $17.8 million was provided for this program and for fiscal year 1973, you are requesting only $15.2 million. What has caused this reduction in your request?

General GLASSER. There are two reasons. First, we did not get underway on several tasks in the electro-optical warfare area as early in fiscal year 1972 as we had hoped. This reduced the funds required for fiscal year 1973. Second, we ran into some problems on one of our tasks in the electro-optical warfare area—one on a [deleted] to reduce the optical visibility of aircraft. The problem we encountered was with the dispenser for [deleted]. We need to do some more work on the dispenser before expanding the scope of this task as we had originally planned for fiscal year 1973.

AIR-TO-AIR COMBAT SIMULATOR

Chairman ELLENDER. $3.2 million is requested for the advanced development program entitled 'Simulator for Air-to-Air Combat." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

TITLE: SIMULATOR FOR AIR-TO-AIR COMBAT

CATEGORY: ADVANCED DEVELOPMENT

Description.—This program was initiated in response to a HQ TAC requirement to develop a simulator which could be used to train pilots for aerial combat. The Simulator for Air-to-Air Combat (SAAC) will be used to reduce training costs, accident rates and aircraft procurement costs, and to improve the quality of training.

The SAAC is a two cockpit moving base simulator with each cockpit having a full out-of-the-canopy display of the target aircraft, sky, terrain and horizon. The SAAC will be capable of simulating the dynamics of any two fighter aircraft and will allow one pilot to fly against the other pilot in simulated air combat. The SAAC program is divided into two parts: Part 1—the design, development and evaluation of a portion of the visual subsystem, and Part 2—the development and evaluation of the complete simulator. Part 1 has been successfully completed and Part 2 has been initiated.

The objectives of the SAAC program are:

(*a*) To demonstrate the feasibility of realistically simulating in a ground based simulator the air-to-air combat environment.

(*b*) To evaluate the effectiveness of the air-to-air simulator as a pilot trainer, as a tool for the development of new air-to-air combat tactics, and as an aircraft design tool.

(*c*) To establish the technology and procurement base for the possible future acquisition of air-to-air combat simulators.

At the present time, the only practical air combat training that can be done is in fighter aircraft; the nature of the exercise demands absolute limit flying, with an attendant high accident risk. High accident rate experienced in the past have imposed severe restrictions on the air combat tactics program, with a corresponding reduction in the combat proficiency of aircrews. Training against possible enemy fighter aircraft types is not possible. It is estimated that as much as $100,000 in training costs per pilot can be saved through the use of full-mission simulators. A recent Navy study indicated that more than $15 million in operating costs per year could be saved by greater use of advanced simulators. Additionally, any new aircraft will incorporate performance capabilities beyond those in current aircraft.

It has been shown that old tactics do not fully exploit the added performance capabilities of new aircraft designs. Therefore, SAAC (Simulator for Air-to-Air Combat) provides a tool to economically explore and develop new tactics to optimally exploit technological advancements. Thirdly, force structure issues frequently generate demands for air combat effectiveness comparisons between aircraft. A meaningful comparison between aircraft possessing widely different characteristics and limitations is possible only if each pilot exploits the strength of his own aircraft and the weaknesses of the opponent. The probing and trial-and-error required for this kind of activity can only be done by the human operator during the course of the air duel. Until we acquire a cost effective capability in this area, we will not be able to fully exploit intelligence data collected at considerable expense and risk.

Work performed by.—The Aeronautical Systems Division, an organization of the Air Force Systems Command, Wright-Patterson Air Force Base, Ohio, has program responsibility. Contractors for Part I were Melpar Division, American Standard Inc., Falls Church, Virginia, and Ferrand Optical Co., Bronx, N.Y. The contractor for Part II is Singer-Link Division, Binghamton, New York.

Fiscal year 1972 program.—A contract award for Part II is scheduled in February 1972. The FY 1972 effort includes: the detail design of all the simulator components; the placement of orders for the long lead time components; and completion of the development of the visual display subsystems for one of the cockpits.

Fiscal year 1973 planned program.—The analysis and simulations associated with the design of the SAAC (Simulator for Air to Air Combat) will be completed. The development and fabrication of the visual display subsystem for both cockpits will be completed and the motion system will be integrated into the system. The development of the image and background subsystems and the software program will continue.

Program to completion.—The simulator will be completed by December 1974. An extensive twelve month evaluation program will then be conducted. The simulator will be evaluated in the performance of three missions as an air-to-air combat trainer; as an aircraft design and comparison tool; and as a tool to develop new combat tactics.

RESOURCES

[In millions of dollars]

	Fiscal year—			Additional to completion	Tota estimated cost
	1971 and prior	1972	1973		
R.D.T. & E. funds	1.8	4.2	3.2	4.6	13.8

AIR-TO-AIR COMBAT SIMULATOR

Chairman ELLENDER. Just what are you planning to do with the $3.2 million you are requesting for fiscal year 1973?

General GLASSER. The major portion of the $3.2 million which we are requesting for fiscal year 1973 will be spent to develop the major simulator subsystems. These include the visual display subsystems for both cockpits, developing the aircraft and background image generation subsystems, and the fabrication and integration of the motion system. The remaining funds will support the computer software development and computer integration tasks.

AEROSPACE FACILITIES TECHNOLOGY

Chairman ELLENDER. $2.6 million is requested for the continuing advanced development program entitled "Aerospace Facilities Technology". Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

TITLE: AEROSPACE FACILITIES TECHNOLOGY

CATEGORY: ADVANCED DEVELOPMENT

Description.—The objective of this program is to provide advances in facilities technology essential to meet current/future Air Force mission requirements and to enhance survivability of tactical and strategic forces. Efforts within this program element are divided into two general areas: Civil Engineering Technology, and Design Criteria for Technical facilities. The former includes research related to passive protection for aerospace facilities, environmental protection engineering, aerospace vehicle landing surface compatibility, and mission support facilities. The latter provides technical analyses to develop criteria for Air Force Research and Development Facilities prior to their being included in the Military Construction Program.

Work performed by.—The Air Force Weapons Laboratory (AFWL), Kirtland AFB, New Mexico is responsible for implementation of the Civil Engineering Technology portion of this program. Approximately 25 percent of this portion is accomplished in-house by AFWL personnel. The Air Force Systems Command manages the Design Criteria portion of the program which is normally accomplished by contract. Representative contractors supporting this program include: Civil Engineering Research Facility, Kirtland AFB, New Mexico, "Vibratory Non-destructive Pavement Evaluation"; Aerospace Medical Research Laboratory, Brooks AFB, Texas, "Noise Exposure Forecasting"; University of Illinois, Urbana, Illinois, "Stabilization of Deep Soil Layers"; North American Aviation Inc., Columbus, Ohio, "Aero-Propulsion Test Sled, Holloman AFB, New Mexico."

Fiscal year 1972 program.—Forty-eight individual efforts are in progress which encompass the scope of technology of this program. Investigations to improve methods and techniques for providing protection from non-nuclear weapons threats to Air Force Systems, are continuing. Investigations in numerous areas of environmental engineering research are underway. Systems and concepts for the treatment, regeneration and reclamation and disposal of photographic processing solutions and electroplating wastes are being tested. Validation of techniques of forecasting noise levels in areas surrounding Air Bases by means of field measurements continues. Development of rapid nondestructive evaluation techniques and methods to improve the skid resistance of landing surfaces is progressing. A field study and evaluation of deep soil layer stabilization techniques developed during fiscal years 1970–71 is also being conducted. Studies to develop new techniques for rapid repair of pavement bomb damage are being accomplished. Development of criteria for control of corrosion in heating systems, cooling towers and gas distribution systems has been initiated. Criteria development studies for National Test Facilities at Arnold Engineering and Development Center are continuing. The pilot model for the Holloman AFB Aero-Propulsion Sled is being evaluated. The Toxic Rocket Exhaust study continues with the acquisition and testing of a pilot model. Studies to develop criteria for a Ricochet Test Facility and Air/Ground Munitions Test Range are planned for initiation in third quarter fiscal year 1972.

Fiscal year 1973 planned program.—In FY 1973 approximately 45 individual investigations are planned. Improved armor materials and configurations will

be investigated for use in protective systems such as shelter doors. Feasible concepts for large-span shelters will be developed and tested. New methods and concepts of camouflage will be tested. Investigations leading to the development and testing of prototype equipment for rapid cleanup of pavement bomb crater debris and rapid backfilling/compaction/surfacing of cratered pavement sections will continue. Treatment methods for Air Force industrial waste applications will be evaluated for efficiency and economy, and standard disposal techniques developed.

Efforts will be directed to the testing, design and development of more efficient and less polluting incineration systems. Noise suppression characteristics of structural materials will be tested and evaluated. Noise control engineering standards, design criteria and construction methods will be evaluated for Air Force application. The effort to develop a rational pavement evaluation procedure will be continued. Efforts to establish quantitative information regarding failure criteria for pavement systems will also be continued. Studies will be conducted to determine methods of more accurately correlating laboratory tests with field performance of stabilized materials subjected to various environmental conditions. Development will proceed to find solutions to problems in corrosion prevention. Structural aspects of advanced air mobility concepts will also be studied. Projects related to development of specific criteria for unique Research and Development laboratory facilities will continue.

Program to completion.—Continuing Program.

RESOURCES

[In millions of dollars]

	Fiscal year—				
	1971	1972	1973	Additional to completion	Total estimated cost
R.D.T. & E. funds	3.3	2.6	2.6	Continuing program	Continuing program.

AEROSPACE FACILITIES TECHNOLOGY

Chairman ELLENDER. I note in the descriptive summary the statement that approximately 45 individual investigations are planned for fiscal year 1973. Could you give us an idea of what some of your major investigations will be?

General GLASSER. Some of the major investigations planned for funding within this program element are: Aircraft protective shelter development; airbase environmental pollution emission study; develop methods to treat and dispose of Air Force photographic wastes; develop techniques for deep pavement foundation stabilization; develop rapid bomb damage repair system; development of a vibratory nondestructive pavement evaluation technique; and criteria study for reentry heating energies analyzer facilities.

INTEGRATED COMMUNICATIONS, NAVIGATION AND IDENTIFICATION

Chairman ELLENDER. $500,000 is requested for the continuing advanced development program entitled "Integrated Communications, Navigation and Identification." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

TITLE: INTEGRATED COMMUNICATIONS-NAVIGATION-IDENTIFICATION

CATEGORY: ADVANCED DEVELOPMENT

Description.—The initial objective of this program is to introduce a secure, anti-jam digital communications system into the Air Force inventory that can be used to transmit and receive information required for effective command con-

trol and air traffic control. It is the only on-going program that addresses the secure, anti-jam communications requirement to insure that essential communications can occur in an enemy generated Electronic Countermeasure environment. With this communications capability, position and status information will be provided to command and other mission execution elements, and mission direction will be transmitted to the aircraft or other force element. Initially, position and status information will be obtained from the systems available within the aircraft, such as Tactical LORAN, Inertial, etc. Identification will be determined through constant monitoring or tracking of friendly aircraft after takeoff. The long term objective is to provide a single family of avionics equipments that will unify the functions of communications, navigation, and identification. The present efforts are directed at defining the characteristics of the communications system prior to requesting approval for system development. Work under this Program Element is part of a greater effort in the Communications, Navigation, Identification area. The overall effort includes:

Planning—Continuous effort to consolidate planning for aircraft Communications, Navigation, Identification (CNI) systems. (In-house)

Near Term—Emphasize cost effective modernization of present avionics.

Mid Term—Introduce a secure anti-jam communications system, this program element).

Long Term—Provide an integrated CNI family of equipments.

Work performed by.—The Electronics System Division, Hanscom AFB, Massachusetts is primarily responsible for this program. Work is being done, however, at the Aeronautical Systems Division, Wright-Patterson AFB, Ohio, and the Space and Missiles Systems Office, Los Angeles, California. Contractors include: MITRE Corporation, Bedford, Massachusetts; Illinois Institute of Technology Research Institute, Annapolis, Maryland; Lincoln Laboratories, Lexington, Massachusetts; Ohio State University, Columbus, Ohio; ARINC Research Corporation, Maryland; System Development Corporation, Santa Monica, California; Systems Group of TRW, Inc., Redondo Beach, California; Federal Systems Division, IBM, Gaithersburg, Maryland; Magnovox, Torrance, California; Westinghouse Corporation, Baltimore, Maryland; Hazeltine, Greenlawn, New York; Sylvania, Mountain View, California; McDonnell Douglas, St. Louis, Missouri.

Fiscal year 1972 program.—The effort initiated in FY 71 was continued. Further studies were conducted in-house relating the various actions to the overall design of a communications system. Primary emphasis was given to the secure, anti-jam communications system rather than long term integration efforts.

Fiscal year 1973 planned program.—Complete efforts initiated in the earlier years. Prepare initial draft of a Development Concept Paper and coordinate with Department of Transportation.

Program to completion.—This is a continuing effort.

RESOURCES

[In millions of dollars]

	Fiscal year—			Additional to completion	Total estimated cost
	1971	1972	1973		
R.D.T. & E. funds	1.6	1.5	0.5	Continuing	NA

INTEGRATED COMMUNICATIONS, NAVIGATION AND IDENTIFICATION

Chairman ELLENDER. Is any of the work on this program being performed by one of the Air Force-funded Federal Contract Research Centers?

General GLASSER. Yes, MITRE Corp. is providing the technical support for the program and Lincoln Laboratories is investigating the signal propagation characteristics and compatibility with civil systems.

Senator YOUNG. How much of the work being done on this program is being done in Air Force facilities?

General GLASSER. The Electronics Systems Division has the responsibility for overall program management. Rome Air Development

Center and the Air Force Avionics Laboratory provide technical and engineering support as needed.

Senator YOUNG. I note in the descriptive summary that you plan to coordinate your efforts with the Department of Transportation. How is the Department of Transportation involved in this program?

General GLASSER. The Department of Transportation is planning for future systems of traffic control and communications within the United States. It is essential that efforts of the military and DOT be carefully coordinated to insure compatibility.

Chairman ELLENDER. Give us some idea of how you will use the $500,000 you are requesting for fiscal year 1973.

General GLASSER. The funds will be used for work to be done by MITRE and Lincoln Laboratories; to conduct studies on the best frequency for the system, to conduct experiments and tests to determine the susceptibility of the proposed signal structure to enemy exploitation or jamming, to consider problems involved in signal propagation, examine possible ways to introduce the capability into the Air Force in the most realistic, cost effective manner, and prepare a draft DCP for the program.

ADVANCED COMPUTER TECHNOLOGY

Chairman ELLENDER. $1 million is requested for the continuing advanced development program entitled "Advanced Computer Technology." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

TITLE: ADVANCED COMPUTER TECHNOLOGY

CATEGORY: ADVANCED DEVELOPMENT

Description.—This program will develop, demonstrate, and evaluate advanced hardware and software techniques for future Air Force data processing systems. The projects under this program will be selected to permit exploitation of Data Processing Sciences, not only of Air Force Exploratory Development Programs, but also of R&D programs sponsored by other Department of Defense agencies or independently undertaken by Industry. This program will be the mechanism to tailor, adapt, combine and/or demonstrate these techniques for military use. Program Element 35898F (COMMAND) was combined with this program. The new techniques will have broad application in the Air Force.

Work performed by.—Rome Air Development Center is the lead division of Systems Command for this effort; however, Electronic Systems Division (ESD), Space and Missile Systems Organization (SAMSO) and Aeronautical Systems Division (ASD) will also provide individual project management. The MITRE Corporation, Bedford, Massachusetts; Planning Research Corporation, McLean, Virginia; Honeywell Information Systems, Schenectady, New York; Auerbach Corporation, Philadelphia, Pennsylvania; Ultrasystems Incorporated, Newport Beach, California; Raytheon Company, Sudbury, Massachusetts; Information International Incorporated, Los Angeles, California; Compu Scan Incorporated, Teterboro, New Jersey; and Bolt, Baranek, and Newman, Cambridge, Massachusetts, are currently on contract.

Fiscal year 1972 program.—Seven tasks have been undertaken to:

(*a*) Demonstrate software techniques that will reduce the cost and increase the reliability of complex Computer systems:

(1) Highly Reliable Computer Programs
(2) Data Management and Security Testing
(3) Applications of Microprogramming Technology

(*b*) Provide the user and system designer with empirical performance data on various software and hardware techniques, and describe the value of new concepts for satisfying future Air Force requirements:

(1) Associative Processor
(2) Space Systems Computer Techniques
(3) Multifont Typeset Print Reader
(4) Computer Based Job Performance Aids

Fiscal year 1973 planned program.—The FY 1973 program will consist of the continuation of the following tasks: Associative Processor ($.475), Modular Spaceborne Computer ($.275), Data Management System Test Capability ($.150), and Multifont Typeset Print Reader ($.100).

Program to completion.—This is a continuing program designed to exploit a rapidly changing and improving area of technology.

RESOURCES

[In millions of dollars]

	Fiscal year—				
	1971	1972	1973	Additional to completion	Total estimated cost
R.D.T. & E. funds	[1] 2.1	1.9	1	Continuing	NA

[1] 1.1 was for former 35898F, Command.

ADVANCED COMPUTER TECHNOLOGY

Chairman ELLENDER. Please tell us how you plan to use the $1 million you are requesting for fiscal year 1973.

General GLASSER. $475,000 will be spent in continuation of the associative processor development; $275,000 is allocated for continuation of the modular spacecraft computer and $150,000 for data management and security testing technology; $100,000 will be utilized to initiate work on a multifont typeset print reader which is intended to aid in the translation of Russian to English.

ADVANCED DETECTION SYSTEM DEVELOPMENT

Chairman ELLENDER. $5.6 million is requested for the continuing advanced development program entitled "Advanced Detection System Development." Has the committee been furnished with details on your request for fiscal year 1973?

General GLASSER. The descriptive summary, furnished to the committee, provides the details of the Air Force's request on pages 404–406 of section 2.

GROUND SENSORS SURVEILLANCE AND REACTION TECHNOLOGY

Chairman ELLENDER. $3.6 million is requested for the continuing advanced development program entitled "Ground Sensors Surveillance and Reaction Technology". Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

TITLE: GROUND SENSORS SURVEILLANCE/REACTION TECHNOLOGY

CATEGORY: ADVANCED DEVELOPMENT

Description.—This program element consolidates P.E. 63714F—Base Security, and 63740F—Ground Based Sensor Technology, and includes FY 73 efforts on selected tasks initiated by the Defense Special Projects Group (DSPG) during FY 72. The efforts in FY 73 include those joint service efforts in base and installation security formerly programmed by DSPG. This is an advanced development program, to support sensor surveillance systems including sensors, communications, and displays for use in perimeter security of DOD bases and

installations worldwide (this will result in a better allocation of manpower, thus freeing personnel for other tasks such as "law enforcement"); to develop an advanced ground sensor system (sensors, communications and display) for use in Tactical Air Warfare; to develop new sensing techniques to improve the capability to detect and classify enemy activity; and to improve the communications system in the area of ECCM.

Work performed by.—The Air Force Systems Command through the Electronic Systems Division and the Rome Air Development Center, Griffiss AFB. The Mitre Corporation of Bedford, Massachusetts, is under contract to assist in this effort.

Fiscal year 1972 program.—Development of techniques for classification of targets, i.e., vehicles, people. Initial efforts completed on Air Base Defense simulation model in 3QFY 72, includes required flowcharts for programming to be completed in March 1972. Concept for individual aircraft intrusion detection alarm for strategic aircraft completed September 1971. Conceptual studies of Base Exterior Sensor System (BESS) completed September 1971; includes, Wide Area Remote Sensor (WARS) subsystem, Remote Sensor Data Communications (RSDC) subsystem, and Central Security Center Processor and Display (CSCPD) component.

Fiscal year 1973 planned program.—Continuation of those additive activities directed by ODDR&E as a result of the disestablishment of the DSPG including: Continuing the development of the subsystems of the Base Intrusion Detection System begun by the DSPG in FY 72; investigate feasibility of using long range ground to ground communications in sensor system to eliminate the need for airborne relay; and further development in the area of classifiers with the capability to sort targets into many classes; e.g., tanks, track vehicles, trucks, aircraft, people and animals. These sensors will be in the seismic and acoustic families.

Program to completion.—This is a continuing program.

RESOURCES

[In millions of dollars]

	Fiscal year—				
	1971 and prior	1972	1973	Additional to completion	Total estimated cost
R.D.T. & E. funds	5.9	2.7	3.6	Continuing	NA

GROUND SENSORS SURVEILLANCE AND REACTION TECHNOLOGY

Chairman ELLENDER. I note that the sum you are requesting for fiscal year 1973 represents an increase of $900,000 over the sum provided for fiscal year 1972. What is the need for this increase?

General GLASSER. The PE 63740F for fiscal year 1973 is actually a combination of three programs from fiscal year 1972. Two AF programs, PE 63714F base security and PE 63740F ground based sensor technology, have been combined with DSPG's planned programs for base and installation security and advanced development of tactical ground sensor systems. For fiscal year 1973 the $3.6 million for the combined program came from the DSPG recommendation to D.D.R. & E. on the disposition of the group's funds, projects, and assets as a result of its disestablishment. These funds will support a part of the USAF programs. The $3.6 million actually represents a reduction in the scope of the integrated program compared to the three fiscal year 1972 programs upon which it is based. This reduction is due to a shift in priorities and emphasis among USAF programs.

Senator YOUNG. Give us a brief description of your planned program for fiscal year 1973.

General GLASSER. The program is a continuing one consisting of two major subprograms. The first is to develop advanced remote sensor techniques and equipments for use in a post-1975 tactical air control system. Target classification techniques and improved communications techniques are among the several projects. The second is to develop subsystems for base intrusion detection systems (BIDS) for use at DOD bases and installations worldwide.

DEFENSE SUPPRESSION

Chairman ELLENDER. $11 million is requested for the continuing advanced development program entitled "Defense suppression." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

DEFENSE SUPPRESSION

CATEGORY: ADVANCED DEVELOPMENT

Description.—This program element was started with fiscal year 1971 emergency funds to initiate development of means for the USAF tactical forces to eliminate the enemy surface-to-air threat. The introduction of effective surface-to-air missiles, installed in multiple and overlapping arrays and complemented with formidable quantities of improved AAA have altered the concept of air superiority. The USAF cannot enjoy control of the air over enemy forces unless both the air and ground threats are suppressed. This program aims at suppressing the ground threat by providing equipment and weapons which are effective from standoff ranges and includes methods of acquiring targets and destroying them. To attain goals required at minimum cost, proposed efforts are based on maximum exploitation of technology from current efforts and contractor supporting technology programs. In fiscal year 1973 and subsequent periods, P.E. 63741F will be divided into specific projects. In fiscal year 1973 these projects are:

a. Project 5974—Pave Storm. This was a new initiative within P.E. 63741F in fiscal year 1972. The objective of this project is to develop, test, and evaluate an [deleted] weapon of the munition type for defense suppression purposes. The [deleted] has the capability of guiding against [deleted] targets [deleted]. The large [deleted] warhead will be approximately the size of a 2,000 pound bomb and will be compatible with the existing electro-optical and laser guidance kits used with the Mk-84 2,000 pound bomb.

b. Project 5975—Defense Supression. Separate attachment.

c. Project 5976—Area Correlation Techniques. This was a new initiative in fiscal year 1972. These efforts support development of a sensor that will be capable of recognizing and acquiring the target area [deleted] as the missile enters the [deleted] and then tracking or homing onto the pre-designated target.

d. Project 5977—Remotely Piloted Vehicles (RPV) Ordnance. This was a new program in fiscal year 1972. The objective is to demonstrate the practicality of dispensing guided and unguided munitions from remotely piloted vehicles. Accomplishment of this program increases the capability and potential of RPVs as a defense suppression weapon system. Since it couples a relatively low-cost approach to penetrating difficult target areas with the ability to deliver ordnance accurately, the RPV is attractive as a weapon delivery platform for heavily defended environments.

Work performed by.—

AFSC in-house—Prime manager	*Prime contractor*
5974—Armament Development Test Center	Martin Marietta, Orlando, Florida—Phase I; Phase II—to be selected
5976—Air Force Avionics Laboratory (AFAL)	Goodyear, Akron, Ohio
5977—Armament Development Test Center	Not available

Fiscal year 1972 program.—a. Project 5974. The Pave Storm program is planned to develop a large (2,000 lb class), [deleted] munition dispenser with an

[deleted] sensor in two phases. Phase I is the dispenser development and Phase II, the [deleted] development. Phase I is minimum risk and features current dispenser technology including an external hardback which leaves the interior of the dispenser clear for maximum bomblet space and ease of loading. A quantity [deleted] of dispensers are being built with the last delivery in March 1972. These units will be used in tests with the laser, electro-optical and [deleted] guidance and control units. The laser guided units have been tested with operational testing and evaluation scheduled for March 1972. A few units will be tested in March 1972 with electro-optical guidance and controls to qualify the controls for the [deleted] sensor. Phase II is planned to be a competitive, demonstration program using a dual-mode, [deleted] developed by two contractors, each using different sensing techniques. Assuming that each of the devices meet specifications, a least cost situation for production should result. These demonstrations are scheduled to begin [deleted].

b. Project 5976. Drop test demonstrations under 63601F of a dual-mode, [deleted] as one of the devices to be competitively demonstrated for the Pave Storm weapons, is supported with these funds. This [deleted] will be capable of precise delivery of [deleted] warheads also.

c. Project 5977. Efforts in this project are designed to adapt, fabricate and test existing munitions for use with remotely piloted vehicles. These munitions are in the 500–700 lb class. An existing electro-optical guidance and control unit was integrated with a shortened casing for an RPV demonstration. This weapon has a potential for small, tactical aircraft also.

Fiscal year 1973 planned program.—a. Project 5974. Continue the Phase II portion of the Pave Storm program to develop a dual mode, [deleted] sensor. During this phase the sensors will be demonstrated in similar conditions (perhaps on the same aircraft) in order for an equitable evaluation and decision for production. Preliminary weapon effectiveness tests are also planned.

b. Project 5976. It is planned to continue support of the ADP 679A (63601F) drop test demonstrations with additional units to be tested in the program.

c. Project 5977. It is planned to continue the fiscal year 1972 efforts to adapt guided weapons [deleted] and demonstrate with remotely piloted vehicles in a two-way strike mission.

Program to completion.—This is a continuing program.

Resources (in million of dollars):

[Dollar amounts in millions]

R.D.T. & E. funds		Fiscal years 1971	1972	1973	Additional to completion	Total estimated cost
5974	Pave storm	0	$2.0	$1.5	Continuing	(2)
5975	Defense suppression	[1] $12	10.5	8.5		
5976	Area correlation techniques	0	2.0	.5		
5977	RPV ordnance	0	1.6	.5		
	Total	[3] 14	16.1	11.0		

[1] Fiscal 1971 emergency funds.
[2] Not available.
[3] Includes $2,000,000 for a special access program.

Defense Suppression

Chairman Ellender. Please provide for the record a tabulation listing the projects funded under this program, the amounts for each for fiscal years 1971 and 1972, and the estimate for fiscal year 1973.

General Glasser. Yes, sir, I will be glad to.

(The information follows:)

The projects funded under this program, the amounts for each for fiscal years 1971 and 1972, and the estimate for fiscal year 1973 are:

[In millions of dollars]

Project	Fiscal year—		
	1971	1972	1973
5974	0	2.0	1.5
5975	12.0	10.5	8.5
5976	0	2.0	.5
5977	0	1.6	.5
Total	14.0 [1]	16.1	11.0

[1] Includes $2,000,000 for a special access program.

Chairman ELLENDER. Just what do you intend to do with the $11 million you are requesting for fiscal year 1973?

General GLASSER. There are four projects in this area. They are: project 5975, Defense Suppression, project 5974, Pave Storm, project 5976, Area Correlation Techniques, and project 5977, Remotely Piloted Vehicles. The fiscal year 1973 allocated funds for each are $8.5 million, $1.5 million, $0.5 million, and $0.5 million respectively. The Defense Suppression project is a continuing effort to demonstrate promising options for guidance systems and integration with stand-off weapons. The Pave Storm program is a continuation of the fiscal year 1972 contractual effort to develop and demonstrate a dual-mode, [deleted] for the Pave Storm weapon. The Pave Storm weapon is a 2,000 pound class, guided, [deleted] munition. Demonstration of the [deleted] is scheduled through [deleted]. Project 5976 supports a development effort for a dual-mode, [deleted] that will be competitively demonstrated with the Pave Storm [deleted]. The best correlator will then proceed into engineering development with the demonstration scheduled in [deleted]. In fiscal year 1973, project 5977 continues the fiscal year 1972 efforts to demonstrate the adaptation of existing guided and unguided ordnance and weapons using remotely piloted vehicles. The demonstrations are scheduled for completion in [deleted].

INFORMATION PROCESSING AND INTERPRETATION

Chairman ELLENDER. $13.4 million is requested for the engineering development program entitled "Tactical Information Processing and Interpretation." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

TACTICAL INFORMATION PROCESSING AND INTERPRETATION

CATEGORY: ENGINEERING DEVELOPMENT

Background.—The tactical forces in the field have consistently been faced with a severe intelligence processing problem and a critical deficiency in timely handling and distribution of intelligence products. To overcome these deficiencies the tri-service Tactical Information Processing and Interpretation (TIPI) system development was initiated as a joint Air Force, Army, Marine Corps program with the Air Force as Executive Agent. Army was permitted to withdraw in 1967 stating that its needs in the area could be satisfied with existing equipment. The program will develop and procure equipment to fill a void that exists in the Services' capability to provide collated, all-source tactical informa-

tion to a commander in the field. Methods of collection have kept pace with technological advances while the capability to exploit the information remains constrained by manual modes of operation. The TIPI system will apply automatic data processing techniques to enhance exploitation and collation. The result will be the provision of finished intelligence to a deployed commander in a useable time frame. The TIPI program will provide mobile land based facilities only and is complementary to Navy programs which provide similar capabilities aboard ships.

Description.—The TIPI program is developing air transportable facilities for the General Purpose Forces of the Air Force and Marine Corps. The program will also support Army requirements as requested. The facilities will provide for processing, reproduction, and interpretation of aerial reconnaissance and surveillance products, collation with intelligence from other sources, reporting on enemy force activities, preparation and distribution of target materials, and mission planning support. The system will provide an inventory of mobile shelters housing the necessary capabilities to perform field intelligence functions. The equipment will be modular in nature so that appropriate numbers and types can be used at any location depending upon the size and nature of the job. The system is divided into four major functional segments: Imagery Processing; Imagery Interpretation; Tactical Electronic Reconnaissance Processing and Evaluation (TERPE) Segment; and Display & Control/Storage & Retrieval (DC/SR). A segment for System Support will provide administrative and maintenance support for the deployed system. The DC/SR segment is detailed in a separate Descriptive Summary.

Work performed by.—Air Force management is provided by the PO, Electronic Systems Division, Hanscom AFB, Mass. Work is supported by Rome Air Development Center, Griffiss AFB, NY, and Naval Reconnaissance Technical Support Center, Suitland, Md. Contractors include: Texas Instruments Incorporated, Austin, Tex., working on initial production of the Imagery Interpretation (II) Segment; Fairchild-Hiller Corporation, Germantown, Md., working on II subassemblies; Raytheon Corporation, Alexandria, Va., working on II subassemblies; General Electric Corporation, Daytona Beach, Fla., providing system integration service; Systems Development Corporation, Santa Monica, Calif.; and Radio Corporation of America working on the prototype Display & Control/Storage & Retrieval (DC/SR) Segment.

Fiscal year 1972 program.—The incrementally funded DC/SR prototype contract was awarded in September 1971. Work on that effort will continue throughout the year. (See Project Descriptive Summary Display & Control/Storage & Retrieval Segment). A study effort leading to design and fabrication of the prototype TERPE Segment will begin. The incrementally funded System Integration contract will continue. Fabrication of the initial II Segment will be essentially complete.

Fiscal year 1973 planned program.—The DC/SR Segment and TERPE Segment prototype efforts will continue. Two efforts concerning the Image Processing Segment will begin. The first will define what additional capabilities must be provided for existing processing equipment to adequately support and interface with the system segments. The second will re-evaluate the Image Processing Segment specification in light of advances in the state-of-the-art in film processing and reproduction. The Imagery Interpretation Segment will enter Category II tests.

Program to completion.—Follow-on production of the Imagery Interpretation Segment will begin in fiscal year 1974. The prototype Display & Control/Storage & Retrieval Segment and prototype Tactical Electronic Reconnaissance Processing and Evaluation Segment will be essentially complete by the end of fiscal year 1974. The System Integration effort will be required through the development and acquisition cycle. An effort to develop an automatic capability to exploit Side Looking Airborne Radar (SLAR) information will be added to the program when advanced development is completed, probably in fiscal year 1974.

MILESTONES

Events and Date	*Estimated cost to reach milestone*
Develop SLAR automatic change detection capability (FY 1975)	$5.0
TERPE Segment Prototype (FY 1974)	3.0
DC/SR Segment Prototype (See Descriptive Summary DC/SR) (FY 1974)	31.0

Resources (In millions of dollars:)
R.D.T. & E. funds for fiscal year 1971 and prior $13.7; fiscal year 1972 $10.4; fiscal year 1973 $13.4; additional funds to completion $23.3; and the total estimated cost $60.8.

TACTICAL INFORMATION PROCESSING AND INTERPRETATION

Chairman ELLENDER. Of the total requested for this program, I note that $10.5 million is for a project entitled "Display and Control and Storage and Retrieval Segments." Tell us the objectives of this project and what you plan to do with the $10.5 million you are requesting.

General GLASSER. The display and control/storage and retrieval project will develop a prototype segment for test and evaluation. The effort which was begun in fiscal year 1972 will result in the development of both the hardware and software required to fulfill the intelligence support requirements of the Air Force component commander. The DC/SR will be an all-source intelligence fusion center capable of providing rapid analysis of information for tactical commanders.

The $10.5 million in fiscal year 1973 will be used to continue hardware and software efforts which were begun in fiscal year 1972. The bulk of the funds will support fabrication of the militarized, shelterized segment prototype and development of required software programs.

Senator YOUNG. Give us some specific examples of the efforts to be funded under "Other efforts below $3 million each" for which you are requesting $2.9 million.

General GLASSER. Two other major efforts will require R.D.T. & E. funds in fiscal year 1973. The tactical electronic reconnaissance processing and evaluation segment will enter prototype development. The TERPE segment will provide ground exploitation equipment required to support the tactical electronic reconnaissance sensor and similar electronic intelligence collection equipment used by the Air Force and Marine Corps. TERPE will give our tactical forces the sort of timely, responsive support required in a sophisticated electronic environment.

The other major effort in fiscal year 1973 addresses system integration. Since the tactical information processing and interpretation system is being developed on an incremental basis, and there is no system prime contractor, we have contracted the task of assuring intrasystem and intersystem interfaces to the system integration contractor. That effort was begun in fiscal year 1971 and will continue through the system's development and acquisition cycle.

Additionally, funds are required to pay other government agencies such as Rome Air Development Center and Aberdeen Proving Grounds for support rendered the TIPI program.

Chairman ELLENDER. I note that this program is a joint effort with the Marine Corps. How much has the Marine Corps contributed toward this program?

General GLASSER. Since the Air Force is DOD executive agent for the tactical information processing and interpretation system the bulk of the development costs are paid by the Air Force. The Marine Corps provides development funds for efforts which have only Marine Corps applicability. The Marines have provided $4.67 million in fiscal year 1972 and prior years, and have $500,000 programed for fiscal year 1973.

Chairman ELLENDER. Just what is the need for the increase of $3 million that you are requesting for fiscal year 1973?

General GLASSER. The increased R.D.T. & E. requirement over fiscal year 1972 results from initiation of the prototype tactical electronic reconnaissance processing and evaluation segment development effort, and a planned and programed increase in the display and control/storage and retrieval segment prototype effort.

LIFE SUPPORT SYSTEMS

Chairman ELLENDER. $5.3 million is requested for the continuing engineering development program entitled "life support systems." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

LIFE SUPPORT SYSTEMS

CATEGORY: ENGINEERING DEVELOPMENT

Description.—This system is designed to provide aircrewmen with equipment and subsystems necessary to maximize both their functional contribution to aeronautical weapon systems and the probability of their survival in inflight or ground emergencies. It encompasses the integration of all life support equipment and subsystems throughout the design, development, test, acquisition, and operational phases. Major efforts include an Airborne Self-Contained Oxygen System for fighter and bomber aircraft, and an Advanced Concept Ejection Seat (candidate for F–15 and A–X). Integrated Life Support System Requirements Analysis produced by this program influenced the escape capsule design for the B–1. An Advanced Survival Avionics system is under development for tri-service worldwide use in locating and identifying downed aircrew and passengers. This program also provides for the development of emergency and survival equipment for aircraft passengers. Approximately 20 separate efforts in emergency/survival and life support equipments are funded each year.

Work performed by.—The Air Force Aeronautical Systems Division, Wright-Patterson AFB, Ohio, provides program management. A total of 102 contractors are involved; representative contractors include: David Clark, Worcester, Mass.; H. Koch and Sons, Corta Madera, Calif.; National Cash Register, Dayton, Ohio; Goodyear Aerospace Corp., Akron, Ohio; Stencel Aero Engineering Corp., Asheville, N.C.; Dayton T. Brown, Inc., Long Island, N.Y.; McDonnell-Douglas Corp., Long Beach, Calif.; ACR Electronics, Carle Place, N.Y.; North-American Rockwell, Los Angeles, Calif., Weber Aircraft, Los Angeles, Calif.; Fairchild Ind., Beth Page, N.Y.; Florida Communications, St. Petersburg, Fla.; MB Associates, San Ramon, Calif.; IBM, Owego, N.Y.

Fiscal year 1972 program.—Development continues on several major life support projects; design trade-off studies will be completed and equipment models developed for increased search and rescue capability under the Advanced Survival Avionics Program; qualification testing will be initiated for the Advanced Concept Ejection Seat (ACES); laboratory evaluation of prototype oxygen concentration systems for fighter aircraft under the USAF/Navy Open-Loop Oxygen System Program. Integrated Life Support System will be continued and design studies completed. Other efforts include Magnetic Leg Restraints to eliminate leg flailing and injury during high speed ejections, Polybenzimidazole (PBI) fire resistant parachute and restraint harnesses, Six-man Open-Loop Oxygen System, Self-Contained Emergency Oxygen Mask, and Helicopter Chemical Oxygen System.

Fiscal year 1973 planned program.—Development of the Advanced Concept Ejection Seat and the Magnetic Leg Restraint will be completed. Development will continue on the Open-Loop Self-Contained Oxygen Systems, Advanced Survival Avionics and Integrated Life Support System. Development will be

Initiated on Aircrew Helmets for Specific Missions and Passenger Escape/Protection Systems.

Program to completion.—This is a continuing program.

Resources (In millions of dollars:)

R.D.T. & E. funds for fiscal year 1971 $5.5; fiscal year 1972 $5.5; fiscal year 1973 $5.3; additional funds to completion are continuing; and the total estimated cost is not available.

LIFE SUPPORT SYSTEMS

Chairman ELLENDER. Please give us a brief description of the projects being funded under this program for fiscal year 1973.

General GLASSER. The major projects that will be funded in the fiscal year 1973 program are as follows:

(*a*) Six-man open loop oxygen system—we will continue development and qualification of a self-contained, on board generated oxygen system to eliminate the need for liquid oxygen in bomber aircraft. This system is intended to see initial use in the B–1 prototype aircraft.

(*b*) Advanced concept ejection seat—we will complete development and qualification of the first fully stabilized ejection seat for high performance aircraft. The seat will be competitive in terms of weight and cost but will have vastly improved performance particularly for low level ejections. This seat is a candidate for the F–15 and A–X aircraft.

(*c*) Advanced survival avionics—this is the completion of the second phase of an effort to address the triservice requirement for worldwide alerting to aircraft accidents and locating of survivors. Initial brassboard models will be manufactured for initial testing of design concepts selected.

(*d*) Integrated life support system—we will continue our integrated life support system development. This involves the design of integrated life support system by aircraft type and mission. The effort is being directed toward an advanced tanker, medium STOL and combat support aircraft. It is a long range program to depart from the historical "bits and pieces" approach to life support equipment.

(*e*) Passenger escape and protection—this is a new effort to improve the systems for passenger escape and protection to provide improved emergency ground escape capability for military cargo/passenger aircraft. This effort will provide a combination of emergency exit slides and slide/rafts for selected aircraft. It will be applicable to a number of Air Force aircraft and will improve the chances of passengers and crew to survive an emergency crash as well as save maintenance and inspection cost of present systems.

Senator YOUNG. I note that the $5.3 million you are requesting for fiscal year 1973 is $200,000 less than the sum provided for fiscal year 1972. Have you completed some major efforts which have caused this reduction in your request?

General GLASSER. Life support systems is a continuing program where several projects are initiated and completed each year. Fluctuation in funding levels from year to year is not unexpected as the total program is evaluated in terms of available funds. We did complete the development of magnetic leg restraints. This is a magnetic system

for providing restraints of the legs of ejecting aircrews to eliminate flailing injuries. This item has the specific end use of installation in the F–4.

OTHER OPERATIONAL EQUIPMENT

Chairman ELLENDER. $6.3 million is requested for the continuing engineering development program entitled, "Other operational equipment." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

OTHER OPERATIONAL EQUIPMENT

CATEGORY: ENGINEERING DEVELOPMENT

Description.—This program was established to develop, test, and evaluate a wide variety of mission support components and equipments in response to operational needs of the using commands. The items of equipment developed are characterized by their ground support or special mission roles in enhancing operational command capability. Examples of this type of development are equipment for repair of bomb damaged runways, equipment for handling air cargo, a weather station for unattended operation in remote areas, and instrumentation for radiation detection. The fiscal year 1973 program will include the work of Program Element 64714F, Improved Aircraft Firefighting Equipment and Program Element 64721F, Common Mobility Support Equipment.

Work performed by.—The Aeronautical Systems Division, Wright-Patterson AFB, Ohio, is the program manager. Contractors include: Lockheed Aircraft Corporation, Marietta, Georgia; XYZYX Information Corp., Canoga Park, California; E. W. Bliss Company, Swarthmore, Pennsylvania; Cochran Western Corp., Salinas, California; All American Engineering, Wilmington, Delaware; Vega Industries, McLean, Virginia; Airborne Instruments Laboratory, Long Island, New York; Logos Corporation, Middletown, N.Y.; Planning Research Corporation, Los Angeles, Calif.; Bendix Communication Division, Towson, Maryland.

Fiscal year 1972 program.—Project 1127—Job Performance Aids are in development for flight line maintenance of C–7A aircraft, plus the T–53, T–55 and J–85 aircraft engines. These aids for the Vietnamese Air Force are also being developed for organizational maintenance of a Refueling Vehicle and two different types of fire trucks. All of this effort is expected to be completed by the close of the fiscal year.

Project 1196—A short term effort to improve the USAF uniform will evaluate new assembly techniques using bonding instead of sewing and new materials such as double knit, warped knit and textured fabrics.

Project 1243—First article was fabricated of the AN/UPM–141 Radar Test Set. Testing for qualification and reliability will be conducted to complete the project by end of the fiscal year.

Project 1244—Design, development and fabrication of the Tactical Cargo Loader will be completed and Category I testing will be started.

Project 1262—Further work on Repair of Bomb Damaged Runways will be transferred to Program Element 63723F, Aerospace Facilities Technology.

Project 1266—Development continued on the Microform Personnel Record System. Equipment installation and conversion of personnel records will be completed and Category III testing started.

Project 1559—Items were principally for the Southeast Asia area. Some examples are an illuminator for low light level television equipment, a target marker having specialized illumination gear, a shaped charge for the 40mm round, beacons for close air support and a fuel air explosive for aerial delivery by cargo aircraft.

Project 1752—A development was initiated for an aircrew dosimeter to measure both neutron and gamma radiation. System 437A. This is a change in project number and replaces 3782. Work on common mobility support was conducted

under P. E. 64721F and included development of synthetic surfacing equipment, foamboard for improved shelters, portable maintenance nose dock, airfield lighting, dining complex improvements, environmental control equipment, waste disposal, latrine repair and modification, water distribution, water reclamation, and crash removal.

Project 3834—A retractable cable mechanism design was started for the BAK 14 aircraft arresting system for use at joint civil/military airports. Lowering the cable beneath the runway surface will permit civilian aircraft operation without the damage to the aircraft caused by the cable being thrown by the wheels of the airplane. Development testing of the BAK 13 system was started. Modular operation of the BAK 12 system will be tested. Application of a net to the MA–1A arresting system was started for the T–38 aircraft, to replace the cable which has caused damage to the aircraft.

Project 3835—Development and testing were completed on the APQ–99 tester for the RF–4C forward looking radar. Optimization continued in the development of programming language for use on dynamic test equipments. Development started on a flight line tester for checkout of F/RF–4 air data computer.

Project 4054—The Isocare Unit has continued in development, with a refined design being used in Category II testing. Testing will be completed on the Special Airborne Medical Care Unit. The following items will be completed and standardized litter access unit, portable liquid oxygen system, nebulizer, infant transporter, patient monitoring equipment.

Project 4133—Proposals were requested for the Shrike Target Simulator and a contract award will be made in the third quarter of the fiscal year.

Project 5065—A production capability was planned and established for machine translation of English language documents into Vietnamese. Priority documents have been identified and are being translated as a part of the Vietnamization program. In calendar year 1972 this project will be transferred to Air Force Logistics Command responsibility for operation under Warner Robins Air Material Area.

Project 5559—The Cold Fog Dissipation System will be placed under contract and design completed.

Project 5571—Development planning will be completed for the Radio Telescope to identify frequencies generated by solar flares and emissions that interfere with operation of communication equipments.

Project 5612—Fabrication complete on the test model of the AN/TPS–60 pencil beam radar. Testing will be completed by August 1972.

Project 5973—A prototype of a helmet mounted sight will be tested. A helmet mounted display will also be tested in both air and ground facilities. An application analysis will include fire control, weapons delivery, reconnaissance, navigation, and flight control applications.

Project 6337—Goggles for flash blindness protection of aircrews will be delivered for testing in B–52 and KC–135 aircraft.

Project 6517—The dual band beacon was successfully demonstrated with KC–135, F–4, C–5A, A–7, F–111 and AC–130E aircraft. The manpack version is completed. The Tactical Air Command cancelled the requirement because the current X band beacon will satisfy the need. The U.S. Marines plan to test the Ku portion for their applications.

Project 7045—The expendable, remote operating weather station will be tested under operational conditions to determine what changes may be required in the final design. An air drop test indicated a stability problem not present in the earlier test with a dummy unit. Correction of this problem will be accomplished to assure the station lands in the proper attitude.

Project 7784—Development was initiated on protective equipment for ground and aircrew use subjected to conditions where laser energy is present in the near infrared region.

Project 8754—The fixed station radio, manpack, and vehicle models will be completed in early 1972. The remaining portion of the project for the support net equipments will be completed by July 1972.

Fiscal year 1973 planned program.—Project 1196—Development will continue on the application of new techniques and materials to improve the USAF uniform.

Project 1244—Category I and II testing will be completed in the later part of 1972 on the Tactical Cargo Loader. Production go-ahead is anticipated by the end of fiscal year 1973.

Project 1266—Testing to establish the initial operating capability will be completed at the Military Personnel Center, Randolph AFB, Texas, of the Microform Personnel Record System. Final evaluation is scheduled for April 1973.

Project 1752—The aircrew neutron-gamma dosimeter development is scheduled to be completed. Preliminary design and protoype fabrication of the airborne radiation monitor will be completed.

Project 3834—Testing will be completed on the BAK 13/14 aircraft arresting. Testing will continue on the modular operation of BAK 12 units. Completion is scheduled for the T–38 net design and testing; and analysis for the net's compatibility with other aircraft is to be completed.

Project 3835—Development of the tester for the F/RF–4 air data computer will be completed.

Project 4054—Operational suitability testing will be completed on the bacterial isolation unit.

Project 4133—Development will be completed on the Shrike Target Simulator.

Project 5559—The protoype unit of the Cold Fog Dissipation equipment will be tested in the field.

Project 5571—Will be started to develop a radio telescope. Current radio telescopes are research tools operated on intermittent schedules; the militarized version will be manned to observe conditions on a 24 hr schedule.

Project 5973—Flight tests will be completed on prototype helmet mounted sight. Fabrication of test prototype helmet mounted display will be completed and ground and flight test carried out. Military Specifications compliance analyses for display optics will be initiated. Interface units will be installed in ground and aircraft test beds. Development will begin on production prototype units.

Project 6337—Application of the flash blindness goggles to the F–111 aircraft will be initiated by an analysis/study of the aircraft.

Project 7045—The Air Force Logistic Command and the Air Training Command will participate in the final phase of the expendable, remote-operated, weather station development. Operational tests will be conducted, manuals prepared, and transition to inventory accomplished.

Project 7784—Completion of the protective equipment for use in near infrared frequencies is scheduled and testing will be completed on the field instrument for measuring laser energy levels.

Project 414N—Improved aircraft firefighting equipment development—formerly P.E. 64714—will continue during fiscal year 1973 under P.E. 64708F. The program has two major areas: System Analysis/Optimization and Equipment Development. System Analysis/Optimization efforts will evaluate fire protection requirements for large aircraft, development an analytical system model to evaluate functional and cost effectiveness of equipment and systems, continue development and test of a generic test model helicopter-borne ground fire suppression system, improve foam producing firefighting agent systems, and evaluate the concepts and cost effectiveness of the very large fire truck and high reach vehicle for protection of large aircraft. Equipment development efforts will develop a runway foamer/resupply vehicle and continue the work to provide firefighters with improved fire protective clothing and breathing apparatus.

Program to Completion.—This is a continuing program.

Resources (In millions of dollars:)

R.D.T. & E. funds for fiscal year 1971, $13.8; fiscal year 1972, $8.4; fiscal year 1973, $6.3; additional funds to completion are continuing; total estimated cost is not available.

OTHER OPERATIONAL EQUIPMENT

Chairman ELLENDER. Please provide a tabulation for the record listing each of the projects funded under this program, the amounts for each for fiscal years 1971 and 1972 and the estimate for fiscal year 1973.

General GLASSER. I will be glad to.

(The information follows:)

[In thousands of dollars]

Element code	Project number	Title	Fiscal year— 1971 actual	1972 estimate	1973 estimate
6.47.08.F		Other operational equipment	13,799	8,418	6,300
	1196	Improvement of Air Force uniform		135	
	1244	Air cargo handling equipment	340	1,000	620
	1262	Bomb damage repair	125	125	
	1266	Microform personnel records	1,504	1,000	1,050
	1559	Operational support equipment for test and evaluation	6,036	1,000	
	1619	Laser target designator	45		
	1752	Radiation detection instrumentation	90	50	120
	3834	Aircraft arresting systems	615	473	500
	3835	Flight line checkout equipment	375	300	470
	4054	Aerospace medical equipment	325	100	120
	4133	Shrike target simulator	20		
	5559	Cold fog dissipation equipment		180	380
	5571	Radio telescope			220
	5612	Pencil beam radar	653		
	5973	Visually coupled systems	400	1,150	1,700
	6337	Aircrew eye protection	177		400
	6517	Counterinsurgency ranging and homing devices	350	150	
	6917	Command and control management data systems software	210		
	7045	Expendable remote operating weather station	215	80	150
	7784	Coherent radiation hazard protection	324	75	270
	8754	Security police communication subsystems	95		
		Improved A/C firefighting equipment	500	500	300
		Common mobility support	1,400	2,100	

Chairman ELLENDER. Are you requesting funds for any new projects in fiscal year 1973? If so, please give brief descriptions of them.

General GLASSER. The radio telescope, project 5571, is the only new start proposed for fiscal year 1973. Principal use of this equipment will be identification of frequencies, generated from solar flare emissions, that interfere with operation of communication equipment.

Two other projects have been transferred into this program, starting with fiscal year 1973, as part of the activity to consolidate program elements. These are improved aircraft firefighting equipment, formerly P.E. 64714F, and common mobility support, formerly P.E. 64721F.

Senator YOUNG. I note that $135,000 was provided in fiscal year 1972 for a project entitled "Improvement of Air Force Uniform." Can you tell me what improvements resulted from this project and exactly how these funds were spent?

General GLASSER. This project was initiated in midfiscal year 1972. Several promising concepts have been identified and will be examined in detail during the fiscal year 1973 program. Examples include a computerized pattern grading system which will improve the standardization of pattern sizes, fusible interlinings which will improve the appearance and durability of the jacket and the identification of six candidate materials for possible incorporation into future uniforms. These materials are 100 percent texturized polyester woven fabric, 70 percent polyester, 30 percent wool double knit, 100 percent polyester double knit, 100 percent polyester rachel warp knit, 75 percent poly-

ester 25 percent wool tropical texturized woven, and a 65 percent polyester 35 percent avril durable press fabric. The fiscal year 1972 funds were spent as follows: Fusible interlining investigation, $15,000; computerized pattern grading code, $10,000; pattern fit tests, $32,500; purchase of six new materials for evaluation, $52,500; laboratory equipment acquisition and up-dating, $25,000.

Senator YOUNG. Of the $6.3 million requested, $1.1 million is for a project entitled "Microform Personnel Records," an increase of $50,000 over the sum provided in fiscal year 1972. Why do you need this increase?

General GLASSER. The bulk of the increased expenditures is required for the costly process of converting present "paper" records to the microform media.

Chairman ELLENDER. For fiscal year 1972, $1.2 million was provided for a project entitled "Visually Coupled Systems," and I note that, for fiscal year 1973, you are requesting $1.7 million. What has caused this increase of $500,000 in your request?

General GLASSER. Visually coupled systems, project 5973, provides for the engineering development of equipment and subsystems utilized in conjunction with Air Force fire control/weapon delivery, reconnaissance, navigation and flight control applications. Current emphasis in this project is on the development and production of qualified helmet-mounted sights and displays for the operational inventory, allowing for heads-up, hands-off control of weapons and weapon/sensor systems.

In fiscal year 1972, the main emphasis of this project centered on procurement and testing of existing early model helmet sight and helmet display devices. The successful completion of these efforts in fiscal year 1972 now allows for development and testing of a production prototype sight/display as programed in fiscal year 1973, thus accounting for increased program costs of $500,000 in fiscal year 1973.

Chairman ELLENDER. I note that, for a project entitled "Coherent Hazard Radiation Protection," you received $324,000 in fiscal year 1971, $75,000 in fiscal year 1972, and for fiscal year 1973, you are requesting $270,000. What has caused the wide fluctuation in the funding of this project?

General GLASSER. The program element was identified for a possible $4.5 million cut in response to recommendations from the Senate Appropriations Committee. Late release of the fiscal year 1972 funds by the Department of Defense to the Air Force limited the amount which could be spent effectively in the current fiscal year.

IMPROVED TACTICAL BOMBING

Chairman ELLENDER. $8.5 million is requested for an engineering development program entitled "Improved Tactical Bombing". Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

Improved Tactical Bombing

CATEGORY: ENGINEERING DEVELOPMENT

Description.—This program is directed toward providing the tactical Air Force a more accurate and versatile weapon delivery capability. The program is currently comprised of two existing projects, including one previously funded under another program element and a proposed new initiative. All of these emphasize the delivery of terminally guided ordnance rather than complex modification to existing air frames to improve delivery accuracy of free-fall, uncontrolled "dumb bomb" ordnance. PAVE SPIKE (Project 1129) will provide a simple, relatively inexpensive, day visual target tracking and laser designating capability to a portion of the F–4 fighter-bomber fleet, permitting the F–4 to expend laser guided ordnance in the self-contained (no forward air controlled) mode regardless of the threat environment. PAVE PENNY (Project 5069) will provide a flight demonstration in an A–7 test bed aircraft of an advanced laser spot seeker system developed for potential use of the F–4, F–111, A–7, OV–10 or A–X under P.E. 64212F, Aircraft Equipment Development. The new initiative is the High Performance Self-Contained Adverse Weather Night Attack (SCANA) Prototype. The SCANA will initially be an F–111 test bed prototype for acquiring the capability of long range, low level, all-weather/night attack against preplanned targets. In addition, the aircraft will have the capability to locate and attack targets of opportunity under conditions of night and adverse weather.

Work performed by.—The Improved Tactical Bombing program is being managed by the Aeronautical Systems Division, Wright-Patterson AFB, Ohio. PAVE SPIKE is currently under contract with Westinghouse Electric Corporation, Baltimore, Maryland. PAVE PENNY studies were performed by Martin-Marietta, Orlando, Fla., Texas Instruments, Dallas, Texas, and RCA, Burlington, Mass. As a result of these studies, a contract for prototype hardware was awarded to Martin-Marietta. SCANA Requests for Proposal have not yet been submitted to industry. The leading avionics and aircraft companies are expected to participate.

Fiscal year 1972 program.—Hardware development was initiated on PAVE SPIKE. Three pods are being fabricated, one for environmental qualification, one for flight test and a third as backup for the other two. Initial ground and airborne evaluation is scheduled for late in the fiscal year. The PAVE PENNY contract for fabrication and ground test of two R&D prototype seekers was awarded to Martin in late October 1971. In December 1971, after evaluating design studies from four contractors, the Air Force decided against proceeding with hardware development on PAVE LANCE. PAVE LANCE was a program to place a night, self-contained delivery capability for laser ordnance on F–4s. The recent PAVE LANCE cancellation has made $3.0 million of fiscal year 1971 funds available for recoupment. These funds will be brought forward into fiscal year 1972 in accordance with the fiscal year 1972 Appropriations Act directing $25.0 million of fiscal year 1971 and prior funds be used to finance the fiscal year 1972 program. An additional $4.3 million was also made available in fiscal year 1972 for reprogramming. Action is underway to reprogram these funds to Surface Defense Suppression, AGM–45 SHRIKE Seeker Development, Advanced Aerial Targets Technology and Maverick European Test Support.

Fiscal year 1973, planned program.—a. In fiscal year 1973, PAVE SPIKE is scheduled to complete flight evaluation early in the fiscal year and, if successful, the Air Force propose buying [deleted] pods for [deleted] modified F–4Ds. PAVE PENNY will take the laser seeker hardware developed during fiscal year 1972 on P.E. 64212F and integrate it with the existing A–7 avionics. For six months starting in 2 fiscal year 1973 the system will be flown at Eglin AFB, Fla., in support of the Close Air Support Weapons System effort under P.E. 63601F, which is developing a family of laser seeker weapons for use in the Close Air Support role. Following successful completion of the flight tests, the Air Force expects to make a production decision. Quantities are still to be determined.

b. *New initiative.*—The F–111 Self-Contained Adverse Night Weather Night Attack (SCANA) effort should be on contract early in the fiscal year. Hardware development will begin on the proposed Forward Looking Infrared (FLIR), Low Light Level TV (LLLTV), and other electro-optical sensors, as well as the

associated displays. Integration of the sensors with on-board radar, computer and navigational systems will commence.

Program to completion.—This is a continuing program. SCANA flight evaluation should begin in 3rd quarter, fiscal year 1974 and be completed in one year. Follow-on projects will be developed for improved tactical delivery of air-to-ground ordnance based on the needs of the using commands and technological advancement. Project PAVE SPIKE total R.D.T. & E. funding is $3.975 million; PAVE PENNY will be $2.675 million. SCANA is estimated at $38.8M.

Resources (in millions of dollars):

R.D.T. & E. funds for fiscal year 1971, $5.9; fiscal year 1972, $5.3; fiscal year 1973, $8.5; additional funds to completion are continuing; and the total estimated cost is not available.

Chairman ELLENDER. I note that the larger part of this request, $7.4 million, is for a new initiative entitled "High Performance SCANA Prototype." Please tell us the objectives of this project, and indicate how the $7.4 million you are requesting for fiscal year 1973 will be spent.

General GLASSER. This is a program designed to obtain a self-contained, adverse weather/night attack or SCANA, capability to search, detect, recognize and strike fixed and mobile targets in high threat areas. The primary objective of the high performance SCANA prototype program is to determine through flight demonstration the optimum configuration for first line tactical aircraft to perform the SCANA mission. Approximately $4.0 million will be used to initiate system design and the remaining $3.4 million will be used to initiate hardware development and acquisition.

Senator YOUNG. Give us some specific examples of the projects which will be funded with the $1.1 million you are requesting for "Other Efforts Below $3 Million Each."

General GLASSER. The other two projects funded in this program element are:

Pave Spike.—A day visual tracking/laser designating capability for F–4s and

Pave Penny.—An advanced laser spot seeker system developed for potential use on the F–4, F–111, A–7, OV–10 or A–X.

The $300,000 requested for Pave Spike will furnish the flight and airworthiness tests and complete the production baseline configuration begun in fiscal year 1972.

The $800,000 requested for Pave Penny will be used to modify the A–7 for flight test and pay for the software programing necessary to integrate the Pave Penny information with the on board weapons delivery system. It will also help to pay for the flight test.

Chairman ELLENDER. Please tell us just why you need the increase of $3.2 million you are requesting for improved tactical bombing for fiscal year 1973.

General GLASSER. The increase of $3.2 million is solely for the SCANA new initiative. The Pave Spike and Pave Penny funding is lower than in fiscal year 1972 as those systems near completion of R. & D. testing.

INTELLIGENCE AND RECONNAISSANCE EQUIPMENT

Chairman ELLENDER. $10.1 million is requested for the continuing engineering development program entitled "Intelligence and Reconnaissance Equipment". Selected paragraphs from the descriptive summary wil be included in the record at this point.

(The information follows:)

INTELLIGENCE/RECONNAISSANCE EQUIPMENT

ENGINEERING DEVELOPMENT

Description.—This program element supports: (1) USAF operating commands by providing engineering development of airborne and ground equipment used to collect, record, process, analyze and distribute intelligence data and (2) the Aerospace Cartographic and Geodetic Service by providing data reduction equipment required in photogrammetric and cartographic production facilities to support mapping, charting and air materiel programs. Projects under this program element are primarily responsive to the reconnaissance requirement of Tactical Air Command (TAC), Strategic Air Command (SAC), and USAF Security Service and the mapping and charting activities of Military Airlift Command (MAC) and the Aeronautical Charting and Information Center (ACIC). Airborne equipment is designed for such aircraft as the RF–4C and the RC–135 and includes electronic, optical, laser and infrared sensors. Ground equipment includes various film developing/printing and ELINT (electronic intelligence) data handling items. Equipment developed under this program element are engineering prototypes for follow-on production. For fiscal year 1973 P.E. 64720F titled Mapping, Charting and Geodesy and P.E. 31015F titled Technical Sensor Collection have been included in this program element.

Work performed by.—Responsible Air Force agencies include: Electronic Systems Division (ESD), Hanscom Field, Mass.; Rome Air Development Center (RADC), Griffiss AFB, NY; Aeronautical Systems Division (ASD) Wright Patterson AFB, OH and the Air Force Cambridge Research Laboratory, Hansom Field, Mass. In general these agencies provide management, technical, and procurement personnel to contract with industry for hardware or software development. Contractors include: Watkins-Johnson Co., Palto Alto, California (ELINT receivers); Honeywell Radiation Center, Lexington, Ky. (infrared equipment); Amecon Division of Litton Industry, College Park, MD (reconnaissance sensor); Texas Instruments, Austin, TX (infrared sensor); Informatics, Inc., Washington, D.C. (ELINT processing system); LTVE, Greenville, TX (electro-optical system); and Eastman Kodak, Rochester, N.Y. (film processor).

Fiscal year 1972 program.—Twelve projects are continuations from fiscal year 1971. The project for a reconnaissance receiver will be completed. There are seven new projects in fiscal year 1972. The most significant projects include: a program to test an infrared imagery set for the RF–4C to provide improved target acquisition at night or during periods of limited visibility, a program to provide a capability to locate threat radars very accurately, the development of equipment to provide an operational capability to collect intelligence data on foreign electro-optical devices and an automated astronomic positioning device for use in conducting strategic missile launch site surveys (P.E. 64720F).

Fiscal year 1973 planned prorgam.—Plans for fiscal year 1973 include 17 projects. Six of the 17 projects will be completed in fiscal year 1973. The two most significant of these programs are: (1) an improved infrared sensor for the RF–4C providing up to 16 times better resolution than the current sensor and permitting the aircraft to operate at higher safer altitudes, and (2) an advanced cartographic system to automate production/update of strategic target materials, with significant savings in time and manpower at the Aeronautical Chart and Information Center. The joint U.S./Federal Republic of Germany side looking radar project, which was in this program element, is now under P.E. 64741F.

Program to completion.—This is a continuing program.

Resources (in millions of dollars:)

R.D.T. & E. funds for fiscal year 1971, $9.7; fiscal year 1972, $11.7; fiscal year 1973, $10.1; additional funds to completion are continuing.

INTELLIGENCE AND RECONNAISSANCE PROJECTS

Chairman ELLENDER. Please provide a tabulation for the record listing the projects funded under the program, the amounts for each for fiscal years 1971 and 1972, and the estimate for fiscal year 1973.

General GLASSER. Yes, sir.

(The information follows:)

Project number and title	Fiscal year— 1971	1972	1973
1146 Nonsilver printer processor		350	400
1155 Optical intelligence signatures		850	420
1156 Radiation intelligence signatures		425	350
1178 Compass robin		1,500	1,500
1180 SR–71		875	300
1190 Compass counter (separate program element in fiscal year 1973 (PE 64742F))		400	
1212 Mapping, charting, and geodesy (PE 64720F added for fiscal year 1973)	1,500	1,100	1,000
1232 Electromagnetic compatibility measurement	80	200	330
1258 United States/Germany side looking radar (separate program element in fiscal year 1973 (PE 64741F))	2,075		
1310 Compass bear	633		
1593 Laser line scan reconnaissance subsystem	50		
1608 Microwave reconnaissance receiver	600	350	
2704 Tactical electronic reconnaissance	1,725	1,625	1,000
2716 Tactical Air Force intelligence exploitation equipment		300	300
2717 Medium altitude camera	72		
3631 Compass quick	900	300	900
4007 Tactical reconnaissance film processor	100		300
4010 Infrared reconnaissance set	800	1,425	1,200
4494 USAF Security Service data display	140	250	300
5999 Intelligence quick reaction capability	715	900	800
6514 Interference control		100	100
6530 Electronic intelligence analysis processing subsystem	50	350	600
8756 Compass lane		300	300
9202 Cobra ball (PE 31015F added for fiscal year 1973)	260	100	

Senator YOUNG. Are you requesting funds for any new projects for fiscal year 1973? If so, please give us a brief description of each.

General GLASSER. The only new project is a development to provide improved photographic capability for the SR–71.

Chairman ELLENDER. The $10.1 million you are requesting for fiscal year 1973 is $1.6 million less than the sum provided for fiscal year 1972. This would seem to indicate that you have completed some of the projects funded under this program in fiscal year 1972. Am I correct?

General GLASSER. No, sir; there were no major projects completed in fiscal year 1972. The reduction in program funding level is attributed to reduction in the requested funding level, thus extending some project completions an additional year.

SYSTEMS SURVIVABILITY

Chairman ELLENDER. $13.5 million is requested for a continuing engineering development program entitled "Systems Survivability." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

SYSTEMS SURVIVABILITY

CATEGORY: ENGINEERING DEVELOPMENT

Description.—This program was established to provide a means to assess the survivability/vulnerability of Air Force operational aerospace systems that may be required to operate in nuclear environments. The assessment of systems to nuclear weapons effects will involve: analysis to determine modes of energy

coupling and identify critical or potentially vulnerable components; and simulation testing to verify predictions, determine the levels of inherent hardness, and provide a basis for recommending corrective action. The system requirements are provided by the using commands; i.e., Strategic Air Command, Aerospace Defense Command and Tactical Air Command.

Work performed by.—Vulnerability testing and analyses of selected systems is being accomplished in-house by the AFWL, which has responsibility for program management, by other Department of Defense agencies and by contract. Contractors include:

Science Systems and Software, San Diego, Calif.	B–52 vulnerability assessment except electromagnetic pulse (EMP).
E.G. & G., Inc., Albuquerque, N. Mex.	B–52 EMP test plan.
Braddock, Dunn & McDonald, El Paso, Tex.	F–106 vulnerability assessment except EMP, prime contractor for B–52 EMP test program.
Physics International, San Leandro, Calif.	Prime contractor for construction of generator for low level EMP simulator.
Goodyear Rubber Co., Dayton, Ohio.	Prime contractor for fabrication of antenna system for airborne EMP simulator.

Department of Defense agencies include:

U.S. Army White Sands Missile Range, Holloman AFB, N. Mex.	Provided reactor facilities for assessing vulnerability of electronic components to Transient Radiation Effects on Electronics (TREE).
USAF Aerospace Medical Division, San Antonio, Tex.	Biomedical studies on degradation of crew capabilities due to nuclear radiations.
USAF Human Factor Laboratory, Dayton, Ohio.	Biomedical studies on degradation of crew capabilities due to nuclear radiations.

Fiscal year 1972 program.—The B–52 EMP tests initiated in fiscal year 1970 are continuing. This includes studies of the modes of unintentional antenna coupling of EMP, threshold measurements of electrical components, and studies to identify internal coupling. A nuclear vulnerability assessment of the Post Attack Command Control System (PACCS) was initiated. Initial efforts are concentrating on the airborne portion of PACCS; i.e., LOOKING GLASS aircraft and relay aircraft. Fabrication of several low level EMP simulators is underway. The vertical dipole simulator is completed; the horizontal dipole will be completed by July 1972. Work will begin during the third quarter fiscal year 1972 on the construction of a threat level EMP simulator for testing aircraft. This test facility will hold all DOD aircraft up to and including C–5A. Initial efforts will center around the development of an EMP pulser which is the long lead time item for the test facility. The Initial Operational Capability (IOC) for this facility is being accelerated to April 1974. The first aircraft scheduled for the facility is the Advanced Airborne Command Post (AABNCP). These simulators will be used in the aircraft electromagnetic pulse (EMP) test program. A low level EMP vulnerability assessment will be conducted during the last quarter fiscal year 1972 on an AABNCP. This test will be conducted to provide hardness design data for the command, control, communications (C^3) systems in the airborne command post and the airborne launch control center. Work will be initiated on the ground portion of the Post Attack Command Control System (PACCS). The C^3 networks to be investigated have been provided by Strategic Air Command. Vulnerability assessment of aerospace system components and subsystems will be conducted using the Transient Radiation Effects Facilities in the electron beam mode.

Fiscal year 1973 planned program.—The B–52 EMP tests will be continued. This effort will include the continuation of studies of EMP coupling into systems and an airborne EMP test using the low level vertical and horizontal dipole EMP simulator. Information from these tests will be used in providing design data for the B–1 aircraft. The low level EMP vulnerability assessment of the AABNCP aircraft will be completed. Information from this test will be used to provide hardened aircraft design data for the C^3 systems to be incorporated into the AABNCP.

Program to completion.—This is a continuing program. There is a significant cost increase in this program over the fiscal year 1972 Presidential Budget. This increase is the result of a requirement for an EMP threat level test

facility which will be used to determine the EMP vulnerability of strategic aircraft such as the B–1, AABNCP, and the Advanced Warning and Control System (AWACS). Funds for the test facility will be provided through Project 1209, EMP Simulation Testing. The primary efforts to be completed after fiscal year 1973 include the erection of the electromagnetic (EM) test stand and the installation of the EM transmission line (waveguide) system.

EMR Test Facility (Threat Level) Milestones, Estimated Cost to Reach Completion

Event and date:	(*Millions*)
Pulser preliminary design (June 1972)	$0.6
Pulser fabrication (July 1973)	13.3
Electromagnetic test stand (August 1973)	21.7
Transmission line (Waveguide) installation (January 1974)	24.3
Command control installation (January 1974)	26.5
Initial operational capability (April 1974)	27.4

Resources (in millions of dollars):
R.D.T. & E. funds for fiscal year 1971, $3.1; fiscal year 1972, $12.1*; fiscal year 1973, $13.5; additional funds to completion are continuing; total estimated cost is not available.

*Includes $9.0 in fiscal year 1972 supplemental appropriation request.

Systems Survivability

Chairman Ellender. For fiscal year 1972, your request was for $3.1 million, yet I note on page 39 of the justifications that your estimate for fiscal year 1972 is listed as $12.1 million. Does this $12.1 million include the $9 million you have requested in the fiscal year 1972 supplemental appropriations request which has not yet been considered by the Congress?

General Glasser. Yes, Mr. Chairman, that includes the $9 million.

Senator Young. Of the $13.5 million you are requesting, $8.3 million is for a project entitled "Electromagnetic Pulse Simulation Testing." Is this a new initiative?

General Glasser. Yes, it is.

Chairman Ellender. Please give us a brief description of this project and tell us what you plan to do with the $8.3 million you are requesting.

General Glasser. The new project, electromagnetic pulse simulation testing, is to develop a threat level electromagnetic pulse (EMP) simulator for large aircraft. The $8.3 million will be for continued development of this EMP test facility. Specific tasks to be funded are design and prototype development of the electrical pulser, fabrication of the electrical pulser, fabrication of the EMP test stand, and installation of the pulser and waveguide.

Senator Young. Your request for systems survivability includes $5.2 million for other efforts below $3 million each. Please give us some specific examples of what these funds will be used for.

General Glasser. The efforts funded under the $5.2 million are for instrumentation development of aircraft electromagnetic pulse (EMP) testing; X-ray simulation studies on electronics; development of EMP hardness design for aircraft using a B–52 and FB–111 as testbed systems; development of aircraft EMP and current injection theories; nuclear vulnerability assessment of critical command, control, communications systems required for warning and launching strategic forces; this includes analysis and testing of satellite, airborne, and ground communications systems.

COBRA MIST

Chairman ELLENDER. $500,000 is requested for an engineering development program entitled "Cobra Mist." Has the committee been provided the details on this program?

General GLASSER. Yes, sir; the details have been provided.

ADVANCED AIRBORNE COMMAND POST

Chairman ELLENDER. $26 million is requested for the program entitled "Advanced Airborne Command Post." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

ADVANCED AIRBORNE COMMAND POST (AABNCP)

CATEGORY: ENGINEERING DEVELOPMENT

Background.—In June 1967 a Joint Chiefs of Staff study report on the Advanced Airborne Command Post (AABNCP) for the National Military Command System (NMCS) and the Single Integrated Operations Plan Commanders in Chief (SIOP CINC's) was forwarded to SECDEF. The report indicated that the threat of Soviet ICBMs and SLBMs required an Airborne Command Post (ABNCP) system for the National Command Authorities with significantly greater physical size, longer endurance, and more operational flexibility than the current EC–135 aircraft. An October 1967 Program Change Decision initiated Concept Formulation. The Air Force submitted a Concept Formulation Package/Technical Development Plan in May 1969. The alternatives were not accepted by OSD. Additional study was made of less complex and costly options. In Dec. 1971, the World Wide Military Command and Control System Council reviewed these options and approved initiation of the AABNCP program. This approval was confirmed by a SECDEF memorandum dated 23 Dec 1971, and the program was authorized for implementation by a SECAF memorandum dated 14 Jan 72.

Description.—The AABNCP program objectives are to obtain early operational experience with new aircraft to assist in equipment designs and to obtain electromagnetic pulse (EMP)—resistant, advanced C^3 Airborne Command Posts at an early date (early 1975). The program consists of the following major actions:

(*a*) Procure four Boeing 747 aircraft during FY 1972 with an option to acquire three more at a later date.

(*b*) Modification of first three aircraft as interim National Emergency Airborne Command Posts (NEACP) by transferring equipment now in EC–135 ABNCP aircraft. Operation of this fleet will provide functional, operational, and interior layout information to the C^3 design program. The fourth aircraft will be used for developing the equipment, defining the final configuration of the AABNCP, testing the improved C^3 package and determining the EMP effects on the aircraft and electronics. It will be reconfigured for operational use at completion of the program.

(*c*) Define, construct, and test an improved C^3 package incorporating a modular concept to facilitate incremental additions of advanced equipment and required personnel.

(*d*) Conduct threat level EMP tests of the aircraft and C^3 package during Category II testing of the fourth aircraft.

(*e*) When procured, the last three aircraft will have the configuration developed by the fourth aircraft with the improved C^3 package and will constitute the initial operational capability (IOC) of the AABNCP for the National Military Command System. Subsequently, the first three aircraft will be modified to the IOC configuration.

Work performed by.—The Air Force Electronics Systems Division (ESD), L. G. Hanscom Field, Mass. has prime development responsibility and will be assisted by the Aeronautical Systems Division (ASD), Wright-Patterson AFB, Ohio, both of the Air Force Systems Command. Aircraft Modifications Support will be provided by the Oklahoma City Air Material Area of the Air Force Logistics Command, Tinker AFB, Oklahoma. Contractual efforts are yet to be determined.

Fiscal year 1972 program.—The Air Force has established a System Program Office (SPO) to manage the program. The SPO will prepare requests for pro-

posals, prepare and submit formal program management documentation and initiate contract efforts. Contracts for purchase of the first four (4) of a seven (7) aircaft buy will be prepared and negotiated if the supplemental request for funds is approved.

Fiscal year 1973 program.—With fiscal year 1972 purchase of the first four aircraft, the fiscal year 1973 effort will be concentrated on installation of EC–135 equipment in the first three aircraft, and engineering design to modify the fourth aircraft to prepare it for its role as a test bed for improved command and control equipments. Electromagnetic Pulse (EMP) design will be confirmed and test of the advanced command and control package will be accomplished. Engineering design of the advanced command and control package will occupy much of the year, thus, these efforts will converge by the end of the year to reach a mid-fiscal year 1974 installation in the test aircraft.

Program to completion.—The newly designed command and control package will be installed in the aircraft, the combination will receive a threat level EMP test and functional testing of the system will be conducted in fiscal year 1974 and fiscal year 1975. Concurrent with achievement of an Initial Operating Capability (IOC) interfaces with surveillance, warning, intelligence and communications systems that are being developed will be studied and appropriate additions of equipment and personnel will be made under a phased modification program. This will provide the final operational capability for the National Command Authorities.

Resources (in millions of dollars) :

R.D.T. & E. funds for fiscal year 1971 and prior, $2.8; fiscal year 1972, $6.0[1]; fiscal year 1973, $26.0; additional funds to completion, $55.0; and total estimated cost, $89.8.

MILESTONES

[Dollar amounts in million]

Event	Date	Estimated cost to reach milestones
1. OSD go-ahead	December 1971	
2. Initiate SPO and mod design	January 1972	$6.0
3. Order A/C No. 1–4	April 1972	126.0
4. C^3 source selection	October 1972	207.0
5. Order A/C No. 5–7	May 1973	397.4
6. Order C^3 Package A/C No. 1–3	July 1974	481.7
7. Deliver 3d AABNCP to NMCS (IOC)	[deleted] 1975	481.7
8. Deliver 3d AABNCP to SAC	[deleted] 1975	481.7

ADVANCED AIRBORNE COMMAND POST

Chairman ELLENDER. As I understand it, $2.8 million has been made available for this effort in fiscal year 1971 and prior fiscal years, and no funds were provided in the appropriation for fiscal year 1972, and you have a pending fiscal year 1972 supplemental in the amount of $6 million for this effort. Am I correct about this?

General GLASSER. Yes, sir, except that the Department of Defense has withdrawn the fiscal year 1972 supplemental request and resubmitted the fund requirement as a fiscal year 1973 budget amendment.

Chairman ELLENDER. I note that the total estimated cost of this development is stated at $89.8 million. Is this total effort associated with the development of equipment to be installed in the planned 747 aircraft?

General GLASSER. The program will assemble off-the-shelf communications and automatic data processing equipment for an Advanced Airborne Command post. The major R. & D. effort relates to design and fabrication of the interface devices and installation of the command, control, and communications (C^3) package in the prototype

[1] Included in fiscal year 1972 supplemental request.

airframe. The total cost of this effort, including costs of the prototype C^3 package, testing and program management, is $89.8 million.

Senator YOUNG. How much of this total effort in R. &. D. is directly related to the plan to install the existing equipment in the first three of these 747's to be procured?

General GLASSER. No R. & D. funds are related to the transfer of electronics from the EC–135's to the first three 747's.

Senator YOUNG. Just what do you plan to do with the $6 million you are requesting in the fiscal year 1972 supplemental?

General GLASSER. The $6 million, which is now reflected in the fiscal year 1973 budget amendment, will provide for engineering support, system survivability/vulnerability studies, low-level EMP testing of the aircraft, and specification preparation.

Senator YOUNG. Exactly what do you plan to do with the $26 million you are requesting for fiscal year 1973?

General GLASSER. We plan to pay for the design of the command, control and communications C^3 package, initial fabrication of the C^3 prototype and associated engineering support.

Chairman ELLENDER. Just a few minutes ago, we discussed your request of $8.3 million for "electromagnetic pulse simulation testing" in connection with the program entitled "systems survivability." Just how is that effort related to the Advanced Airborne Command post?

General GLASSER. The Advanced Airborne Command post aircraft will undergo testing in the simulator. The purpose of this testing is to assure a survivable, EMP resistant system in accordance with directions of the Secretary of Defense on this program.

Chairman ELLENDER. Let me be sure I understand this program. As I read the justifications, you plan to buy seven of these 747 aircraft to replace a number of the existing EC–135 aircraft. You will install existing communications equipment in the first three of these aircraft, use the fourth aircraft as a test bed for a new electronics package and the new electronics will be installed in the fifth, sixth, and seventh aircraft, as you will later reconfigure the first four aircraft with the new equipment. Is this correct?

General GLASSER. That is correct.

TACTICAL LORAN

Chairman ELLENDER. $3 million is requested for a program entitled "Tactical LORAN." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

TACTICAL LORAN

CATEGORY: ENGINEERING DEVELOPMENT

Description.—An Engineering Development Program tailored to provide improvements to, and final engineering of, the basic Tactical Long Range Navigation (LORAN) ground transmitter and other components of the ground chain; integration of airborne LORAN equipment with other elements and systems in various aircraft; and incorporation of LORAN D capability into applicable command and control systems. The Air Force plans to use LORAN to satisfy positioning requirements of designated parts of the tactical fleet. The development approach to LORAN Avionics will be as a system, and all facets of operation, including targeting and the use of the common grid in command/control, will be considered. Tactical LORAN will, for the first time, provide a common grid over

the combat area which can be utilized by all forces. The common grid makes possible improved night and adverse weather bombing, better navigation, improved search and rescue, and better combat area management.

Work performed by.—This program is managed by the Electronic System Division, Hanscom Field, Massachusetts, an organization of Air Force Systems Command. Contractors include: Lear Siegler, Grand Rapids, Michigan; Sperry Rand Corp., Great Neck, New York; Teledyne, Inc., Los Angeles, California.

Fiscal year 1972 program.—Final altitude and terrain effects testing will be conducted. Results of these tests will be utilized for adjustments to the Long Range Navigation (LORAN) grid for more precise target location. Altitude effects testing will be completed in conjunction with high altitude weapons delivery. Continuing evaluation of a ranging mode of LORAN navigation is programmed. This mode of LORAN Navigation promises greater range and improved accuracy in some areas of the LORAN grid. The proposed test is scheduled to begin in April 1972 and be completed by June 1972. Additional equipments will be procured to begin reliability testing. Contract award for reliability hardware is planned in March 1972.

Fiscal year 1973 planned program.—One of the systems, fabricated under the advanced development program, will be installed in an F–4D/RF–4C aircraft beginning in January 1973. The competitive prototype installations will be evaluated for compatibility with other aircraft systems and ease of installation. Reliability testing of the LORAN system will be continued.

Program to completion.—A flight test of the prototype LORAN installation will be accomplished on the F–4D/RF–4C. Reliability testing will be completed. The second system, fabricated under the advanced development program, will be prototyped into the C–130/OV–10 aircraft and flight tested. Both the flight test results and the demontrated reliability will be considered prior to a production decision. Command and control aspects for tactical battlefield control will be incorporated. Improvement in tactics and interface with new systems for targeting will be incorporated. Electronic-counter-counter-measures will be incorporated or updated to provide the capability for world wide contingencies.

Resources (In millions of dollars):

R.D.T. & E. funds for fiscal year 1971, $0; fiscal year 1972, $2; fiscal year 1973, $3; additional funds to completion, $12.6; and total estimated cost, $17.6.

Tactical LORAN

Chairman Ellender. This program seems to have been initiated in fiscal year 1972. Tell us briefly what you have accomplished up to this time.

General Glasser. The fiscal year 1972 program included the completion of several tasks that had been initiated in previous fiscal years under advanced development. These tasks include final altitude and terrain effects testing, final evaluation of a ranging mode of LORAN navigation, and development of employment/deployment manuals for the LORAN ground chain. The results of previous terrain testing have provided a model for reducing the amount of LORAN targeting error, which also reduces the amount of pretarget reconnaissance required within the combat area to provide accurate LORAN target information. We have contracted with TRW to provide documentation procedures for establishing interface control documentation on the various aircraft to be prototyped.

Chairman Ellender. How will you use the $3 million you are requesting for fiscal year 1973?

General Glasser. Initial integration into the F–4 tactical fighter aircraft will be accomplished. This will include installation into the aircraft of the LORAN engineering development model system, with instrumentation, and initial installation testing. The intent is to determine the capability of the system to form, fit, and function with other on-board systems and to determine ease of installation. The installation will be made on separate aircraft to evaluate the installation

characteristics of the competitive systems. Preliminary design work on the aerospace ground equipment will be accomplished. Engineering data and interface control documentation for other sensors requiring LORAN interfacing will be accomplished.

Senator YOUNG. Your request for fiscal year 1973 is $1 million larger than the amount provided for fiscal year 1972. Just why do you need this increase?

General GLASSER. The majority of fiscal year 1972 funding was utilized for tasks other than LORAN systems integration into the aircraft and prototyping. The fiscal year 1973 funds are required to begin systems integration and prototype in the F–4D. The prototype installation will be accomplished in a competitive environment utilizing systems developed under the advanced development program, PE 63709F, LORAN D.

GROUND SENSORS SURVEILLANCE AND REACTION EQUIPMENT

Chairman ELLENDER. $2.6 million is requested for the engineering development program entitled "Ground Sensors Surveillance and Reaction Equipment." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

GROUND SENSOR SURVEILLANCE/REACTION EQUIPMENT

CATEGORY: ENGINEERING DEVELOPMENT

Description.—This program consolidates PEs 64715F, Integrated Program for Air Base Defense, and 64730F, Ground Based Sensor Development and Test, and describes FY 73 efforts on selected tasks initiated by the Defense Special Projects Group (DSPG) during FY 72. The efforts in FY 73 include those DSPG activities which are pertinent to Air Force requirements and new responsibilities assigned to the Air Force with the disestablishment of DSPG. The objectives of this program are to: (1) develop unattended ground sensors and components capable of operating over a wide range of geographic, climatic, and electromagnetic conditions with camouflage tailored to the area of deployment and with the capability to classify targets; (2) improve the communications subsystem to enable more sensors to be usd per unit of allocated frequency and provide reduced vulnerability to interference (intentional/unintentional); (3) deliver an airborne relay capable of operating at higher altitudes to increase survivability in a non-permissive environment and minimize sensor signal attenuation caused by terrain masking and foliage penetration; and (4) develop a perimeter intrusion detection system for Department of Defense (DOD) installations and bases located in CONUS and overseas. The latter systems will be used to augment existing security systems and make existing security systems less man sensitive. The result of this effort will be better allocation of security manpower. This will free more security manpower to handle the pressing "law enforcement problem."

Work performed by.—The Air Force Systems Command (AFSC) through the Electronic Systems Division (ESD), L. G. Hanscom Field, Massachusetts, and the Rome Air Development Center (RADC), Griffiss Air Force Base, New York, is responsible for this effort. The MITRE Corporation, Bedford, Massachusetts, is under contract to assist ESD in this effort.

Fiscal year 1972 program.—These activities are directed toward: enhancement of existing sensors to increase lifetime, reduce cost and establish a target classification capability; development of a sensor which combines [deleted] detection with audio-monitoring capability (available for operational testing October 1972); development of procedures and techniques for integration of sensor-derived target information into the Tactical Air Control System (completion September 1972); definition of sensor system communications to include identification of weaknesses on ECCM, system sensitivity and overall information handling capability (completion November 1972); and preparation of specifica-

tions for system integration, test and evaluation of a Sensor Integration and Display System to satisfy base and installation security requirements for the Tactical Air Command contingency deployment.

Fiscal year 1973 planned program.—The goals of these efforts are: development of procedures and techniques for precisely locating sensors after emplacement; test and evaluation of sensor system components developed during FY 1972; and system integration, test and evaluation of the Base Intrusion Detection System (BIDS). The BIDS is a sensor surveillance system employing both remote and line sensors reporting through a communication subsystem to a processor and display facility.

Program to completion.—This is a continuing program.

Resources (in millions of dollars):

R.D.T. & E. funds for fiscal year 1971 and prior, not available; fiscal year 1972, 2.8; fiscal year 1973, 2.6; additional funds to completion, continuing; and total estimated cost, not available.

GROUND SENSORS SURVEILLANCE AND REACTION EQUIPMENT

Chairman ELLENDER. Would you tell us briefly the objectives of this program?

General GLASSER. The objectives of this program are twofold. First is the development and testing of physical security equipment required to meet the global needs of DOD bases, installations, and other high-value resources for protection. Second is the development and test of tactical ground based sensor systems for introduction into the world-wide tactical air forces.

Senator YOUNG. Is any of the work on this program being performed by a Federal contract research center?

General GLASSER. Yes, sir. Some of the work will be done by the MITRE Corp. They support both the ground sensors surveillance and reaction technology and equipment programs.

Chairman ELLENDER. I note that your request for fiscal year 1973 is $200,000 less than the sum provided for fiscal year 1972. Why is this?

General GLASSER. The program in fiscal year 1973 is essentially a combination of three programs from fiscal year 1972. Two Air Force programs, PE 64715F—integrated program for air base defense, fiscal year 1972, $0.8 million, and ground based sensor development and test, fiscal year 1972, $2 million, have been combined with a number of DSPG tasked projects into PE 64730F—ground sensors surveillance and reaction equipment. For fiscal year 1973 the $2.6 million for the combined program came from the DSPG recommendation to D.D.R. & E. on the disposition of the group's funds, projects, and assets as a result of its disestablishment. These funds will support the U.S. Air Force part of these programs being continued in fiscal year 1973. The reduction in total funding is due to a shift in priorities and emphasis among U.S. Air Force programs.

Chairman ELLENDER. Just what do you intend to do with the $2.6 million you are requesting for fiscal year 1973?

General GLASSER. The $2.6 million requested in fiscal year 1973 will be used for:

	Million
(1) Systems integration and communication links for the base intrusion detection system (continuation of DSPG efforts)	$1.000
(2) Program support and system test for the base intrusion detection system (continuation of DSPG effort)	.700
Total for base and installation security	1.700
(3) Sensors (tactical) completion of fiscal year 1972 efforts	.373
(4) Assessment (tactical) completion of fiscal year 1972 efforts	.527
Total for tactical ground sensors	.900

SURFACE DEFENSE SUPPRESSION

Chairman ELLENDER. $8 million is requested for a new engineering development program entitled "Surface Defense Suppression." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

SURFACE DEFENSE SUPPRESSION

CATEGORY: ENGINEERING DEVELOPMENT

Description.—This is a new program for FY 1973 and will resolve the technical risks in engineering development for improved operational weapons systems capable of standoff surveillance and attack of surface-to-air weapon systems. The introduction of effective surface-to-air missiles, installed in multiple and overlapping arrays and complemented with formidable quantities of improved AAA have altered the concept of air superiority. The USAF cannot enjoy control of the air over enemy forces unless *both* the air and ground threats are suppressed. This program aims at suppressing the ground threat by providing equipment and weapons to the tactical forces which are effective from standoff ranges and includes methods of acquiring targets and destroying them.

Projects and tasks pursued under P.E. 63741F, Defense Suppression, that prove sufficiently effective will be considered for operational application. These efforts will bring demonstrated hardware to a near production/operational configuration through further engineering development, tests and evaluation.

WORK PERFORMED BY—	AFSC in-house	Contractor
EFFORT		
(a) Modular guided glide bomb	Armament Development & Test Center (ADTC), Eglin AFB, Fla.	To be selected.
(b) Time of arrival/distance measuring equipment.	Rome Air Development Center, Griffis AFB, N.Y.	Do.
(c) Remotely piloted vehicle	Aeronautical Systems Division (ASD), Wright-Patterson AFB, Ohio.	Do.
(d) Modified warhead for KMU-353 guidance unit.	ADTC, Elgin AFB, Fla.	None.

Fiscal year 1973 planned program.—Assuming successful feasibility demonstrations of the Defense Suppression (PE 63741F) tasks, engineering development efforts are planned for the Modular Guided Glide Bomb (MGGB) Remotely Piloted Vehicle (RPV), Time of Arrival/Distance Measuring Equipment (TOA/DME) tasks. Air Force Systems Command (AFSC) and the Tactical Air Command (TAC) will recommend specific efforts to proceed into engineering development for the standoff weapons required by the tactical forces. Funds will be programmed to meet these recommendations.

(*a*) *Modular Guided Glide Bomb (MGGB).*—A two phase, Initial Operational Capability (IOC) oriented program is planned. Phase I is planned to procure 20 soft-tooled vehicles for a joint Air Force Systems Command/Tactical Air Command (AFSC/TAC) evaluation for tactics, operational and deployment concepts, military specification, and environmental testing. Range Extension System (RES) modification and a determination of hardware rates is planned. Phase II is planned for a two year period. During this phase, one hundred (100) production vehicles and six (6) pods are required for service testing.

(*b*) *Remotely Piloted Vehicle (RPV).*—An operational feasibility demonstration leading to a limited FY [deleted] Initial Operational Capability (IOC) is planned. This effort will be a part of the Tactical Air Command's Combat Angel capability. ([Deleted] model designation) drones will be upgraded in performance, control and navigation capability to verify the concept and role of RPVs in strike missions. Area Coordinating Paper (ACP) No. 4 designates the Air Force as lead service for RPV development.

(*c*) *Time of Arrival/Distance Measuring Equipment (TOA/DME).*—It is planned to upgrade the demonstrated, ground-based TOA/DME equipment with additional frequencies in an elevated platform for a multiple-weapon, deployable system. This effort will contribute directly to the Precision Emitter Location System (PELS).

(*d*) *Modified Warhead for KMU-353 Guidance Unit.*—Commence additional testing and certification of modified warheads for use with the KMU-353 electro-optical guidance system. The warhead is being developed to permit use of existing electro-optical guidance units with remotely piloted vehicles, F-5 and A-37 aircraft.

Program to completion.—This is a continuing program.

Resources (in million of dollars):

R.D.T. & E. funds for prior and fiscal year 1970, none; fiscal year 1971, none; fiscal year 1972, none; fiscal year 1973, 8; additional funds to completion, continuing; and total estimates, not available.

Chairman Ellender. What relationship has this program to the advanced development program entitled "Defense suppression" that we discussed earlier?

General Glasser. The demonstration projects and tasks performed under program element 63741F, defense suppression, that prove sufficiently effective and are selected for engineering development transition into this program. These efforts bring the hardware to near production and operational configuration through further development, test and evaluation.

Senator Young. Please give a brief description of each of the projects funded under this program, and tell us what you plan to accomplish in each of them in fiscal year 1973.

General Glasser. $2 million will be used in conjunction with emergency funds to accelerate and deploy the airborne defense suppression, time of arrival/distance measuring equipment (TOA/DME) system to SEA in response to the increased SAM threat in that area; $2 million will be used for the integrated modular guided glide bomb (MGGB) and the TOA/DME standoff weapon system. The remaining $4 million will incrementally fund the joint AFSC/TAC operational feasibility demonstration using remotely piloted vehicles (RPV).

Improved Capability for Operational Test and Evaluation

Chairman Ellender. $3.5 million is requested for the continuing engineering development program entitled, "Improved capability for operational test and evaluation." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

IMPROVED CAPABILITY FOR OPERATIONAL TEST AND EVALUATION

CATEGORY: ENGINEERING DEVELOPMENT

Description.—The objective of this program element is to improve the Air Force's capability for operational test and evaluation (OT&E). Gained through this program element will be the capability to significantly improve the operational evaluation of weapons systems, subsystems or components. Because these evaluations would be supported with quantitative data collected during tests for operational suitability and tactics development, decisions based upon the capabilities of the weapon system under realistic operational conditions would be made with a minimum of subjectivity and extrapolation. The total result would be an operational force with known operational capabilities for meeting combat threats. The development efforts of this program element fall into four major task areas or sub-elements which are entitled: Improved Targets, Improved Threats, Instrumentation and Data Transmission/Analysis.

Work performed by.—Subordinate organizations of Air Force Systems Command. Specific assignments will be designated when project and task plans are approved.

Fiscal year 1972 program.—Projects for FY 72 fell within four major task areas. These were: Improved Targets, Improved Threats, Instrumentation and Data Transmission/Analysis. Projects in each of the task areas are shown below:

Improved Targets: Moving Target Prototypes.

Improved Threats: Multi-threat Emitter prototype, Enemy Command, Control, and Communications Simulation.

Instrumentation: Ground Scoring System, Time-Space-Position Information Study, Laser Scoring System.

Data Transmission/Analysis: Telemetry Requirements Study.

The moving target prototypes effort will give the command/control systems needed for full maneuvering ground targets. The multi-threat emitter will have the capacity for radiating a variety of wave forms, pulse rates and power levels to simulate the signal sources of threat electronic systems. A command, control and communications (C^3) system to tie together the threat emitters and to simulate the enemy's C^3 system will be developed to further enhance the realism of the simulated threat environment. To improve the accuracies of bomb and air-to-ground missile scoring during all weather conditions a system will be developed to give automatic scoring of the actual impact. The time-space-position information (TSPI) study is reviewing the stated requirements for TSPI. Its output will be recommended alternatives for satisfying the requirements. The laser scoring study will identify high risk areas and existing techniques or systems and provide a development program for a laser system which can accurately score the terminal phases of an air-to-air or air-to-ground engagement. The telemetry study will provide an assessment of telemetry requirements for air intercept missiles and air-to-ground missiles and will include the most advantageous alternatives for satisfying the requirements.

Fiscal year 1973 planned program.—In fiscal year 1973 work will continue in the major task areas of Improved Targets, Improved Threats, Instrumentation, and Data Transmission. Of the work, four are follow-on efforts completing that which began in fiscal year 1972. These efforts are moving target prototypes; multi-threat emitter, enemy command/control/communications simulation and ground scoring system.

New initiatives in each of the four major task areas are: Improved Targets, None; Improved Threats, ECM Effectiveness Scorer; Instrumentation—Air-to-Air Scoring System, TSPI System, Weapon System Evaluator; Data Transmission, Missile Telemetry Package.

The electro-countermeasures effectiveness scorer is equipment which will measure and record quantities that facilitate the determination of the effectiveness of electronic warfare equipment and techniques. Vector scoring equipment will be developed for use on air-to-air targets. This equipment will become a part of the airborne target system providing a readout of the direction and distance by which a missile misses the target to a greater accuracy than given by ground

radar scoring. The time-space-position information (TSPI) development will use the output of the TSPI study conducted in fiscal year 1972. Prototyping of a programmable pod which will simulate missile functions and responses to fire control commands will give a needed capability for evaluating the fire control system through the launch phase. The telemetry package development will result in capability to monitor functions of air launched missiles and to assess continuing reliability for operations missiles.

Program to completion.—This is a continuing program.

Resources (in millions of dollars):

R.D.T. & E. funds for fiscal year 1971, $1.0[1]; fiscal year 1972, $2.7; fiscal year 1973, $3.5; additional funds to completion continuing; and total estimated cost, not available.

Improved Capability for Operational Test and Evaluation

Chairman Ellender. I note in the descriptive summary that this program is divided into four major task areas. Tell us what these areas are and describe what you hope to accomplish in each of them.

General Glasser. The four task areas that you mentioned are: Improved targets, improved threats, instrumentation, and data analysis/transmission. These four tasks can be grouped into two categories. One category includes improved targets and improved threats. This category principally aims at improving the realism of operational tests by providing realistic targets and simulations of threat systems. In the other category would fall instrumentation and data transmission/analysis. This latter category's goal is to provide data and data handling methods by which systems being tested can be evaluated.

Senator Young. Are you beginning any new initiatives in any of these areas for fiscal year 1973?

General Glasser. Yes, we plan to start four. These are the ECM effectiveness scorer, weapon system evaluator, time-space-position-information system, and a missile telemetry package. A fifth one, air-to-air scoring system, was planned but it is being developed in another program.

Senator Young. The $3.5 million you are requesting for this program for fiscal year 1973 is $800,000 more than the amount provided in fiscal year 1972. Just why do you need this increase?

General Glasser. This additional $800,000 will provide funding for our fiscal year 1973 new starts.

Protective Systems

Chairman Ellender. $30 million is requested for the engineering development program entitled, "Protective systems." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

Protective Systems

CATEGORY: ENGINEERING DEVELOPMENT

Description.—Develop, test and evaluate electronic warfare subsystems for in-service aircraft and the F-15 and upgrade electronic warfare laboratory and flight test simulations of enemy electronic defense systems. Specifically, current plans are to continue engineering developments initiated during prior years;

[1] Fiscal year 1971 emergency funds added to support construction of shelter targets.

expand the laboratory simulation capabilities at General Dynamics, Cornell, and the Avionics Laboratory, e.g., add simulations of new Soviet surface-to-air and air-to-air missile systems; develop threat radar simulations for Eglin AFB; upgrade SR–71 protective systems; upgrade older ECM pods and continue development of an advanced tactical jamming pod to counter the newer terminal threat radars; improve threat warning receivers for F/FB–111 and F/RF–4 aircraft; develop infrared and optical countermeasures; and develop a tactical electronic warfare subsystem for the F–15. The quality, quantity, and diversity of Soviet air defense command/control and weapon systems indicate a need for improved as well as new types of electronic warfare equipment for tactical and strategic aircraft. Laboratory and flight test simulations of Soviet radars and defense systems are needed in order to evaluate electronic warfare techniques, equipment, and tactics.

Work performed by.—The program is managed by the Aeronautical Systems Division, Wright-Patterson AFB, Ohio, with the assistance of the Rome Air Development Center, Griffiss AFB, N.Y., and the Armament Development and Test Center, Eglin AFB, Fla. The major contractors are: General Electric Co., Utica, N.Y.—ALQ 87; Westinghouse Electric Corp., Baltimore, Md.—radar simulations; Hallicrafters Co., Rolling Meadows, Ill.—jamming system for F–15; Sanders Associates, Inc., Nashua, N.H.—jammer update for F–111; Loral Electronic Systems Corp., Bronx, N.Y.—radar warning for F–15; ITT, Avionics Div., Nutley, N.J.—jammer for B–52; General Dynamics, Inc., Fort Worth, Tex.—simulations; Radio Corporation of America, Burlington, Mass.—tail warning; Douglas Aircraft Co., Long Beach, Calif.—ECM pod; and Dalmo Victor, Textron Div., Dallas, Tex.—radar warning equipment.

Fiscal year 1972 program.—(Examples) To be completed during FY 72: flight test of breadboard [deleted] tail warning system; precision antenna measurement system at RADC; simulations of [deleted] fire control radars; interim simulation of [deleted] surface-to-air missile system radar; development of a digitally controlled jammer subsystem; and electronic steerable antenna.

Continuations: Operate, upgrade and validate laboratory threat simulations; tri-Service investigation of Soviet [deleted] surface-to-air missile systems; update F/FB–111 countermeasure subsystems; upgrade SR–71 warning and countermeasure subsystem.

Initiated: System definition studies for [deleted] countermeasures equipment (complete FY–72); tri-Service development of [deleted] anti-aircraft fire control radar (complete FY 74); simulated [deleted] ground control intercept radar (complete FY–73); prototype [deleted] tail warning radar (complete FY–74); update F/FB–111 radar warning equipment (complete FY–73); prototype expendable jammers for flight test (complete FY–73); radar cross section reduction for F–4 aircraft (complete FY–73); advanced countermeasure pod (complete FY–73); electronic warfare subsystems for the F–15 (complete FY–75).

Fiscal Year 1973 planned program.—(Examples) Completions: Update of F/FB–111 warning and countermeasure equipment, [deleted] ground control intercept radar, prototype [deleted] tail warning system; development of advanced countermeasures pod, radar cross section reduction for F–4 aircraft.

Continuations: Tri-Service development of [deleted] radar simulation (complete FY–74); operation and maintenance of laboratory simulations; improved warning and countermeasure subsystems for the SR–71; electronic warfare subsystems for the F–15.

Initiate: Development of a subsystem to counter [deleted] weapons (complete FY–75) and multiple [deleted] Band heads for the laboratory threat simulation located at General Dynamics (complete FY–73).

Program to completion:

Resources **(in millions of dollars):**

R.D.T. & E. funds are fiscal year 1971, 32.2; fiscal year 1972, 29.5; fiscal year 1973, 30; additional funds to completion, continuing.

PROTECTIVE SYSTEMS

Chairman ELLENDER. Please provide for the record a list of the projects funded under this program, the amounts for each for fiscal years 1971 and 1972, and the estimate for fiscal year 1973.

General GLASSER. Yes, sir.

(The information follows:)

[In millions of dollars]

Project number and title	Fiscal year— 1971	1972	1973
1627 Simulation, analysis, evaluation	1.695	4.496	1.730
3757 Radar degradation	2.264		
3829 Infrared and optical countermeasures	.780	1.378	.350
4700 Quick reaction capability	9.619	5.820	.760
5615 B-52 protective systems		.860	1.675
5616 F/FB-111 protective systems		.650	1.910
6517 SR-71 protective systems		2.100	1.500
5618 F-15 protective systems	16.250	9.700	16.340
5619 F-4/F-105 protective systems		.560	4.640
5970 Expendable countermeasures		.837	
5972 Electronic counter countermeasures		.160	.150
6510 Flight test simulations	1.613	2.939	.945
Total	32.221	29.500	30.000

The FY 71 program element number was 64705F. Beginning with FY 72 the program element number was changed to 64738F. The program structure was realigned so as to identify the specific weapon systems that the projects supported.

Various tasks under FY 71 project 3757 were transferred to other projects in FY 72. The FY 71 funds on project 3757 relate to these projects as follows:

Counterpart fiscal year 1972 project:	*Fiscal year 1971 dollars on project 3757*
5615	$1.732
5970	.382
6510	.150
Total	2.264

FY 72 project 5970 is being transferred to program element 64743F, "Tactical Support Jamming", in FY 73.

Senator YOUNG. I note that over half of the $30 million you are requesting for protective systems is for a project entitled "F–15 protective systems." What is the objective of this program?

General GLASSER. The objective is to develop the electronic warfare equipment-warning receivers, jammers and chaff/flare dispenser—and associated aerospace ground equipment (AGE) required for the electronic warfare subsystem of F–15 aircraft.

Chairman ELLENDER. The $16.3 million you are requesting for F–15 protective systems is almost $7 million more than the amount provided in fiscal year 1972. Why do you need this very large increase?

General GLASSER. The difference between the fiscal year 1972 and fiscal year 1973 funds appears to be a major increase, but is not in reality; $6.4 million of fiscal year 1971 funds on the project were obligated at the end of fiscal year 1971 and were carried over into fiscal year 1972. Thus, funds available for obligation on the project in fiscal year 1972 were $16.1 million versus the $16.34 million programed for fiscal year 1973.

Senator YOUNG. $4.6 million is requested for the project entitled "F–4/F–105 protective systems." What is the objective of this program?

General GLASSER. The objective is to rectify stated operational deficiencies with respect to the electronic warfare capability of F–4

and F–105 tactical aircraft. The program involves the development, test, and evaluation of electronic warfare equipment for these aircraft. Results of the program provide the hardware and data base needed for subsequent production programs.

Chairman ELLENDER. Why do you need the increase of almost $4 million over the sum provided for fiscal year 1972?

General GLASSER. The funds are needed to develop a new jammer for F–4/F–105 aircraft. An improved jamming capability is urgently needed for these aircraft so that they can cope with the diverse enemy air defense weapon systems that we expect them to encounter. So that we could get an early start on a new jammer, the development program was initiated in fiscal year 1972 under Project 4700, Quick Reaction Capability; $3.1 million fiscal year 1972 funds were allocated to this task. In fiscal year 1973 the program will be under Project 5619, F–4/F–105 Protective Systems; $4.3 million of the $4.64 million identified for this project in fiscal year 1973 is for the jammer development program. The remaining funds will be used to complete a task, initiated in fiscal year 1972, to reduce the radar cross section (radar echo area) of F–4 aircraft.

Chairman ELLENDER. Give some specific examples of how you will use the $9 million you are requesting for "Other efforts below $3 million each."

General GLASSER. $1.6 million will be used to complete development of a pulse doppler tail warning radar for the B–52. The equipment will detect interceptor aircraft, the launch of air-to-air missiles and [deleted]; $1.5 million will be applied to the radar warning set used by F/FB–111 aircraft to extend the frequency range of the equipment and to develop a new signal processor so that the warning set can intercept and identify the newer SAM's, AAA, and manned interceptor systems; $1.5 million will be used to continue development of equipment for the electronic warfare subsystem of SR–71 aircraft; $1.73 million will be applied to laboratory simulators—to provide for the operation of these simulators and for modifications to provide more realistic representations of radars associated with enemy defense weapon systems; $945,000 will be used to complete the development and fabrication of realistic models of several Soviet radars and to complete development of a system for measuring aircraft antenna patterns.

This equipment supports our electronic warfare flight test program wherein we test and evaluate the effectiveness of our countermeasures equipment and tactics; $760,000 is allocated to our quick reaction capability program—to develop equipment on a quick reaction basis in response to urgent and unforeseen operational requirements. The remaining $1 million is allocated to a number of smaller tasks under various projects.

SIDE LOOKING RADAR

Chairman ELLENDER. $1.8 million is requested for the engineering development program entitled "Side looking radar." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

SIDE LOOKING RADAR

CATEGORY: RECONNAISSANCE

Background.—This effort was reported in FY 72 under Program Element 64710F Intelligence/Reconnaissance Equipment, Project 1258. In 1968, the Ninth US/FRG (Federal Republic of Germany) Cooperative R&D Steering Committee recommended a program be undertaken to develop, through a cost sharing effort, major improvements in Side Looking Airborne Radar (SLAR). A program was initiated titled "The US/FRG Side Looking Airborne Radar Improvement Program." The program establishes a development effort to improve the performance and utility of SLAR considerably beyond that presently available in either the US or the FRG. Side Looking Airborne Radar is unique in that it provides an all weather tactical reconnaissance capability. It has the ability to penetrate cloud and other atmospheric conditions and can, therefore, produce useful intelligence information under conditions which render other sensors ineffective. This is accomplished from a standoff position beyond the high threat environment. In addition, this sensor will be extremely useful for prehostility reconnaissance and ocean surveillance.

Description.—The program includes the development and flight testing of pre-production all weather high resolution SLAR systems. The systems will be capable of detecting tactical targets, providing long range coverage (out to [deleted] NM) over wide areas [deleted] mile swaths extending several hundreds of miles), detecting moving targets (MTI), and long range data transfer to a remote ground facility where SLAR imagery will be exploited in near-real-time. The program has been established as a three phase development effort. The phases are: Phase I, a Design Study which was completed in Sept. 69; Phase II, Component Development which was initiated in Oct. 71; and Phase III, Fabrication, Integration, and Qualification of Pre-production Systems. The system has been designated the AN/UPD-5. The development of the system is intended to provide an advanced radar capability that will be effective as a tactical reconnaissance tool during the 1976 time frame and beyond.

Work performed by.—Responsible Air Force Systems Command agencies are Aeronautical Systems Division, Wright-Patterson AFB, Ohio and Rome Air Development Center, Griffiss AFB, N.Y. Contractors include Goodyear Aerospace Corp., Litchfield Park, Ariz., and Westinghouse Electronic Corp., Baltimore, Md.

Fiscal years 1972 program.—Phase II, Component Development, will be conducted in order to resolve the technical areas requiring additional development. Research efforts in laser recorders, continuous motion compensation, automatic correlator focusing, wide bandwidth transmission, and data transfer are being pursued to produce the technology required to field an advanced SLAR system. The Phase II effort will be conducted as a dual development effort by two contractors and is anticipated to take approximately 20 months. At the conclusion of Phase II, a source selection will be conducted to select the contractor for Phase III fabrication and qualification of pre-production systems.

Fiscal year 1973 planned program.—The Phase II Component Development is to be completed late in fiscal year 1973. In addition, preliminary action will be taken to establish the Phase III portion of the joint development program.

Program to completion.—Phase III involves development, design, fabrication, test, installation of pre-production systems and support equipment, and provisioning for engineering services during the Air Force conducted qualification flight tests. This phase will be implemented provided successful component development is accomplished in Phase II. Approximately 30 months will be required for Phase III. The system is anticipated to become available for operational use in calendar year 1976.

MILESTONES

Event	Date (fiscal years)	Estimated cost to reach milestone (millions)
Country-to-country agreement signed	February 1969	0
Phase I design study initiated	April 1969	0
Phase I design study completed	March 1970	$0.330
Revised country-to-country agreement signed	February 1972	.330
Phase II component development initiated	do	.330
Phase II component development complete	April 1973	4.430
Phase III initiate	do	6.230

Note: All costs of the program to be shared equally by the United States and the Federal Republic of Germany. Funding shown for U.S. portion only.

R.D.T. & E. Funds:	
Fiscal year 1971 and prior	4.5
Fiscal year 1972	0
Fiscal year 1973	1.8
Completion	21.4
Total estimated cost	27.7

SIDE LOOKING RADAR

Chairman ELLENDER. I note that this is a joint effort between the United States and the Federal Republic of Germany and that the costs of the program are to be shared equally. In what way is the Federal Republic of Germany involved in this project other than financially? That is, are German scientists doing part of the work, or is the work being performed solely by Americans?

General GLASSER. The Federal Ministry of Defense has in the United States a deputy program manager to work with the USAF program manager in coordinating USAF and Federal Ministry of Defense efforts in implementing the country-to-country agreement. Other than this Federal Ministry of Defense representative, all the work is being performed solely by Americans.

Senator YOUNG. Please describe the objectives of this program.

General GLASSER. The overall objective of this program is to develop and demonstrate a synthetic aperture side looking radar reconnaissance subsystem (AN/UPD-5) which will have the capability of detecting tactical size targets over wide areas, under all weather conditions at standoff ranges up to [deleted]. In order to demonstrate a near-real-time reconnaissance capability, a data transfer system and ground based processor-correlator will be included in the subsystem.

Chairman ELLENDER. Exactly what do you intend to do with the $1.8 million you are requesting for fiscal year 1973?

General GLASSER. The funds have been programed to initiate phase III, preproduction prototype development.

PRECISION EMITTER LOCATION

Chairman ELLENDER. $12 million is requested for the engineering development program entitled "precision emitter location." Has the committee been provided with details on this program?

General GLASSER. Yes, sir. The committee has been provided details on this program.

TACTICAL SUPPORT JAMMING

Chairman ELLENDER. The request includes $25 million for what seems to be a new project entitled "tactical support jamming." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

TITLE. TACTICAL SUPPORT JAMMING

CATEGORY—ENGINEERING DEVELOPMENT

Background.—The size, weight, space and power requirements of ECM subsystems preclude tactical attack and reconnaissance aircraft from carrying a full complement of ECM devices. Therefore, tactical aircraft carry ECM subsystems to counter enemy surface-to-air missile (SAM) systems and anti-aircraft artillery (AAA) systems. The task of countering other enemy systems must be accomplished by tactical support jamming systems.

The current support jamming system assigned to the tactical forces is the EB–66 which is becoming increasingly difficult to maintain. A re-engining and jammer updating program would be costly (over $400M for 35 aircraft) and would not correct the operational and maintenance deficiencies of the EB–66. Current plans call for all EB–66 aircraft to be phased out of the Air Force inventory by the end of [deleted]. A replacement tactical support jamming capability is urgently required for the tactical forces by that time.

Based on recent studies and operational experience, the Air Force has concluded that a mixed force of ECM systems and devices is needed in order to effectively counter an enemy's air defense systems. The force would include manned aircraft, recoverable drones, expendable drones, and expendable jammers, to provide the most effective and most economical method of fulfilling this mission.

Description.—This program has four projects. The first project is to modify F–4D Wild Weasel aircraft to carry up to [delted] ALQ–99 jamming pods. The second project is recoverable drones for use in high threat and sensitive areas to provide electronic jamming [deleted]. The third project covers the development of a wide range of expendable jamming devices from low cost ($20), low power [deleted] noise jamming sources to sophisticated multi-signal receiver-transmitter units producing several hundred watts of power. The fourth project is the expendable drone project to develop a low-cost ($15,000–$30,000) ground-launched vehicle [deleted].

Work performed by.—The Program Manager is Aeronautical Systems Division (ASD), Wright-Patterson AFB, Ohio, of the Air Force Systems Command (AFSC).

Fiscal year 1972 program.—The Tactical Support Jamming program was conceived in September 1971 and approved by the Secretary of the Air Force in November 1971 for submission as a fiscal year 1973 New Initiative. Program management directives were issued on the F–4D Wild Weasel and the expendable jammer projects in late November 1971 and management directives for the drone projects are currently in preparation. Fiscal year 1972 emergency funds of $5.5 million have been requested for the F–4D Wild Weasel and expendable drone projects.

Fiscal year 1973 planned program.—Assuming the availability of fiscal year 1972 emergency funds, engineering design studies, electromagnetic intereference/electromagnetic compatibility and aerodynamic tests will be continued on the F–4D Wild Weasel/ALQ–99 project in fiscal year 1973. The expendable jammer project will continue with concept formulation, prototype development and test/evaluation tasks. Drone project tasks include conceptual studies, prototype development and test [deleted] launch and control development and payload optimization and integrations. The recoverable drone project will be completed in fiscal year [deleted].

Program to completion.—The F–4D project will be completed in fiscal year [deleted]. The expendable drone and expendable jammer development projects are expected to be completed in fiscal year [deleted]. Milestone charts and specific schedules are expected to be available in April 1972.

Resources

[Dollar amounts in millions]

R.D.T. & E. funds:	
Fiscal year 1971 and prior	0
Fiscal year 1972	(1)
Fiscal year 1973	25.0
Additional to completion	48.3
Total estimated cost	73.3

[1] $5.5 million emergency funds requested.

TACTICAL SUPPORT JAMMING

Chairman ELLENDER. Please provide a tabulation listing each of the projects to be funded in fiscal year 1973.

General GLASSER. Yes, sir.

(The information follows:)

[In millions of dollars]

Project	Title	Amount
1229	F-4D Wild Weasel/ALQ-99 Pod	15.0
1230	Expendable drone	4.0
1231	Recoverable drone	1.0
5970	Expendable countermeasures	5.0
	P.E. 64743F Total	25.0

Chairman ELLENDER. As I recall, there was an emergency fund transfer in fiscal year 1972 for this effort. Am I correct about this?

General GLASSER. Yes, sir; you are correct. We requested $2 million in fiscal year 1972 emergency funds for the F-4D Wild Weasel/ALQ-99 project. The funds were requested under the ongoing Wild Weasel program element 64206F, "F-4 Avionics," so we could get an early start on the project by using some resources from that program. The emergency funds will be used to start the engineering design and definition phase and to conduct electromagnetic interference/electromagnetic compatibility tests.

Senator YOUNG. Please comment briefly on each of the four projects to be funded with the $25 million you are requesting for this effort.

General GLASSER. Sixty percent of the fiscal year 1973 program funds would be allocated to the F-4D project. The objective is to provide the F-4D Wild Weasel aircraft a capability to carry three ALQ-99 high-power pod jammers. This will allow us to use the F-4D as an escort support jammer for the tactical forces, as a Wild Weasel or as an attack aircraft. The pods will be interfaced with the APR-38 Wild Weasel equipment to provide antenna steering and frequency set-on control of the jammers. Two F-4D aircraft will be prototyped and tested before a decision is made to modify followon aircraft.

Four million dollars of the funds will be allocated to a project to develop an expendable drone—a low cost ($15,000 to $30,000), ground launched, nonrecoverable drone with a jammer payload. These drones would be employed en masse in heavily defended areas to saturate and provide decoy targets for the enemy's defenses; thus the drones would complement other countermeasures.

Another drone, a recoverable type currently used by TAC, is the third project under the tactical support jamming program; $1 million was requested for this project. The objective here is to integrate ECM jammers into this vehicle. Its present capability is limited to [deleted].

The objective of the final project is to develop a family of expendable countermeasures from low-cost, low-power devices to relatively sophisticated jammers. These devices will be deployed in a [deleted] in order to enhance the effectiveness of our other countermeasures.

AIRBORNE WARNING AND CONTROL SYSTEM

Chairman ELLENDER. $160 million is requested for the continuation of development of the airborne warning and control system, referred to as AWACS. Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

TITLE. AIRBORNE WARNING AND CONTROL SYSTEM (AWACS)

CATEGORY—ENGINEERING DEVELOPMENT

Background.—AWACS will support all types of tactical combat operations and in air defense of the Continental United States (CONUS); thus it plays a role against enemy bombers and enemy air-to-air fighters in tactical theaters of operations. AWACS will replace surveillance and communications elements in both air defense and tactical forces. Present ground based systems have deficiencies (vulnerability, effectiveness against low altitude targets) and require a large number of sites for area coverage. A new capability to detect and track targets against ground clutter makes AWACS effective against low-altitude targets. Since the radar is accommodated in a high flying jet aircraft, the surveillance volume is greatly increased as compared to a ground based radar. AWACS survivability is increased due to its mobility, capability to maintain awareness of the developing air situation and capability to command weapons as appropriate including in its own defense. Many alternatives were considered including using the Navy E–2C equipment in other aircraft, and all new equipment installed in other aircraft such as the KC–135, Boeing 747, C–5, and C–141. Those alternatives were abandoned after consideration of many factors including cost, performance, and schedule trade-offs.

Description.—The airborne platform, a modified Boeing 707 aircraft, will be common for both defensive and tactical operations. Equipments include the radar, identification, sensors, navigation units and a data processor to provide an integrated presentation of the air situation on operator display consoles in near real time. Interchangeability in missions will be easily accommodated with change of central processor software. Additional operational requirements can readily be accommodated with plug-in/plug-out of electronic equipment. The system will be capable of detecting and tracking low flying aircraft targets in the presence of ground clutter, detecting bomber aircraft at distances of [deleted] nautical miles, tactical aircraft up to [deleted] nautical miles, automatic tracking of [deleted] targets, 7–9 hours on station time at 1000 nautical miles from base, and active interrogation of aircraft using a cooperative beacon in cryptological secure or standard mode. Defensive forces will use the AWACS to provide early detection of enemy aircraft and for battle management of interceptors. Tactical forces will use AWACS for command and control during the movement of a Composite Air Strike Force (CASF); while achieving and maintaining air superiority in a battle area; in providing direct air support to ground forces; and in accomplishing rescue and airlift missions. Its flexibility and versatility will enable it to be deployed at any level of military action ranging from a show of force through general war. AWACS will operate in the 1977 and following time period.

Work Performed By.—Contractors include: The Boeing Company, Seattle, Washington; Hughes Aircraft Corporation, Fullerton, California; and Westinghouse Corporation, Baltimore, Maryland. Air Force management is provided by the Electronic Systems Division, L. G. Hanscom Field, Bedford, Massachusetts.

Fiscal year 1972 Program.—The two radar sub-contractors, Hughes and Westinghouse, have completed fabrication and successful ground testing of the radars. The 707 aircraft modifications will be completed and airworthiness testing will be conducted during February 1972 to insure aerodynamic characteristics of the

modifications. The brassboard radars will be installed into each of the modified 707 aircraft and the competitive radar fly-off will begin late March 1972. The fly-off will continue into FY 73. AWACS avionics subsystem development to support the System Integration Demonstration part of the DDT&E phase was initiated following successful ground testing of the radars. There are no significant cost, schedule, or other changes in the program since last year.

Fiscal year 1973 Planned Program.—The competitive radar flight test program will continue between Hughes and Westinghouse using modified Boeing 707 aircraft. At the successful completion of the Brassboard Radar phase, November 1972, one of the two radar sub-contractors will be selected to continue with the AWACS program. The successful completion of the Brassboard Radar milestone is a prerequisite for initiation of the Design, Development, Test and Evaluation (DDT&E) phase. The avionics subsystem development, initiated in FY 72, will be continued. This effort supports the System Integration Demonstration which utilizes the selected radar and other mission avionics to demonstrate the total AWACS function. This demonstration will permit early initial operational suitability evaluation. An air vehicle from the Brassboard Radar Phase will be used. The demonstration will begin March 1974 and will evaluate the utility of AWACS through hardware demonstration prior to production. The DDT&E phase requires five initial production aircraft to demonstrate completion of all systems objectives including training adequacy and logistic support aspects as well as airborne operational effectiveness and operational suitability.

Three of these aircraft are to be procured with production funds in FY 73 and two in FY 74. The five aircraft will be cycled into the operational inventory after completion of the testing program.

Program to Completion.—The System Integration Demonstration will be conducted and the results will contribute to the FY 75 decision milestone to enter full production for the AWACS system. The testing and evaluation of the System Integration Demonstration will be completed December 1974. The five initial production aircraft will undergo extensive testing in conjunction with the using and supporting Commands—Tactical Air Command, Aerospace Defense Command, Logistics Command. Full Operational Capability is planned for [deleted] with a total force of 42 AWACS (includes five DDT&E aircraft). Total estimated cost to completion includes escalation costs averaging approximately 4% per year. The RDT&E total estimated cost increased approximately $195 million taking this escalation into consideration. The AWACS schedule slipped three months during Contract Definition while the contractual arrangements for the development portion of the program were changed from fixed price to post plus incentive fee. The production option is on a fixed price basis.

MILESTONES

[In millions of dollars]

Milestone	Date	Estimated cost to reach milestone
Engineering development contract award	July 1970	75
1st flight (Brassboard)	March 1972	241
End of flight test of brassboard	July 1972	288
Release for full D.D.T. & E	November 1972	316
System demo flight tests begin	March 1974	599
System demo test and evaluation completed	December 1974	721
Release for full production	do	721
Interim operational capability	[Deleted]	855
Full operational capability		880

Resources

[Dollar amounts in millions]

R. D. & E. funds:	
Fiscal year 1971 and prior	178.9
Fiscal year 1972	139.3
Fiscal year 1973	160.0
Additional to completion	402.0
Total, estimated cost	880.2

AWACS

Chairman ELLENDER. Earlier we discussed the procurement request of $309.9 million for the procurement of three of these aircraft. Just how is that request related to the R. & D. program for AWACS?

General GLASSER. The three aircraft for which procurement funds have been requested will initially be used in the development test and evaluation (D.T. & E.) phase of the AWACS program. At the conclusion of D.T. & E., the aircraft will become part of the operational inventory.

Chairman ELLENDER. Comment in detail on your planned program for fiscal year 1973.

General GLASSER. We plan to complete the brassboard radar flight test program and select a winning radar by November 1972. Basis of selection will be reviewed by the Defense Systems Acquisition Review Council (DSARC). Following DSARC review, four efforts will be initiated in fiscal year 1973. Full design, development, test and evaluation will commence. Eight-engine reconfiguration of the losing brassboard aircraft, and manufacturing on two development, test and evaluation aircraft will be initiated. Airborne tracking tests, with selected radar, will be conducted through April 1973. At the conclusion of the airborne tracking tests, additional avionics will be installed in the selected brassboard vehicle in preparation for systems integration demonstration.

Senator YOUNG. I note on page 491 that the total estimated cost for R. & D. for the AWACS program is now stated at $880.2 million. How does this compare with the original estimated cost of R. & D.?

General GLASSER. The original AWACS planning estimate was $692.7 million. Adjustments to this figure for economic escalation and configuration changes led to an initial development estimate of $876.5 million for the current program. The additional $3.7 million increase leading to the current figure of $880.2 million results from engineering, support, and estimating changes.

Chairman ELLENDER. It is my understanding that the funds for these first three aircraft are included in the procurement appropriation because these aircraft will later be reconfigured as operational aircraft. Am I correct about this?

General GLASSER. Yes, sir. That is correct.

Chairman ELLENDER. It is also my understanding that the fiscal year 1974 request for procurement will include two additional 707 aircraft that are required for your planned R. & D. program of AWACS. Is this correct?

General GLASSER. Yes, sir. That is correct. These two, like the other three, will be in the operational inventory most of their useful life.

Senator YOUNG. On page 489 of the descriptive summary under the heading "Fiscal Year 1971 and Prior Accomplishments," I note the following statement: "The Boeing Co. began modification of two Boeing 707 aircraft to accommodate rotodome and competing radars to be utilized as the airborne platform to conduct a competitive radar flight test program." Were these two 707 aircraft purchased by the Air Force for this effort?

General GLASSER. The Air Force paid for these aircraft through its cost plus contract with the Boeing Co. These aircraft will be refurbished and become part of the operational inventory.

Senator YOUNG. As I read the tabulation on page 490 of the descriptive summary, we do not expect a production decision on the AWACS decision until December 1974. Is this correct?

General GLASSER. Yes, sir. That is correct.

Senator YOUNG. This being the case, I am at a loss to understand why you are requesting funds in the procurement appropriation for three of these aircraft in 1973 to be followed by another request in fiscal year 1974 for two of these aircraft. Just why is this being done?

General GLASSER. The AWACS R. & D. aircraft, unlike most other R. & D. aircraft, are planned to become part of the operational inventory. Most of the 30,000 flying hour life of these aircraft will be used in the operational environment. This being so, procurement funding appears to be appropriate. This request for procurement funds should not be considered a production decision. A production decision will be sought after a successful system integration demonstration, and is anticipated for December 1974.

Chairman ELLENDER. Again referring to the tabulation on page 490 of the descriptive summary, it is indicated that the estimated cost of R. & D. to reach the full production decision in December 1974 is approximately $721 million. Does that total include the cost of these aircraft which are being procured with procurement funds?

General GLASSER. No, sir. It does not include the procurement funds requested for the design, development, test and evaluation aircraft.

Chairman ELLENDER. I wish you would review this program to determine if it would be possible to continue your R. & D. effort without going ahead with the procurement of these three very expensive 707 Boeing aircraft.

General GLASSER. These three aircraft are production prototypes for use in development testing and operational test and evaluation prior to entry into the operational inventory. From manufacturing start to rollout of a prototype test aircraft requires 30 months. This manufacturing time, when laid out in front of planned testing, necessitates the manufacturing start on these aircraft in fiscal year 1973.

ELECTROMATIC COMPATIBILITY ANALYSIS CENTER

Chairman ELLENDER. $4.5 million is requested for the Electromagnetic Compatibility Analysis Center. Selected paragraphs from the descriptive summary will be included in the record at this point.)

(The information follows:)

ELECTROMAGNETIC COMPATIBILITY ANALYSIS CENTER (ECAC)

CATEGORY: MANAGEMENT AND SUPPORT

Description.—The Electromagnetic Compatibility Analysis Center (ECAC) is a Department of Defense (DOD) facility established to provide advice and assistance on any electromagnetic compatibility (freedom from radio interference) to the Secretary of Defense, Joint Chiefs of Staff, the military departments and other DOD components. The Center, located at the United States Navy Marine Engineering Laboratory, Annapolis, Maryland, is managed by the Air Force, but is available to all DOD users. The Joint Chiefs of Staff, together with the Office of the Director of Defense Research and Engineering, directly provide detailed policy guidance, assignment of tasks, establishment of task priorities and other day-to-day guidance. The Center consists of an Air Force Commander, Deputies from the Army, Navy, Marines, and Air Force, and a civilian technical management staff assisted by a contractor. Work includes: establishment and maintenance of data bases which include an environmental data file, an equip-

ment characteristics file, and a terrain data file; development of mathematical models and computer programs; provision for convenient and rapid access to the data bases and analysis techniques for investigations of intra or inter-agency electromagnetic compatibility problems; analysis of characteristics of electromagnetic equipment in use, under development or proposed, to determine its electromagentic compatibility with other equipments in present and projected environments; and analysis of frequency allocations and assignments in support of frequency management in the military departments and in the Unified and Specified Commands.

Work performed by.—The responsible Air Force agency is the Electronic Systems Division, Hanscom Field, Massachusetts. Contractor is the IIT Research Institute, Annapolis, Maryland.

Fiscal year 1972 program.—The outstanding accomplishment of the year was going into a functional status with the Frequency Resource Records System. With this system, the world-wide frequency utilization of the Unified and Specified Commands is maintained at the Center to provide a quick response assistance to the operational forces on frequency utilization questions. The data flow incident to this system required installation of additional computer memories and other peripherals and used up most of the computer spare time which had previously been available for contingencies and workload fluctuations. The Univac 1108 computer now operates on a three-shift, five-day week, with a frequent single shift on the sixth day. Other work included continued development, updating and maintenance of the data base, advanced mathematical modeling to simulate characteristics of new types of receivers, transmitters and circuits. Data base outputs and short term projects occupied 19 man-years and spectrum management support occupied 15 man-years.

Fiscal year 1973 planned program.—Data base maintenance and outputs will continue. Capability developments will be conducted as required by analyses of need arising from new equipment planning. Emphasis will be given analyses of equipment and systems in the development phase as determined by the OSD and the Joint Chiefs of Staff. Reimbursing customer projects will include all but a few of the major systems in the developmental phase within the Department of Defense. The extent of each analysis depends on the nature of the system. The reduction of funds between FY 1972 and FY 1973 reflects a change in the rate of reimbursement rather than a reduction of the total program. As mentioned above, reimbursement from customers is expected to be about $2.5 million in FY 1973.

Program to completion.—Continuing program.

Resources

[Dollar amounts in millions]

R.D.T. & E. funds:	
Fiscal year 1971	5.4
Fiscal year 1972	5.0
Fiscal year 1973	4.5
Additional to completion	(1)
Total estimated cost	(2)

[1] Continuing.
[2] Not available.

ELECTROMATIC COMPATIBILITY ANALYSIS CENTER

Chairman ELLENDER. As I recall, this operation was at one time considered to be a Federal Contract Research Center, but it is no longer so considered. Am I correct about this?

General GLASSER. That is correct.

Senator YOUNG. Briefly, just what is the function of this center?

General GLASSER. This is a Department of Defense center assigned to the Air Force for management and funding. The center provides advice and assistance on electromagnetic compatibility, or freedom from electromagnetic interference, to the Secretary of Defense, the Joint Chiefs of Staff, the military departments and other Department of Defense components. The center has collected and maintains the

data base of equipment characteristics, locations, frequencies used, and terrain data. By use of mathematical models, computer programs and engineering ability, the center assists in minimizing the interference potential or in correcting interference situations throughout the equipment life cycle including planning, development, acquisition, siting, frequency selection, operation and modification. The funds in this program element only cover the basic program of data base maintenance, capability development, frequency management and short term projects. Other funds, expected to total $2.5 million in fiscal year 1973, reach the center through reimbursements for long-term projects supporting many of the major funded systems.

Chairman ELLENDER. How many civilian employees do you have at this center, and how many military assigned to this center?

General GLASSER. There are 43 Air Force civilians and eight Air Force military. In addition, there are assigned two Army, two Navy, and one Marine military officers as Deputy Directors of the center for the respective departments. Resident contractor personnel total just over 300.

LINCOLN LABORATORY

Chairman ELLENDER. The request includes $18 million for the Lincoln Laboratory, another one of the Air Force funded Federal contract research centers. Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

LINCOLN LABORATORY

CATEGORY—MANAGEMENT AND SUPPORT

Description.—Lincoln Laboratory was established in 1951 by the Air Force with participation by other agencies of the Department of Defense. It is operated as a Special Laboratory by the Massachusetts Institute of Technology under an Air Force cost reimbursement contract.

The mission of the Laboratory is to carry out a program of research and development pertinent to national defense, with particular emphasis on advanced electronics. Lincoln Laboratory's principal fields of specialty within the broad field of electronics are radar and optical sensors, signal design and processing, analog and digital technology, communications, electromechanical control systems, solid state technology, and antennas and electromagnetic propagation. Typical categories of activity include: (1) The evolution and demonstration of the feasibility of new concepts and technology; (2) Laboratory construction of initial models of equipment suitable for field demonstration and test; and (3) providing technical advice and consultation in areas of its demonstrated competence.

In order to provide policy and program guidance to the management of Lincoln Laboratory, a Joint Advisory Committee (JAC) has been established. The Commander, Air Force Systems Command (AFSC) is the Chairman; the Director of the Advanced Research Projects Agency (ARPA) and the Deputy Chief of Staff/Research and Development, U.S. Army are the other members. The Committee is supported by an Executive Group chaired by the Director of Laboratories, AFSC, and has four technical panels assigned to major laboratory program areas. To accomplish detailed technical reviews, each panel has representatives of the Army, Navy, Air Force and ARPA.

Work Performed By.—Headquarters, Air Force Systems Command (AFSC) and the Electronic Systems Division of AFSC are the responsible Air Force agencies. The work is done in-house by Lincoln Laboratory. However, subcontracts for purchase of hardware and/or software are let in those instances in which it is better economically and technically to do so. Typical subcontractors are: RCA, Moorestown, N.J.; Control Data Corporation, Minneapolis, Minn.; and Sylvania, Waltham, Mass.

Fiscal year 1972 program.—There are six Air Force line programs:

(1) *LES 8 & 9 Communications Satellites.* This is an experimental project which tests a conceptual approach to be used in an advanced Department of Defense Survivable Communication Satellite System for Command and Control. The two spacecraft will contain a satellite to satellite communications link and will demonstrate the feasibility of using [deleted] band frequencies for communications with Airborne Command Post aircraft and submarines. FY 72 efforts are primarily directed at carrying the technology developments through the breadboard design and construction stage.

(2) *Radar Techniques.* Since FY 67, this program has developed the technology necessary to build demonstration moving target indicator radars, both ground and helicopter borne, which will be used to help defend air bases or detect trucks or other moving targets in the presence of heavy foliage. A demonstration radar will be completed by the end of FY 72. The results are expected to provide the technical background necessary to design an advanced base-defense radar with enhanced range and target handling capabilities.

(3) *Air Traffic Control.* Beginning in FY 70, the Laboratory carried out a series of studies to assess some of the technical problems in radars, beacons, data links, cockpit displays and communications that must be solved in developing an advanced detection, surveillance and air traffic control system to serve both civil and military needs. The initial efforts in this area were entirely funded by the Air Force. However, by FY 72 over half of the program funding came from the Department of Transportation and Federal Aviation Agency and by FY 73 these agencies will completely fund the program.

(4) *Educational Technology.* A number of studies conducted over the past few years have indicated the feasibility of developing teaching machines or training terminals that would significantly reduce the present high cost of technical training. The Laboratory is developing a technology demonstration system of a machine capable of using audio, as well as video course material, based on photographic (microform) techniques. A laboratory demonstration terminal is presently under construction and will be field tested at Keesler AFB in FY 72.

(5) *Solid State Program.*—The purpose of this program is to carry out research and development of devices for advanced electronic applications and to investigate fundamental processes in solids that appear capable of leading to important new technology. The program consists of research in the areas of infrared sensors, tunable lasers, satellite optical components and high frequency microwave devices; development of prototype integrated circuits for laboratory programs and associated research; and certain selected fundamental research topics of high technological potential. This is a continuing effort.

(6) *Data Systems.*—The use of increasingly sophisticated computer systems in areas such as radar signal processing, command and control, information retrieval, picture processing and speech recognition has provided a continuing impetus for providing more complex computer structures utilizing higher speed devices and greater parallelism. The present emphasis in industry is in cost reduction (particularly in the case of storage) with relatively little R&D in more novel, complex logic configurations. This program, therefore, is aimed at developing high-performance digital machines which exploit advanced solid state device technology. This is also a continuing program.

Fiscal 1973 Program.—In this fiscal year, five of the six FY 72 programs will be continued. (1) *LES 8&9 Communications Satellite* ($9.500M). During this fiscal year, the two satellites will be carried through the prototype stage. Launch is scheduled for FY 75. (2) *Radar Techniques* ($1.100M). The demonstration radar should be completed by the end of FY 72 with the experimental program continuing through FY 73. (3) *Educational Technology* ($0.375M). Based on the Keesler AFB tests, a pre-production prototype of the teaching machine will be constructed and the Laboratory will provide technical assistance to the Air Force during procurement of a sufficient number for a full field evaluation. (4) *Solid State Program* ($5.540M) and (5) *Data Systems* ($1.485M). The basic and applied research in these areas will be continued from FY 72.

Program to completion.—This is a continuing program.

Resources

[Dollar amounts in millions]

R.D.T. & E. Funds	
Fiscal year 1971	19.5
Fiscal year 1972	18.0
Fiscal year 1973	18.0
Addition to completion	(1)
Total, estimated cost	(2)

[1] Continuing.
[2] Not available.

LINCOLN LABORATORY

Chairman ELLENDER. Comment generally on the type of work performed by this organization.

General GLASSER. Lincoln Laboratory carries out a program of research and development pertinent to national defense with emphasis on advanced electronics. The laboratory works for DOD and other Government agencies and provides us with a specialized, highly competent source of ideas and developments to meet defense needs. The principal fields of competence are: radar systems, communications, optical sensors, signal design and processing, electromechanical control systems, solid state technology, computer technology and applications, and electromagnetic propogation.

In pursuit of their mission, the laboratory conducts specific programs which include: the demonstration of feasibility of concepts and technology; fabrication of initial models of laboratory-developed equipment for field demonstration and test by DOD agencies; and the development and evaluation of advanced electronic concepts.

Senator YOUNG. Tell us why these efforts could not be performed within Air Force capabilities.

Secretary HANSEN. Lincoln Laboratory is a unique resource which the Air Force uses in attempting to resolve its most difficult electronic problems. It is this uniqueness which precludes its duplication inhouse for all practical purposes. For example, many of the personnel at Lincoln Laboratory are acknowledged authorities in their professional specialties. Its association as part of the Massachusetts Institute of Technology enhances that talent base from which the laboratory can solicit technical advice. Lastly, since the nature of work accomplished at the laboratory spans technology from applied research to systems concepts and prototype hardware development, there is a capability to exercise management flexibility to assign the appropriate talent to a dynamic workload. For these and other reasons then, the Air Force considers the efforts accomplished by Lincoln Laboratory to be the best supplement to our inhouse capability.

MITRE CORPORATION

Chairman ELLENDER. $8.5 million is requested for the MITRE Corporation, another one of the Air Force funded Federal Contract Research Centers. Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

TITLE. MITRE

CATEGORY—MANAGEMENT AND SUPPORT

Description.—The Mitre Corporation provides direct scientific and engineering assistance to the Electronic Systems Division (ESD) of Air Force Systems Command. ESD is responsible for developing, monitoring, and strengthening the U.S. capability in the field of electronic systems (command and control, communications, sensor and support systems).

The principal activities of the corporation are: *Planning and Analysis* (including requirements, functional and environmental analyses; conceptional design studies and feasibility and cost/effectiveness studies); *Systems Engineering/Technical Direction* (including design and specification preparation; design verification; acquisition support and contract technical direction; design control; and test and evaluation); *Systems Integration* (including preparation of interface specifications and standards and interoperability design, analyses, test and evaluation); *Technology Studies* primarily in the areas of information systems; communications systems (tactical, satellite, long haul, digital, and secure); and sensor systems (radar, optical, acoustic, and seismic) and *Foreign Systems Studies and Analysis.* Of these major tasks, the Systems Engineering/Technical Direction and Systems Integration efforts are generally funded from appropriate system program funds. However, the work in planning and analysis, research, experimentation, etc., are performed with funds provided under this program element. These efforts mutually support each other.

The Corporation provides personnel with outstanding technical capabilities in the areas of computer hardware, software and peripheral equipment; digital communications, signal processing; data compression; communications devices and techniques; sensor devices and techniques; systems analysis and costing; and technical management.

Work performed by.—The responsible Air Force management agency is the Electronic Systems Division, L. G. Hanscom Field, Bedford, Mass. All work is performed by the Mitre Corporation, Bedford, Mass.

Fiscal year 1972 program.—Three main areas are funded from this program element: planning and analysis, technology studies, and Foreign Technology. The planning and analysis area includes such projects as Have Edge (a program to provide a realistic operational test environment for all phases of air penetration and weapon delivery under combat-like conditions); new requirements for use of the Advanced Airborne Command Post; Post-1975 Automatic Tactical Command and Control Systems (Seek Flex); Tactical Command Control and Communications Systems Analysis; Unified Communication, Navigation Identification System; Space Relay Communications; Data Management Systems; and Command and Information Systems Security. Technology studies are centered on the areas of information systems, communications and navigation equipment and improved data transmission systems. In the area of Foreign Technology, Mitre technical analysis of foreign command, control, and communications systems and developments provides direct support to Electronic Systems Division (ESD) and Air Force weapons systems development offices.

Fiscal year 1973 program.—Funds are requested under this program element in FY 1973 for the same areas described for FY 1972. The following three proposed projects serve as typical examples of work the Mitre Corporation will perform: (1) Have Edge—prepare technical inputs to procurement and programming documentation; review, analyze and evaluate contractor proposals and the results of contractor efforts; prepare system performance specifications, provide technical portions of Statements of Work; and provide technical planning assistance for transition to a system acquisition program. (2) Command and Management Systems—this project involves technical developments concerning data management systems, computer system security, and software technology. The Mitre support effort will include evaluation of commercially available products and the preparation of design analyses to meet Air Force requirements. (3) Low Cost Automatic Radar Techniques—experimentally explore techniques for achieving radar surveillance and tracking with very low initial cost and extremely low

operating and maintenance cost through the use of highly reliable subsystems which function automatically. The proposed effort is the design, construction, and evaluation of a single experimental module using newly available microwave transistors.

Program to completion.—This is a continuing program.

Resources

[Dollar amounts in millions]

R.D.T. & E. funds:	
Fiscal year 1971	9.0
Fiscal year 1972	8.5
Fiscal year 1973	8.5
Addition to completion	(1)
Total estimated cost	(2)

[1] Continuing.
[2] Not available.

MITRE Corp.

Chairman Ellender. Comment generally on the nature of the work performed by this organization, and tell us why this work could not be performed in-house.

General Glasser. MITRE provides scientific and engineering assistance to the Electronic Systems Division (ESD) of Air Force Systems Command in the general fields of command and control, communications, sensor, and support systems. Work in the systems engineering/technical direction area includes design and specification preparation; design verification; acquisition support and contract technical direction; design control; and test and evaluation. The corporation activities also include conceptual planning and analyses. These analyses provide a means to translate Air Force operational requirements into technical requirements, discover deficiencies in our command and control systems, and evolve conceptual ideas toward more timely and economical systems.

MITRE furnishes expert skills in a diverse range of technical disciplines, and both industrial and engineering experience over a wide range of systems. Over 60 percent of the MITRE technical staff were with industry in their immediately preceding jobs. MITRE also provides flexibility and objectivity which could not be totally duplicated in-house.

PROGRAMWIDE MANAGEMENT AND SUPPORT

Chairman Ellender. $384.2 million is requested for the budget activity entitled, "Programwide management and support". How much was provided for this budget activity for fiscal years 1971 and 1972?

General Glasser. For prior years, the amounts made available for this budget activity, restructured for comparability with fiscal year 1973, were: $333,244,000 for fiscal year 1971 and $349,304,000 for fiscal year 1972.

International Research, Development, Test and Evaluation

Chairman Ellender. $4.1 million is requested for "International research, development, test, and evaluation". Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

TITLE. INTERNATIONAL RESEARCH, DEVELOPMENT, TEST AND EVALUATION

CATEGORY—MANAGEMENT AND SUPPORT

Description.—These funds support effort within the free world to establish and conduct international research, development, test and evaluation with friendly nations. This joint effort permits sharing program costs, technical knowledge, unique techniques and production capacity and seeks to eliminate unnecessary duplication, promote unity of purpose, and standardization of equipment.

International RDT&E may be categorized generally into four groups: (1) Information Exchanges, (2) cooperative R&D projects, (3) support for International Military Agencies, and (4) Evaluation of Allied Developments. The first category is exercised through the Mutual Weapons Development Data Exchange Program and the Defense Development Data Exchange Program. Under these programs, the US has agreed to exchange scientific and technical data with countries throughout the free world. Information exchange occurs also through such international organizations as the NATO Advisory Group for Aerospace R&D (AGARD), the NATO Air Force Armaments Group, the NATO Tri-Service Group on Air Defense and The Technical Cooperation Program. The second category consists of a number of bilateral agreements with allied countries which result in jointly developed hardware or research to satisfy mutual requirements. The third category formally PE 01004F) provides technical support to the SHAPE Technical Center (STC) and NATO Air Defense Ground Environment (NADGE) program. The fourth category provides for the test and evaluation of systems, subsystems and equipments developed by allied nations which may satisfy USAF requirements (formally PE 64736F).

This program pays for the travel and per diem expenses of the many experts, technicians, engineers, negotiators, and project managers who regularly travel to free world countries to promote and monitor international RDT&E. This provides funding support (administrative, logistics, language services) for international meetings and symposia held in and hosted by the US. In addition, this program pays salaries and allowances for 20 US civilian employees at the STC and 12 contract personnel from MITRE for the NADGE program. Finally the program provides funds to lease or buy equipment; make modifications, if required; provide technical and operational test support and engineering studies for the evaluation of allied developed equipments.

Categories 1 and 2 are funded under project 1218, Support for Cooperative R&D. Category 3 items are funded under projects 1215, Support for SHAPE Technical Center, and 1216, Technical Support for NATO Air Defense Ground Environment. Category 4 items are funded from Project 1217, Allied Weapons Evaluation.

Work Performed By.—The program is monitored by the Assistant for International R&D Programs, Deputy Chief of Staff, Research and Development, Headquarters United States Air Force. Work is performed by The Air Force Systems Command and its intermediate commands and laboratories. The evaluation of the Oerlikon 304 RK gun is accomplished by the Hughes Tool Company and the Armament Development Test Center.

Fiscal year 1972 program.—Significant accomplishments by programs are summarized as follows:

Project 1218: The project with Canada to develop an air cushion landing system continues. 19 inactive DEAs were terminated and 12 new DEAs with France commenced. The four cooperative projects with Germany continue and one DEA was signed. Two DEAs with Israel were begun. Under AGARD the US hosted two international symposia.

Project 1217: The USAF began design and fabrication of equipment required to evaluate the Swiss Oerlikon 304 RK 30 mm gun. Evaluation will begin in November 1972. This gun system will be evaluated to determine if it can satisfy potential USAF requirements. A simulation evaluation of the French MATRA 550 air-to-air missile is scheduled.

Project 1215: The US personnel at STC are currently engaged in approved studies in the fields of command and control, communications, cost effectiveness, force planning and computer modeling.

Project 1216: The MITRE engineers represent the US at technical conferences on computer software and configuration control. They have helped resolve many subsystems interface problems while participating in site testing and acceptance activities.

Fiscal year 1973 planned program:

Project 1218: Negotiations will continue with those countries with whom tentative agreements exist. Effort will be directed to promote and expand international cooperative R&D with our allies.

Project 1217: The evaluation of the Oerlikon 30 mm gun will continue. Other foreign developments to be evaluated include the Mirage Milan and F.1 fighter aircraft, the Franco-German Alphajet Trainer Aircraft and the UK-French Martel Air-to-Ground Missile.

Project 1215: These activities of the US personnel at STC will help implement the approved FY 1973 annual program of work.

Project 1216: The MITRE personnel will continue to support implementation, checkout and acceptance testing for the NADGE sites. The final NADGE site is scheduled to be accepted in December 1972. MITRE support will be phased down in August 1972.

Program to completion.—Projects 1215, 1217, and 1218 are continuing projects. Project 1216 is to be completed in FY 73.

RESOURCES

[In millions of dollars]

	Fiscal year—			Additional to Completion	Total estimated cost
	1971	1972	1973		
R.D.T. & E. funds (total)	1.2	2.4	4.1	(1)	(2)
Project:					
1218	.2	.3	.3	(1)	(2)
1217	0	1.0	2.9	(1)	(2)
1215	.5	.6	.6	(1)	(2)
1216	.5	.5	.3	0	(2)

[1] Continuing.
[2] Not available.

INTERNATIONAL RESEARCH, DEVELOPMENT, TEST AND EVALUATION

Chairman ELLENDER. Please provide a tabulation for the record listing the projects to be funded under this program, the amounts for each for fiscal year 1971 and 1972, and the estimate for fiscal year 1973.

General GLASSER. Yes; I can provide that for the record.

(The information follows:)

[In millions of dollars]

	Fiscal year—		
	1971	1972	1973
Projects:			
1215—Support for SHAPE technical center	0.5	0.6	0.6
1216—Technical support for NATO air defense ground environment	.5	.5	.3
1217—Allied weapons evaluation	0	1.0	2.9
1218—Support for cooperative R. & D	.2	.3	.3

Chairman ELLENDER. Could you describe each of these projects briefly for us and tell us what their major objectives are?

General GLASSER. We have recently combined all of our program elements related to international R. & D. into this single program element. The program element now has four projects and I would like to provide a description of these projects for the record.

(The information follows:)

Project 1215, Support for the SHAPE Technical Center (STC). STC provides engineering and analysis support for SACEUR and SHAPE. The United States has long supported this activity with funds and personnel. Currently, there are 18 U.S. Air Force civilians on loan to STC. This project provides for the salaries of these civilian employees. The overall objective is continued scientific support of STC.

Project 1216, Technical Support for the NATO Air Defense Ground Environment (NADGE). NADGE is currently being installed within NATO. Near the beginning of the project, each nation was asked to provide a share of the qualified people required for the engineering, installation and check-out of the overall system. The U.S. share was 12 people. The Mitre Corporation, which had provided similar support to the U.S. Air Force during the acquisition of CONUS Air Defense Systems was asked to provide this support. This project provides funds to pay the salaries of these employees. It is nearly complete and the support will be phased down during fiscal year 1973. The overall objective is continued support of the NADGE system.

Project 1217, Allied Weapons Evaluation. The purpose of this project is to test and evaluate weapons systems developed by our allies which may meet U.S. Air Force requirement. We are currently testing the Oerlikon 304RK 30mm gun and plan to complete this testing during fiscal year 1973. Additionally, we are reviewing other systems such as the French developed Mirage 5, the Mirage Milan and the MATRA 550 air-to-air missile. We plan to test the United Kingdom MADGE tactical approach and landing system. The objective is to jointly reduce duplicative R. & D. within the Alliance.

Project 1218, Support for Cooperative R. & D. This project provides for the travel and per diem expenses of the many experts, technicians, engineers and project managers who regularly travel to free world countries to promote and monitor international R.D.T. & E. This project also provides the required funding to support international meetings and symposia held in and hosted by the United States. The objective is to promote the interchange of technical and scientific information within the Alliance.

Senator YOUNG. I note that funds from this program have been used to pay the salary and allowances of 12 personnel from the MITRE Corp. who are assigned to the NATO air defense ground environment program. Why was it necessary to use personnel from the MITRE Corp. instead of Air Force personnel?

General GLASSER. As I recall, there were three factors considered in selecting the MITRE Corp. for supporting this task. These were timely support of NADGE, the availability of personnel and the temporary, though long term, nature of the task. The requested personnel were required on a timely basis to get on with the project. While we had some qualified USAF personnel, these were not available in the quantities required. MITRE had provided similar support to the USAF and was well qualified. All in all, our judgment at the time indicated that the optimum way of responding to this NATO request was to task MITRE. The arrangement has been satisfactory and, as indicated previously, the task should be completed during fiscal year 1973.

Chairman ELLENDER. I note on page 504 of the descriptive summary that "MITRE support will be phased down beginning in August 1972." Precisely what does this mean in terms of the funds that have been used to contract for the services of MITRE in this program?

General GLASSER. These funds will decrease. In fiscal year 1973 we are showing a 40-percent decrease in funds to support this program—down to $0.3 million. We are not planning for any further funds in this area after fiscal year 1973.

Chairman ELLENDER. If the "phasing down" of MITRE support means that fewer Mitre personnel will be used, will they be replaced, and if so, by whom?

General GLASSER. The "phasing down" marks the completion of this portion of our support to NADGE. The people will not be replaced.

Senator YOUNG. The $4.1 million you are requesting for fiscal year 1973 is $1.7 million more than was provided for fiscal year 1972. Why do you need this increase?

General GLASSER. While there is a $1.7 million net change in the amounts requested for fiscal year 1972 and fiscal year 1973, this reflects a combination of a decrease of $0.2 million in the support of NADGE and an increase of $1.9 million in our allied weapons evaluation program. We expect requirements for these funds to increase as we identify more allied developments for testing. This reflects both our increasing interest in these system developments and our increasing awareness in the capabilities of our allies to develop weapons systems.

ARNOLD ENGINEERING DEVELOPMENT CENTER BASE COSTS

Chairman ELLENDER. $53.7 million is requested for the project entitled "Arnold Engineering Development Center Base Costs." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

TITLE. ARNOLD ENGINEERING DEVELOPMENT CENTER BASE COSTS

CATEGORY—MANAGEMENT AND SUPPORT

Description.—Arnold Engineering Development Center (AEDC) provides ground environmental test support for all DOD aeronautical, missile, and space programs such as Minuteman, F–15, B–1, Close Air Support Aircraft (AX), Advanced Ballistic Re-Entry Systems (ABRES), Safeguard as well as for other government agency programs. The Center comprises three test facility complexes encompassing wind tunnels, altitude rocket cells, aeroballistic ranges, altitude engine cells, space chambers, together with required support and administrative facilities. The test facility complexes are: the Von Karman Facility, which performs aerodynamic testing of scale models of aircraft, missile and space systems at Mach numbers 1.5 to above 20; testing of full or large scale satellites, sensors and space vehicles in a simulated space environment and projectiles both high performance and conventional guns at altitudes and re-entry conditions; the Engine Test Facility, which provides altitude environmental testing for aircraft, missile, and spacecraft propulsion systems including turbojets, turbofans, and both liquid and solid propellant rockets; the Propulsion Wind Tunnel Facility, for testing large-scale models, and in some cases, full-scale aircraft, missiles, and space boosters together with their propulsion systems at Mach Numbers of 0.5 to 4.5. The operation of AEDC was funded under the Air Force Industrial Fund with the program element providing the funds for base costs and the users providing test costs. Industrial fund operation was terminated in FY72. The Center is institutionally funded under program element listed above. This National Test Facility evaluates aerospace systems, hardware, concepts and prototypes in simulated operating environments to assist project managers and program directors in effective development and acquisition. These test facilities assist in obtaining an optimal design, evaluation and certification of performance, and acceptance of hardware by providing accurate data at minimum cost. Ground testing complements flight testing and is an important technique in the "fly-before-you-buy" concept of system development.

Work performed.—Under the direction of the Air Force Systems Command, the AEDC Commander and his staff provide the over-all planning, programming, funding, and administration of the test center. A private company, ARO, Inc., Tullahoma, Tennessee, operates the test facilities and support activities at the Center. Approximately 85 percent of the total AEDC budget is applied on the operating contract.

Fiscal year 1972 program.—Major direct support with environmental testing is being provided for the F–15, B–1, Advanced Ballistic Re-Entry Systems, Minuteman, Advanced Surveillance devices, aerospace propulsion, flight dy-

namics, and munition development. Technical support and test equipment is being provided for a new air-breathing engine test facility now under construction (1969 Military Construction Program) which will permit testing ram jets and other engines for low-altitude, high-speed operations. The performance of this new facility will represent a unique capability in the United States. Improved Test equipment and testing technology and instrumentation development is also provided in support of the Center's test mission.

Fiscal year 1973 planned program.—The Center will continue to be a prime contributor to the successful development of Department of Defense and National Aeronautics and Space Administration, aeronautical, missile and space systems. Systems which have major test programs projected for FY 1973 include the F–15, B–1, Close Air Support Aircraft (AX), Minuteman III, Advanced Ballistic Re-Entry Systems, Airborne Warning and Control Systems (AWACS), Subsonic Cruise Armed Decoy (SCAD); Advanced Sensors, and aerial munitions development. AEDC (Arnold Engineering Development Center) will maintain its continuing effort in testing technology and test instrumentation development to improve and modernize its existing test capabilities to provide the best possible test data at minimum cost. Advanced facility plans exist for maintaining the Center's capability through the Military Construction Program to support development of all advanced systems in the foreseeable future. The increase in funding in FY 1973 is the result of the transfer of the Center's operations from the industrial fund with users paying the test costs to full institutional funding. The forecast test program for 1973 requires 31,700 hours and is a small increase from the 29,300 forecast for FY 1972. The budget level will require reduced operation of the Von Karman Facility placing all wind tunnels and impact ranges on standby status.

Program to completion.—This is a continuing program.

Resources

[Dollar amounts in millions]

R.D.T. & E. funds:	
Fiscal year 1971	8.7
Fiscal year 1972	12.6
Fiscal year 1973	53.7
Additional to completion	(1)
Total estimated cost	(2)

[1] Continuing.
[2] Not available.

ARNOLD ENGINEERING DEVELOPMENT CENTER BASE COSTS

Chairman ELLENDER. Comment generally on the mission of this center.

General GLASSER. The primary mission of the Arnold Engineering Development Center is to support the timely acquisition of superior aerospace systems by conducting development and evaluation testing in environmental test facilities for the Air Force, other Government agencies and industry. This is accomplished by operating wind tunnels, altitude aircraft engine test cells, aeroballistic ranges, altitude rocket motor cells and space chambers.

Chairman ELLENDER. As I indicated earlier, the request for fiscal year 1973 is $53.7 million, which is an increase of $41.1 million over the sum provided for fiscal year 1972. On page 506 of the descriptive summary, I note the following statement: "The increase in funding in fiscal year 1973 is the result of the transfer of the Center's operations from the industrial fund with users paying the test costs to full institutional funding." Tell us just what is involved in this transfer of funding and why it was deemed necessary to change the source of funding for this Center.

General GLASSER. The Arnold Engineering Development Center was the lead Air Force R. & D. activity to be operated under the management concept of industrial funding. This did not prove successful; therefore, operation in fiscal year 1973 will be returned to institutional funding. In order to increase the AEDC fiscal year 1973 program element from $12.5 to $53.7 million each of the programs that identified funds in their individual budgets for testing at AEDC was reduced by the identified amount and that amount was added to the AEDC program element. Thus additional R.D.T. & E. funds were not required, only rearrangement within the total program.

Senator YOUNG. Give us several examples of some of the major systems that will be supported by this Center during fiscal year 1973.

General GLASSER. The F–15, B–1, Minuteman, Airborne Warning and Control System, A9/10 close air support aircraft, and SCAD, the subsonic cruise armed decoy.

Chairman ELLENDER. On page 507, I note the following statement: "The forecast test program for 1973 requires 31,700 hours and is a small increase from the 29,300 forecast for fiscal year 1972. The budget level will require reduced operation of the Von Karman facility placing all wind tunnels and impact ranges on standby status." Please elaborate on this statement.

General GLASSER. The budget level of $53.7 million requires a reduced operation of the Arnold Engineering Development Center. This level necessitates placing on standby the supersonic and hypersonic wind tunnels of the Von Karman facility. Some of the forecast test programs cannot be accomplished; however, the major weapon systems will be supported by the other test facilities of AEDC.

DEVELOPMENT AND TEST SUPPORT

Chairman ELLENDER. $138.7 million is requested for the management and support program entitled "Development and test support." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

TITLE. DEVELOPMENT AND TEST SUPPORT

CATEGORY—MANAGEMENT AND SUPPORT

Description.—This program provides resources for operating the Test Centers of the Air Force Systems Command. The operation of the Centers includes both the technical mission and base support functions. The categories of expense for operating the Centers includes the following: pay and related costs of civilian personnel, travel, transportation, rents, communications, utilities, contractual services, supplies, and equipment.

Work Performed By.—Air Force Flight Test Center, Edwards AFB, Calif., Air Force Special Weapons Center, Kirtland AFB, N.M., Armament Development Test Center, Eglin AFB, Fla.

Program Accomplishments and Future Plans.—Plans and accomplishments are reflected in the individual programs of advanced, engineering and operational systems receiving support from the organizations funded by this element.

1. *Fiscal year 1971 and Prior Accomplishments.*—Not available.
2. *Fiscal year 1972 Program.*—Not available.
3. *Fiscal year 1973 Planned Program.*—Not available.

Program to Completion.—This is a continuing program.

Resources

[Dollar amounts in millions]

R.D.T. & E. funds:	
Fiscal year 1971	$143.6
Fiscal year 1972	140.3
Fiscal year 1973	138.7
Additional to completion	(1)
Total estimated cost	(2)

[1] Continuing.
[2] Not available.

DEVELOPMENT AND TEST SUPPORT

Chairman ELLENDER. Please provide for the record a tabulation listing the test centers supported under this program, the amounts provided for their support in fiscal years 1971 and 1972, and the estimate for fiscal year 1973.

General GLASSER. Yes, sir.

(The information follows:)

[In millions of dollars]

	Fiscal year—		
	1971	1972	1973
Air Force flight test center	41.0	44.6	46.0
Air Force special weapons center	39.9	28.6	27.5
Armament development test center	62.7	67.1	65.2
Total program element	143.6	140.3	138.7

On January 1, 1971, command of Holloman AFB was assumed by the Tactical Air Command. This action resulted in the reduced funding for Air Force Special Weapons Center in fiscal year 1972.

Senator YOUNG. Would you please comment on the basic missions of the three test centers supported under this program?

General GLASSER. The mission of the Air Force Flight Test Center includes flight testing and evaluation of manned and unmanned aircraft systems, development testing of aerodynamic decelerators, evaluation testing of runway barrier and arresting equipment, and operation of the aerospace research pilot school. In addition, it supports and participates in selected test and evaluation programs of other Government agencies, contractors, and, on occasion, foreign governments. It currently provides support to 44 tenants which include: NASA Flight Research Center, Rocket Propulsion Laboratory, Army Aviation Test Activity, and Federal Aviation Agency.

The responsibility of the Armament Development Test Center is the development of all Air Force nonnuclear munitions. The complete development cycle, from exploratory research through acquisition of the munition, is accomplished at the Center. Armament and munitions—including aircraft systems and subsystems, allied equipment, guns, bombs, rockets, targets and drones, and airborne electronic countermeasure equipment—all are developed, tested, and evaluated on the ranges at the Armament Development Test Center. Development and testing are conducted under a variety of conditions, from simulated combat to climatic tests performed in the McKinley Climatic Laboratory.

The Center also supports and assists more than 40 other organizations at Eglin, including the Tactical Air Command's Special Operations Force, the Tactical Air Warfare Center, the 33d Tactical Fighter Wing, the Military Airlift Command's 39th Aerospace and Recovery Wing and the Army's Ranger training program.

The Air Force Special Weapons Center is responsible for the aerospace test and evaluation at Kirtland and Holloman Air Force Bases in New Mexico. The Center supports a broad spectrum of programs including nuclear and advanced weaponry, guidance navigation and laser technology, missilry and development of airborne subsystems. Specifically, its mission is to conduct aircraft compatibility testing of special weapons and associated equipment; test and evaluate airborne missiles; plan for and provide air support for nuclear weapons testing; test and evaluate navigational and guidance systems; conduct air operations and support the AEC/DOD nuclear test program; provide USAF interface with White Sands Missile Range (WSMR) and air support including drones to White Sands Missile Range; test and evaluate electro-optical sensor systems; and to operate the central inertial guidance test facility, the high speed test track facility and the radar target scatter facility.

Chairman ELLENDER. Please provide for the record a tabulation showing the number of civilian employees at each of these test centers, the funds necessary for their compensation and benefits and the number of military personnel assigned to each of the test centers.

General GLASSER. Yes, sir.

(The information follows:)

[In millions of dollars]

	Fiscal year 1973		
	Civilian	Civilian pay	Military
Air Force Flight Test Center	1,660	21.6	2,668
Air Force Special Weapons Center	1,220	21.2	1,766
Armament Development Test Center	2,185	31.1	3,537
Total	5,065	73.9	7,971

Senator YOUNG. I note that the $46.1 million you are requesting for the support of the Flight Test Center is $1.4 million more than was provided in fiscal year 1972. Why do you need this increase?

General GLASSER. The increase results from two causes. In fiscal year 1973 we will pay our first full year's rental on the CDC 6500 computer, which we installed at the Flight Test Center in the middle of fiscal year 1972. This full year's rental will absorb about $500,000 of the increase in fiscal year 1973.

The other $900,000 will provide for the civil service pay raise and continue our program for upgrading the test instrumentation.

Chairman ELLENDER. For the Special Weapons Center in New Mexico your request of $27.5 million is $1.1 million less than was provided in fiscal year 1972. What has happened to cause this decrease?

General GLASSER. By reducing the element of expense for instrument equipment we have reduced the overall budget figure for the Air Force Special Weapons Center to $27.5 million for fiscal year 1973.

This will cause a stretchout of our instrumentation upgrade program, but is necessary in order to meet other requirements within the R.D.T. & E. budget.

Chairman ELLENDER. I also note that your request for $65.2 million is $1.8 million less for fiscal year 1973 than for fiscal year 1972 for the Armament Development Test Center. Why is this?

General GLASSER. Two things are responsible for the decrease. Our progress in fiscal year 1972 has reduced our requirement for fiscal year 1973 facility projects by $1.3 million. Another reduction in costs for fiscal year 1973 was achieved by deferring some aircraft inspection and repair work, known as IRAN. This will result in an increase in estimated costs for IRAN in fiscal year 1974. The reduction of IRAN costs in fiscal year 1973 is about $1.8 million. Even though the facility projects and IRAN are sizable reductions, the slight increases in costs for transportation, communications, civilian pay, utilities, to name a few, result in a net reduction of $1.8 million.

ACQUISITION AND COMMAND SUPPORT

Chairman ELLENDER. $187.6 million is requested for the management and support program entitled "Acquisition and Command Support." Selected paragraphs from the descriptive summary will be included in the record at this point.

(The information follows:)

TITLE. ACQUISITION AND COMMAND SUPPORT

CATEGORY—MANAGEMENT AND SUPPORT

Description.—This program element provides the resources to support the Commander, his staff, the technical mission, and base support functions at each of the organizations listed below. Categories of cost include pay and related costs of civilian personnel, travel, transportation, rents, utilities, contractual services, supplies and equipment.

Work Performed By:

Headquarters, Air Force Systems Command, Andrews AFB, MD.
Aeronautical Systems Division, Wright-Patterson AFB, OH.
Electronic Systems Division, Hanscom Field, MA.
Aerospace Medical Division, Brooks AFB, TX.
Space and Missile Systems Organization, Los Angeles AFS, CA.

Program Accomplishments and Future Plans.—Plans and accomplishments are reflected in the individual program elements supported by the organizations listed above.

1. *FY 1971 and Prior Accomplishments:* NA.
2. *FY 1972 Program:* NA.
3. *FY 1973 Planned Program:* NA.
4. *Program to Completion:* Continuing.

Resources

[Dollar amounts in millions]

R.D.T. & E. funds:	
Fiscal year 1971	[1] 179.8
Fiscal year 1972	[1] 194.0
Fiscal year 1973	[1] 187.6
Additional to completion	(2)
Total estimated cost	(3)

[1] Funding restructured to reflect fiscal year 1973 consolidation of P.E. 65806F communications costs into P.E. 65304F, Western Test Range (DCS).
[2] Continuing.
[3] Not available.

Senator YOUNG. How many civilian employees are engaged in this program, and how much of the total requested is for their compensation and benefits?

General GLASSER. Civilian employees in the program total 9,124. Their compensation and benefits amount to $150,546,000.

Chairman ELLENDER. $92.8 million is requested for the support of the Aeronautical Systems Division. What is the basic mission of this division?

General GLASSER. The Aeronautical Systems Division manages the planning, programing, development, acquisition, and testing of aeronautical systems and related equipment. The Division further is responsible for the overall Systems Command's limited war and special air warfare programs and for reconnaissance systems and associated equipment.

Senator YOUNG. $36.8 million is requested for the Electronic Systems Division in Hanscom Field, Mass. What is the basic mission of this division?

General GLASSER. The Electronic Systems Division mission is to plan for command and control and communications-electronics systems for aerospace forces. ESD is the lead division for design and acquisition of systems and related equipment for command and control, communications-electronics, and range instrumentation.

Chairman ELLENDER. $29.3 million is requested for the Space and Missile Systems Organization in Los Angeles Air Force Station, Calif. What is the basic mission of this organization?

General GLASSER. The Space and Missile Systems Organization plans, programs, and manages system programs to acquire qualitatively superior space and missile systems, aerospace ground equipment and other subsystems and related hardware; provides for the activation and alteration of missile sites and ground launch facilities; performs the function of launch, on-orbit tracking, data acquisition, and command and control of DOD satellites; and effects recovery of various space packages.

Sentor YOUNG. $5.7 million is requested for the Aerospace Medical Division, Brooks Air Force Base, Tex. What is the basic mission of this division?

General GLASSER. The Aerospace Medical Division plans and executes the Air Force exploratory, advanced, and engineering development programs to provide biomedical support for aerospace systems; advance aerospace biotechnology; determine the personnel hazards of aerospace environments and establish human tolerance to them.

Chairman ELLENDER. $22.9 million is requested for the Headquarters, Air Force Systems Command, Andrews Air Force Base, Md. What is the basic mission of this command?

General GLASSER. The Headquarters, AFSC mission is to advance aerospace technology, adapt it into operational aerospace systems, and acquire qualitatively superior aerospace systems and material to accomplish the Air Force mission. The Commander and his staff manage the resources and provide direction and guidance to subcommands. Liaison is maintained with other Air Force commands, services and agencies to keep abreast of operational problems.

FEDERAL CONTRACT RESEARCH CENTERS

Chairman ELLENDER. The total budget requested for research and development for the Air Force includes $110.8 million for work to be performed by the various Federal contract research centers. Other Air Force appropriations include an additional $23.4 million for work to be performed by these organizations as follows: Aircraft procurement, $110,000; missile procurement, $3.6 million; other procurement, $16.7 million; and operation and maintenance, $3.1 million. The tabulation appearing on pages 81 and 82 of the justifications setting out the total available for each of the centers by appropriation for fiscal years 1971 and 1972, and the estimate for fiscal year 1973, will be included in the record at this point.

(The information follows:)

DEPARTMENT OF THE AIR FORCE PROPOSED PROGRAM FOR FISCAL YEAR 1973

SUMMARY OF FEDERAL CONTRACT RESEARCH CENTERS BY APPROPRIATIONS

[In thousands of dollars]

	Fiscal year—		
	1971 actual	1972 estimate	1973 estimate
Aerospace Corp.:			
R.D.T. & E.	50,771	42,410	46,598
Aircraft procurement	0	64	110
Missile procurement	3,256	6,448	3,568
Other procurement	9,312	12,070	14,219
Operations and maintenance	379	535	530
Total, Aerospace Corp.	63,748	61,527	65,025
MITRE Corp.:[1]			
R.D.T. & E.	20,728	24,118	26,091
Other procurement	3,950	4,334	2,470
Operations and maintenance	1,622	952	2,595
Total, MITRE Corp.	26,300	29,404	31,156
Lincoln Laboratory: R.D.T. & E.	25,550	25,000	26,828
RAND Corp.: R.D.T. & E.	11,180	9,600	8,000
Analytic Services, Inc.: R.D.T. & E.	1,799	1,770	1,859
Applied Physics Laboratory/Johns Hopkins University: R.D.T. & E.	1,092	500	1,225
Human Resources Research Organization (HUMRRO): R.D.T. & E.	0	50	150
Total, program summary by appropriation:			
R.D.T. & E.	111,120	103,448	110,751
Aircraft procurement	0	064	110
Missile procurement	3,256	6,448	3,568
Other procurement	13,292	16,404	16,689
Operations and maintenance	2,001	1,487	3,125
Total, Federal contract research centers	129,669	127,851	134,243

[1] Contract reduced by 2 months during fiscal year 1971 to align it with the fiscal year.

AEROSPACE CORP.

Chairman ELLENDER. Earlier in our discussions of the R.D.T. & E. request, we discussed the $13.5 million requested for the aerospace basic program. Including this $13.5 million for the basic program, there is a total of $46.6 million requested in the R. & D. appropriation for work to be performed by the Aerospace Corp. Other Air Force appropriations include approximately $18.4 million for work to be performed by Aerospace for a total of $65,025,000. The tabulation appearing on pages 83, 84, and 85 of the justifications giving the sources of funding of this $65 million will be included in the record at this point.

(The information follows:)

DEPARTMENT OF THE AIR FORCE PROPOSED PROGRAM FOR FISCAL YEAR 1973

AEROSPACE CORPORATION

[In Thousands of dollars]

		Fiscal year—		
		1971 actual	1972 estimate	1973 estimate
R.D.T. & E. appropriation				
65402	Basic Program	19,500	15,000	13,500
	Other programs:			
63421	Satellite system for precise navigation	150	500	680
12431	Defense support program	6,700	7,323	9,562
34111	Special activities	6,395	1,900	2,006
(1)	Titan III	1,950	1,064	1,115
63402	Space test program	1,064	1,249	2,349
35158	Satellite data system	1,567	1,800	1,921
63311	ABRES	8,200	8,696	11,011
63605	Advanced radiation technology	1,119	740	642
63406	Advanced space guidance	070	0	0
33110	Defense satellite communications	1,200	0	0
63101	Preliminary design and development	458	0	0
63101	Preliminary design and development (Space appl. planning)	150	0	0
11213	Minuteman squadrons	560	0	0
64209	F-15A (stress corrosion project)	110	0	0
27129	F-111 squadrons (stress corrosion project)	021	0	0
63741	Defense suppression	090	570	0
63411	Advanced space delivery system	1,350	1,320	0
63728	Advanced computer technology (software library)	0	0	120
64406	Space defense system	0	290	908
33601	MILSATCOM (TACSATCOM program)	117	0	0
33601	MILSATCOM (survivable satellite)	0	0	492
33601	MILSATCOM (on board sensors)	0	163	249
33601	MILSATCOM	0	0	777
65301	Western Test Range	0	0	185
62302	Rocket prop. (high altitude chemistry)	0	0	100
63424	Advanced surveillance technology	0	150	180
61102	Defense research sciences (TRACE program)	0	050	0
(2)	Fleet satellite communications system	0	1,300	0
63601	Conventional weapons (modular bomb)	0	250	0
63428	Missile and space defense concepts (missile attack warning)	0	0	600
63731	Advanced detection system development (AFTAC support)	0	045	201
	Total R.D.T. & E.	50,771	42,410	46,598
Aircraft procurement appropriation				
7129	F-111 squadrons (stress corrosion project)	0	035	110
7129	F-111 squadrons (MK-II avionics)	0	029	0
	Total aircraft procurement	0	064	110
Missile Procurement Appropriation				
31036	Special reconnaissance vehicle (drone assessment)	0	019	0
34111	Special activities	1,078	3,336	0
33110	Defense satellite communications systems	615	1,733	2,007
12431	Defense support program	1,563	1,360	1,561
	Total missile procurement	3,256	6,448	3,568
Other procurement appropriation				
34111	Special Activities	9,342	12,070	14,219
	Total other procurement	9,342	12,070	14,219
Operations and maintenance appropriation				
35110	Satellite control facility (TACSATCOM)	129	135	130
12815	Joint strategic integrated planning staff	250	400	400
	Total operations and maintenance	379	535	530
	Total Aerospace Corporation	63,748	61,527	65,025

[1] Includes user funded support of launch activities and P.E. 35119, Space Boosters.
[2] Program funded by the Navy.

AEROSPACE CORP.

Senator YOUNG. Just what is included in the basic program for Aerospace Corp., and how is this level of funding established?

Secretary HANSEN. As General Glasser discussed earlier, the basic program is to perform research and provide technical support to the space and missile systems organization's development planning and foreign systems analysis efforts.

The level of funding for the basic program is established as an evolutionary process involving matching technical needs against an estimated fiscal funding level. Aerospace efforts are identified and scoped, the resource needs determined, and priorities established jointly by SAMSO and Aerospace management personnel.

In addition to this technical baseline agreement is the entire process of budget justification which is required in the Air Force programing system.

Chairman ELLENDER. I note that the request for the "Advanced ballistic reentry system" includes over $11 million for work to be performed by Aerospace Corp. What is the nature of their contribution to this effort?

General GLASSER. The Aerospace Corp. provides a general systems engineering and technical direction capability for the ABRES program office. In this role, it is a body of specialized technical expertise and experience that the program office uses to develop and provide technical support for its projects. Aerospace also draws upon its laboratory scientists and engineers for indepth investigations of complex technical problems facing the program office.

Chairman ELLENDER. I note that the request for "Aircraft procurement" included $110,000 for F–111 stress corrosion projects. What is the nature of this effort, and why is it funded from the procurement appropriation rather than from R. & D. or operation and maintenance?

General GLASSER. Even though our F–111 structural problems to date have not really involved stress corrosion, past experience with high-strength materials in other aircraft prompts some caution regarding potential stress corrosion problems with the F–111 high-strength steels. Therefore, this effort is a fundamental technology investigation into the basic properties of high-strength steels with respect to crack initiation and the propagation of cracks in an environment of high-stress loading combined with a corrosive element. The USAF Scientific Advisory Board's ad hoc committee on F–111 structures recommended that in addition to the other F–111 structural corrective actions already taken, that this basic stress corrosion area should be explored more fully. General Dynamics has been doing some of this work. As a complementary effort, Aerospace Corp. was tasked to investigate the stress corrosion characteristics of the F–111's structure as well. Aerospace Corp. has developed indepth expertise in the stress

corrosion field by virtue of their work on Titan II and III stress corrosion problems over the past several years.

Because this program is directed toward preventing a potential F–111 problem, and the F–111 is still in production, it is considered appropriate for this requirement to be funded from the procurement rather than the R. & D. or operation and maintenance appropriations.

Chairman ELLENDER. Please comment on the contribution of the Aerospace Corp. to the two projects that will be funded from operation and maintenance.

Secretary HANSEN. There are two efforts supported from O. & M. funds. They are the Joint Continental Defense Systems Integration Planning Staff (JSIPS) and the TACSAT. With regard to JSIPS, Aerospace Corp. began work on project 24, "satellite and missile surveillance system project" in March 1972 with an estimated completion date of March 1973. The purpose of this project is to provide near-term and long-term planning for satellite and missile surveillance systems and determine systems mixes required for worldwide strategic command capabilities. The resulting plan will furnish technology, development, and modification programs needed to achieve the desired capabilities and their related costs. The project will provide substantive rationale for responding to the tasks outlined by the Joint Chiefs of Staff.

TACSAT is an R. & D. communications satellite which was launched in February 1969 and has been used as part of an interim operational system since 1970. When problems arise that interfere with normal operations or appear peculiar, Aerospace provides scientific and engineering help to keep the satellite operating through the Camp Parks radiometric site. While this unit is an interim operating capability, a great deal is being learned from it that will be useful in subsequent satellites.

MITRE CORP.

Chairman ELLENDER. The total request for R. & D. includes $26.1 million for work to be performed by the Mitre Corp., which includes the $8.5 million for the basic program discussed earlier. In addition, other Air Force appropriations include approximately $5.1 million for work to be performed by the Mitre Corp. for a total of $31,156,000. The tabulation on pages 86, 87, and 88 of the justifications setting out the funding by appropriation and project for the Mitre Corp. for fiscal years 1971 and 1972, and the estimate for fiscal year 1973 will be included in the record at this point.

(The information follows:)

DEPARTMENT OF THE AIR FORCE PROPOSED PROGRAM FOR FISCAL YEAR 1973—MITRE CORP.[1]

[In thousands of dollars]

		Fiscal year—		
		1971 actual	1972 estimate	1973 estimate
	R.D.T. & E. Appropriation:			
65706	Basic program	9,000	8,500	8,500
	Other programs:			
35114	TRACALS	0	044	161
35114	TRACALS (AN/TPN-19 program)	100	251	85
64744	AWACS	2,346	2,800	3,812
12417	CONUS OTH Radar	1,210	1,700	1,840
64212	Aircraft Equipment Del (SEEK STORM)	005	200	120
63727	ICNI	375	600	0
63727	PLRACTA	0	0	500
(2)	PLRACTA	636	1,060	0
63728	Advanced Computer Technology	781	640	422
63728	Adv Computer Tech (Adv Software Del)	159	320	394
63706	Adv Command and Control Cap (TACC Complex)	804	980	0
64718	Cobra Mist	771	976	445
11316	Strategic Air Command Comm (SACCON)	0	630	1,085
11316	Strategic Air Command Comm (MEECN)	252	0	0
11316	Strategic Air Command Comm (ERCS)	095	110	0
64723	AABNCP	344	1,158	2,622
28010	Joint Tactical Comm Program (TRI-TAC)	190	330	575
28010	Joint Tactical Comm Program (ICMS)	119	220	440
64738	Protective Systems	303	200	230
65801	Intl Military HQ and Agencies (NADGE Support)	396	466	208
63740	Ground Sensors Surv/Reaction	[3] 1,621	1,415	2,643
33125	Air Force Communications (ATEC)	0	0	372
64602	Armament/Ordnance Development (PAVE MACK)	204	167	299
33601	MILSATCOM	0	250	529
64730	Ground Sensors Surv/Reaction (Base Defense)	0	230	0
65806	Acquisition & Command Support (AEDC Support)	048	0	0
65806	Acquisition & Comd Spt (DCS Oper—AFSC)	413	463	0
64708	Other Operational Equipment	086	0	0
65302	Eastern Test Range (BUIC)	175	0	0
63741	Defense Suppression (HVAE LEMON)	145	0	0
11213	Minuteman Squadrons (HAVE GUARD)	060	0	0
33601	MILSATCOM	050	0	0
63421	Satellite System for Precise Navigation	040	0	0
64728	Tactical LORAN	0	165	240
64735	Improved Capability for OT & E (HAVE EDGE)	0	0	610
27412	Tactical Air Control Sys(TACS Improvement)	0	243	0
	Total RDT & E	20,728	24,118	26,091
	OTHER PROCUREMENT APPROPRIATION			
27412	Tactical Air Control System	2,714	1,230	0
12424	SLBM	146	100	0
27412	Tactical Air Control Sys (TACS Improvement)	0	2,070	2,070
33112	Air Force Communications (Autovon)	505	500	400
21116	USSTRICOM	312	0	0
27411	West PAC North	273	0	0
27411	COMBAT GRANDE	0	434	0
	Total other procurement	3,950	4,334	2,470
12311	NORAD IMPROVEMENT	1,422	829	1,560
11311	SACCON (SEED CUPS)	044	99	307
11811	Strategic Air Command Support	0	0	240
35123	AFSC E. & I. (PEACE RUBY)	0	024	0
27411	COMBAT GRANDE	156	0	488
	Total, operations and maintenance	1,622	952	2,595
	Total, Mitre Corp	26,300	29,404	31,156

[1] Contract reduced by 2 months during fiscal year 1971 to aline it with the fiscal year.
[2] Funded under P.E. 63706, advanced TACS for fiscal year 1971 and 1972.
[3] Funded under P.E. 28012 DSPG in fiscal year 1971.

MITRE CORP.

Senator YOUNG. Please comment on the work performed by the Mitre Corp. under the basic program, and tell us how this level of funding is established.

General GLASSER. Requirements for improved command and control are identified at Air Force and Department of Defense level. The Mitre basic program is used to provide technical support to the Electronic Systems Division's development, planning, exploratory development, and foreign systems analysis projects in response to those requirements. Mitre support efforts on these problem areas are identified, scoped, resource needs determined, and priorities established jointly by ESD and Mitre management personnel.

In addition to this technical baseline agreement is the entire process of budget justification which is required in the Air Force programing system.

Chairman ELLENDER. I note that, of the total requested for the AWACS program, $3.8 million is for work to be performed by Mitre. What is the nature of this effort?

General GLASSER. The Mitre Corp. provides support to the AWACS program in the areas of system level design, engineering test, analysis and studies, and subsystem functional design and integration. Specifically, the Mitre effort includes:

Analysis and updating of the physical and electronic threats to AWACS.

Assessment of the impact of new policy and plans governing Tactical Command/Control and Conus Air Defense.

Preparation and update of specifications for AWACS interfaces with other systems.

Review of contractor specifications and development plans for Brassboard Radar and Brassboard Test support facilities.

Progress and analysis review of data from Brassboard test program.

Review of contractor performance and design specifications and technical plans.

Analysis of system integration in the areas of surveillance radar, communications, electronic counter counter measures and electromagnetic compatibility.

Senator YOUNG. The total requested for the advanced airborne command post includes $2.6 million for work to be performed by Mitre. Just what is their contribution to the advanced airborne command post program?

General GLASSER. The Mitre Corp. provides the general systems engineering support to ESD on this program. They assist in preparation of specifications for the C^3 package, engineering design reviews and all technical aspects of the program.

Chairman ELLENDER. It is indicated that the other procurement appropriation request includes $2.5 million for work to be performed

by Mitre, of which $2.1 million is for the tactical air control system improvement. Please comment on the nature of this effort.

General GLASSER. The $2.1 million for Mitre in the other procurement appropriation request for the tactical air control system is for system engineering support to Electronic Systems Division for the 485L program acquisition efforts. These efforts include acquisition of tactical air control center automation, VHF/AM and HF/SSB manpack radios; microwave relay equipment, and control reporting center/post improvements. The expertise provided by Mitre is essential to the performance of these efforts.

Senator YOUNG. Within the total of $2.6 million requested in the operation and maintenance appropriation for work to be performed by Mitre, I note that $1.6 million is for Norad improvement. What is the nature of this effort, and why is it funded from operation and maintenance rather than from R. & D.?

General GLASSER. Mitre performs general systems engineering in support of the 427M program office on the Norad Cheyenne Mountain complex improvement program. Tasks include workload analysis, system simulation and modeling to determine system configuration, translation of operational requirements into technical performance requirements, and preparation of system and subsystem performance specifications. Mitre is funded from the operation and maintenance appropriation because these Mitre tasks support the procurement of commercially available, general purpose automatic data processing equipment. There is no research and development associated with this program.

LINCOLN LABORATORY

Chairman ELLENDER. Earlier, we discussed the $18 million requested for the basic program for the Lincoln Laboratory. In addition to this $18 million, there is $8.8 million requested in various R. & D. programs for work to be performed by the Lincoln Laboratory. The tabulation on page 89 setting out the source of funding for the Lincoln Laboratory for fiscal year 1971, 1972, and 1973 will be included in the record at this point.

(The information follows:)

DEPARTMENT OF THE AIR FORCE PROPOSED PROGRAM FOR FISCAL YEAR 1973

[In thousands of dollars]

LINCOLN LABORATORY

	R.D.T. & E. appropriation	Fiscal year— 1971 actual	1972 estimate	1973 estimate
65705	Basic program	19,500	18,000	18,000
	Other programs:			
63311	ABRES	5,615	5,500	6,000
62204	Aerospace avionics	200	300	400
62702	Ground electronics	235	300	400
63718	Recon/E-W tech (adv recon and tgt acq cap)	0	0	1,028
63430	MILSATCOM (survivable satellite)	0	900	1,000
	Total, Lincoln Laboratory	25,550	25,000	26,828
	Subcontracts for equipment procurement	0	4,000	2,500

BASIC PROGRAM

Chairman ELLENDER. Comment on the nature of the work performed by the Lincoln Laboratory under the basic program, and tell us how this level of funding is established.

General GLASSER. Lincoln Laboratory works predominately in radar and optical sensors, signal design and processing, analog and digital technology, communications, electromechanical control systems, solid state electronics, antennas and electromagnetic propogation. Their job is to evolve new technical concepts and to build models of equipment to demonstrate and test the feasibility of these concepts.

The level of funding is established through a process of technical review and prioritization of the projected work and the budget justification process that our program elements pass through each year.

An annual technical program is proposed by Lincoln based on their view of their various sponsor's needs related to the applied research areas and their commitment to the Air Force in pursuit of specific development programs. The proposal is reviewed in-depth by permanently established technical panels comprised of 65 in house technical personnel from the three services and ARPA. The program, with its revisions, is then reviewed and approved by the joint advisory committee which is composed of the Commander, Air Force Systems Command; Chief of Research and Development U.S. Army; and the Director, Advanced Research Projects Agency.

In 1961, DOD and Lincoln agreed to limit the workload of the laboratory. A fairly stable level has been maintained through the years. Because of the laboratory's competency and productivity, the DOD sponsors often desire more work than can be accomplished. However, this limit and the Air Force internal programing process serves to balance the desired workload with the available resources.

Senator YOUNG. Just what is the Lincoln Laboratory's contribution to the ABRES development for which they will receive $6 million in fiscal year 1973?

General GLASSER. Lincoln Laboratory provides a specialized capability in radar and electronic and optical countermeasures to the ABRES program office. Some of this technical work is carried through a brassboard development and testing phase. Some hardware is also developed for ABRES under this project; for example, the Solitaire optical sensor now operational at White Sands Missile Range, and the [deleted].

RAND CORP.

Chairman ELLENDER. As I understand the tabulation, the only funds in the Air Force budget for the Rand Corp. is the $8 million in the R. & D. request for the basic program that we discussed earlier. Am I correct about this?

Secretary HANSEN. Yes, sir. The total Project Rand budget request is that single item, but as was discussed earlier we now hope to fund Project Rand at $9.1 million for fiscal year 1973.

ANALYTIC SERVICES INC.

Chairman ELLENDER. Earlier we discussed the $1.5 million requested for the basic program of the Analytic Services, Inc. As I understand the tabulation, they are to receive $359,000 for work in connection with

the project entitled reconnaissance electronic warfare technology. Is this total of $1,859,000 the total amount included in the fiscal year 1973 budget request for the Air Force for work to be performed by this organization?

General GLASSER. Yes, sir; it is.

APPLIED PHYSICS LABORATORY—JOHNS HOPKINS UNIVERSITY

Chairman ELLENDER. The total requested for R. & D. for fiscal year 1973 includes $1,225,000 for work to be performed by the Applied Physics Laboratory of Johns Hopkins University. The tabulation on page 90 of the justifications setting out the source of funding for work to be performed by this organization for fiscal years 1971, 1972, and 1973 will be included in the record at this point.

(The information follows:)

DEPARTMENT OF THE AIR FORCE PROPOSED PROGRAM FOR FISCAL YEAR 1973

APPLIED PHYSICS LABORATORY/JOHNS HOPKINS UNIVERSITY

[In thousands of dollars]

		Fiscal year—		
		1971 actual	1972 estimate	1973 estimate
	R.D.T. & E. APPROPRIATION			
	Basic program	0	0	0
	Other programs:			
34111	Special activities (satellite beacons)	690	0	560
64728	Tactical Loran	040	100	260
62101	Environment	200	220	310
62203	Aerospace propulsion	146	90	95
62702	Ground electronics (RADC support)	016	0	0
27412	Tactical air control system (back pack)	0	090	0
	Total, APL/JHU	1,092	500	1,225

Chairman ELLENDER. As I read this tabulation, your budget request includes only $1.2 million for work to be performed by this organization. Am I correct about this?

Secretary HANSEN. Yes, sir.

HUMAN RESOURCES RESEARCH ORGANIZATION

Chairman ELLENDER. Please comment on the nature of the work to be performed with the $150,000 that is included in your request for work to be performed by the Human Resources Organization.

Secretary HANSEN. Typical studies being conducted relate to unsuitable discharges, desertions, and other unsatisfactory behavior; factors related to educational development and the value of the general educational development (GED) high school equivalency programs to the individual service member; and the occupational development of service personnel in a wide range of specialties.

PERFORMER DISTRIBUTION

Chairman ELLENDER. Please provide a tabulation for the record giving a breakdown of your total R. & D. programs for fiscal years 1971, 1972, and the estimate for 1973 by the various performing agencies.

Secretary HANSEN. Yes, sir; I will be glad to.

(The information follows:)

PERFORMER DISTRIBUTION

[In thousands of dollars]

Category	Fiscal year— 1971 program actual	1972 program requirements	1973 program requirements
1. For operation of installations of the reporting service Government operated	479,218	463,503	449,780
2. For operation of installations of the reporting service contractor operated	148,388	84,758	87,023
3. For contracts directly in support of work performed at installations of the reporting service	120,937	112,514	93,193
4. For work assigned to other Department of Defense activities	30,250	29,600	28,700
5. For work assigned to activities of other Government agencies	3,349	3,100	3,000
6. For work performed by industrial contractors (profit organizations)	1,826,066	2,054,791	2,314,849
7. For work performed by educational institutions:			
(a) Designated Federal contract research centers	1,092	500	1,225
(b) Other institutions	53,759	50,911	49,864
8. For work performed by other nonprofit organizations:			
(a) Designated Federal contract research centers	107,968	102,948	109,526
(b) Other institutions	56,201	57,803	56,017
Total, research, development, test, and evaluation appropriation	2,827,228	2,960,428	3,193,177

SUBCOMMITTEE RECESS

Chairman ELLENDER. Are there any further questions?

Senator YOUNG. I have none.

Chairman ELLENDER. Thank you.

The subcommittee will recess until 10 o'clock tomorrow morning.

(Whereupon, at 1:10 p.m., Monday, February 21, the subcommittee was recessed, to reconvene at 10 a.m., Tuesday, February 22.)

DEPARTMENT OF DEFENSE APPROPRIATIONS FOR FISCAL YEAR 1973

THURSDAY, MAY 4, 1972

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, D.C.

The subcommittee met at 2 p.m. in room S–128, the Capitol, Hon. Allen J. Ellender (chairman) presiding.

Present: Senators Ellender, Magnuson, Young, and Symington.

DEPARTMENT OF DEFENSE

DEPARTMENT OF THE AIR FORCE

RESEARCH, DEVELOPMENT, TEST, AND EVALUATION, AIR FORCE

STATEMENT OF LT. GEN. OTTO J. GLASSER, DEPUTY CHIEF OF STAFF, RESEARCH AND DEVELOPMENT HEADQUARTERS, U.S. AIR FORCE

SUPPLEMENTAL REQUEST

Chairman ELLENDER. The subcommittee will please come to order. House Document 92–272 contains two budget amendments for fiscal year 1973 for the Department of the Air Force:

For aircraft procurement, the $113.8 million budget amendment will increase the total Air Force request from $2,612,700,000, as contained in the original budget submission, to $2,726,500,000.

For research, development, test, and evaluation, the $39 million budget amendment will increase the total Air Force request from $3,193,177,000, as contained in the original budget submission, to $3,232,177,000.

Lt. Gen. Otto J. Glasser, Deputy Chief of Staff for Research and Development, will testify to these amendments. You may proceed.

General GLASSER. Thank you.

Mr. Chairman and members of the committee, I appreciate this opportunity to discuss with you the proposed amendment to the President's 1973 budget.

AIRCRAFT PROCUREMENT

Chairman ELLENDER. General, before you proceed with your discussion of the amendment for the aircraft procurement appropriation I want to include in the record the information on pages 10 and 11 of the justifications.

(The information follows:)

Program and Financing (in thousands of dollars)

Identification code 07-15-3010-0-1-051	FY 1973 Budget Plan (Amounts for procurement actions programmed) Request Pending	Proposed Amendment	Revised Request	Obligations FY 1973 Request Pending	Proposed Amendment	Revised Request
Program by activities:						
4. Other aircraft	148,100	113,800	261,900	103,800	113,800	217,600
10 Total	3,037,700	113,800	3,151,500	3,268,500	113,800	3,382,300
Financing:						
40 Appropriation	2,612,700	113,800	2,726,500	2,612,700	113,800	2,726,500
Relation of obligations to expenditures:						
71 Total obligations (affecting expenditures)				2,843,500	113,800	2,957,300
72 Obligated balance, start of year				1,241,066	....	1,241,066
74 Obligated balance, end of year				-1,811,566	-84,800	-1,896,366
90 Expenditures				2,273,000	29,000	2,302,000

NARRATIVE JUSTIFICATION

This amendment to the FY 1973 President's Budget will increase the FY 1973 Aircraft Procurement, Air Force appropriation by $113.8 million.

The increase is in Other Aircraft and, will purchase four Boeing 747 aircraft for the Advanced Airborne Command Post (AABNCP). At present, the mission of survivable command and control of our nuclear forces in the event of a nuclear war must rely on EC-135 aircraft to support the President or his designated successor (operating from Andrews AFB, Md) and CINCSAC (operating from Offutt AFB, Neb).

Because of space and weight limitations inherent in the present aircraft, a larger aircraft, such as the 747, must be acquired to provide space and payload capacity to accommodate the improved communications, the necessary additional battle staff and the automatic data processing equipment. A comparison of relevant characteristics of the two types of aircraft is as follows:

	EC-135	747
Maximum take-off, weight lbs.	297,000	775,000
Empty weight, lbs.	134,000	302,616
Payload weight, lbs.	40,000	85,000
Payload space, sq. ft.	880	3,500
Take-off runway length, feet	8,500	7,500
Endurance, hours	10.5	16.2

Approval of this budget amendment is required so that early operational capability can be established. Three of these four aircraft will utilize existing EC-135 communications equipment pending the development and availability of advanced equipment. The fourth aircraft will be the test bed for the advanced equipment development. Early operational experience with the three larger aircraft will provide an invaluable input to the development program.

ADVANCED AIRBORNE COMMAND POST

General GLASSER. The first budget amendment program is the advanced airborne command post.

The present EC–135 National Emergency Airborne Command Post (NEACP) aircraft have reached their payload and floor space limits. The small battle staff consisting of 18 people, coupled with the present manual information processing methods, will permit only limited command and control functions during national emergencies. It is important that these functions be expanded as soon as possible.

An additional $113.8 million is requested for the purchase of four Boeing 747 aircraft. This brings the total fiscal year 1973 request of $217.6 million for six aircraft. Three of these aircraft will be modified with equipment from the existing EC–135's, thereby alleviating floor space limitations. These aircraft will provide a substantially improved function capability.

The fourth aircraft will be used to test new electronics equipment which is scheduled for development in fiscal year 1973.

An additional $6 million in R.D.T. & E. funds will be needed to prepare specifications and further define requirements for both the NEACP and the Strategic Air Command's Airborne Command posts. Based on the results of the development program, the NEACP aircraft will be modified later.

MODIFICATION OF 747'S

Chairman ELLENDER. You indicate that three of the 747's will be modified to use the existing communications and electronics equipment in the EC–135s. Will these three aircraft be for use of the President or the commander of the Strategic Air Command?

General GLASSER. These three aircraft will be used for the National Command Authority. They will be located on Andrews Air Force Base as are the 135's from which the equipment will be transferred.

Chairman ELLENDER. What will be gained by buying these new airplanes and equipping them with the old electronics and communications equipment? Aren't you replacing the communications equipment with the new equipment you are going to develop?

ADVANTAGES OF NEW AIRCRAFT

General GLASSER. There are a number of advantages that accrue through this course of action.

The present EC–135's are so crowded with equipment that it is impossible to put on board the aircraft, the staff, the advisers, and the workers needed to do an efficient job even with the equipment that is already there.

Moreover, it is our desire to work out in the new aircraft better layouts, better procedures, with the actual staff that will be there and that simply cannot be done without getting into a larger aircraft.

What we would propose to do would be to move the present equipment which should not be described as old because much of it will reappear in nearly the identical configuration in any modernized aircraft, but putting it in there, adding to it other existing equipment that simply can't get into the present airplanes, putting in the ex-

panded staffs that are needed, will enable us to devise the newer design in the most efficient and effective way.

Chairman ELLENDER. In other words, you think the existing equipment is modern enough?

CAPABILITY UPGRADING

General GLASSER. It means an immediate upgrading of our capability which, in itself, is sufficient to justify the effort. Also, it assists in pointing the way toward improvements that will appear in the later versions.

Chairman ELLENDER. When was this equipment developed for the present airplanes?

General GLASSER. It has evolved over a period of some years; 1964 was the initial portion of it. I would have to supply for the record the detailed changes that have been made throughout these years, because it has been an evolutionary program since that time.

Chairman ELLENDER. This program, I presume, has been kept up by adding to it the most modern equipment?

General GLASSER. That is correct, sir.

(The information follows:)

NEACP/WHEN WAS EQUIPMENT PUT IN PRESENT PLANES

The fanjet EC–135 C and J model aircraft currently used by SAC and NMCS were acquired in 1964 and 1965. The information to follow relates to the growth of the SAC ABNCP from 1964 to 1970. Similar growth occurred on the NEACP in the same period and the modifications were generally accomplished on all 17 aircraft. The following chart portrays the equipment that was aboard at deployment and the equipment that was added by year. Included are mods to the flight avionics that have improved operational efficiency.

EQUIPMENT ITEMS

The basic aircraft equipment is as follows: 4 HF transmitters/receivers, 5 UHF transmitters/receivers, multiplex equipment, automatic switchboard (miniaturized), and battle staff communications consoles.

The following equipment was added in the year noted: KW–7 Cryto devices (1966), airborne launch control system (1967), high altitude radiation detection system and the ARC–96 LF/VLF system with long trailing wire (1968), communications performance monitor flight director system (1969), AIMS—air traffic control system UHF satellite communications terminal (TACSAT/LES 6) (1970).

NO COMMITMENT TO BOEING COMPANY

Chairman ELLENDER. Have you made any contractual arrangements yet with Boeing?

General GLASSER. No, sir. The situation that we are in with the Boeing Co. is that of their own volition; anticipating that the program may be approved they undertook the initiation of the construction of three aircraft for which they do not have orders. They have been building those aircraft and they are presently at the point in the construction of those aircraft where they must make a positive decision as to whether they will be completed as command post aircraft or whether they will be completed as commercial aircraft for potential sale.

Chairman ELLENDER. You propose to obtain seven of these aircraft.

General GLASSER. Ultimately, we would have a fleet of seven.

Chairman ELLENDER. What is the requirement for seven aircraft?

General GLASSER. Three of these aircraft would be assigned here in Washington to the National Command Authority; three of them to the Strategic Air Command. The seventh one would be the overhead airplane, if you will, to assure the availability of six at any one time.

Chairman ELLENDER. How many will be in flight at all times?

General GLASSER. There will be a minimum of one in flight at all times at the Strategic Air Command. The possibility exists, of course, that more than one will be in flight at one time.

FLYING COSTS

Chairman ELLENDER. What is the per hour flight cost?

General GLASSER. We can submit for the record, sir, what the hourly cost is.

(The information follows:)

AABCP/COST TO OPERATE PER HOUR

Based on commercial airline experience and manufacturer's data, we estimate that the cost per flying hour, exclusive of personnel costs, will be approximately $1,022 when the aircraft are fully operational.

USE OF EC–135 AIRCRAFT

Chairman ELLENDER. What do you propose to do with the EC–135's you are now using for that purpose?

General GLASSER. Those will be deconfigured and will become available for other purposes, and what characteristically happens is that some of our older aircraft will fall out of the bottom as being no longer required in the inventory.

We will submit the hourly operating cost of the aircraft.

REVISED PROGRAM

Chairman ELLENDER. General, I want to be sure I understand the amended request for the Advanced Airborne Command Post. On February 18, you appeared in support of the original budget program which was for $103.8 million for the procurement of two aircraft.

General GLASSER. That is correct, Mr. Chairman.

Chairman ELLENDER. At that time there was pending a fiscal year 1972 request in the amount of $113.8 for the procurement of four aircraft. This has been withdrawn as a fiscal 1972 supplemental and resubmitted as a fiscal 1973 amendment, making a revised request of $217.6 million for the procurement of six of these aircraft. Have I stated it correctly?

General GLASSER. Yes, you have, Mr. Chairman.

Chairman ELLENDER. Our earlier discussion of this program and the aircraft data sheet is on page 503 of the hearings.

Senator Magnuson, do you desire to ask any questions?

BACKING FOR COMMAND POST CONCEPT

Senator MAGNUSON. No. Naturally, I have a sectional interest in this matter, because of the people out in the Everett/Seattle area working on this plane over the years who have discussed it with me.

Secretary Packard was in Seattle in April 1971, and encouraged the program. Also, during his tenure of office, he formed a worldwide military control council. This was made up of the top intelligence, communication, and JCS personnel. It was chaired by him, and the requirement for the updated national command posts was recognized as urgent. It seems that that was the opinion of most everyone at DOD involved in this as well as those in the administration and at the Office of Management and Budget. All believed it wise to start on this before we lost any time. Is that a good way to put it, General?

General GLASSER. Absolutely, sir. I might expand on what you said there.

When Mr. Packard began to investigate this whole area of command control, he identified it as being, in his judgment, the singlemost serious question that needed resolution within the Defense Department.

It was with that in mind that he established the council you described, and he, personally, took a deep interest in this program and came out with the conclusion that this was of such urgency that we should press on with it even through the supplemental appropriations route.

AUTHORIZATION REQUIREMENT

Senator MAGNUSON. The House Armed Services Committee, as I understand it, took the position that they had previously authorized this in fiscal year 1972, which effectively meant that they were giving their approval for the use of authorized but not appropriated funds. We would have to appropriate funds for the program to proceed.

General GLASSER. That is our understanding.

URGENCY OF REQUEST

Chairman ELLENDER. Will you tell us for the record what is the urgency of this request? You indicated that Mr. Packard said it is urgent.

I wonder why it is urgent? Is it possible we cannot find protection in all these places of safety that we have constructed at great cost?

General GLASSER. That is the judgment, sir——

Chairman ELLENDER. Of whom?

General GLASSER. The people on this council who are at the top level of the Defense Department.

Chairman ELLENDER. Are they civilians?

General GLASSER. They are exclusively civilians except for the Chairman of the Joint Chiefs.

They are the Deputy Assistant Secretary of Defense, Assistant Secretary for Intelligence, Assistant Secretary for Communications, and the Chairman of the Joint Chiefs, with other service Secretaries sitting as observers for appropriate items.

They came to the conclusion last December that this was of such overriding urgency that it required even the submission of a supplemental appropriation request and that was approved by OMB and the White House.

Chairman ELLENDER. What evidence was presented to them as to the urgency?

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General GLASSER. It was a culmination of about a year's study. This was underway for quite some time in the appropriate channel; that is, the joint channels had been studying this proposition for quite some time.

They were concerned about the eroding survivability of the underground command post.

We could find ourselves in a position where it was impossible to guarantee the survivability of the National Command Authority. But up until Mr. Packard's personal intervention in the program, they had not been successful in having assigned to the program a sufficient priority for it to compete with all the other urgencies in the Defense Department.

It was the consequence of Mr. Packard's deliberation with the council that elevated the priority to a position where it did successfully compete to the extent that this supplemental, which has since been modified through a budget amendment, was the outcome.

APPOINTMENT OF ADVISORY COUNCIL

Chairman ELLENDER. Who appointed this council and at whose request?

General GLASSER. I don't have the identification of that. I will supply that, sir.

(The information follows:)

WWMCCS COUNCIL

The World Wide Military Command and Control System (WWMCCS) Council was established by DODD 5100.30, dated 2 December 1971. It was signed by Mr. Packard, the Deputy Secretary of Defense. The Council is made up of the Deputy Secretary of Defense, the Assistant Secretary of Defense (Intelligence), the Assistant Secretary of Defense (Telecommunications) and the Chairman of the Joint Chiefs of Staff.

MANNING OF AIRCRAFT

Chairman ELLENDER. Assuming that you acquire the seven aircraft, how many men would it require to carry out this function?

General GLASSER. The manning of these aircraft, the ones that are used by the National Command Authority here in Washington, would have an onboard crew of [deleted].

Chairman ELLENDER. You mean on each of them?

General GLASSER. On board the one that is flying.

Chairman ELLENDER. How many such crews will you need? They don't fly 24 hours?

General GLASSER. No, sir.

The [deleted] I am describing will be the onboard population of one of these aircraft at the time it is flying in an emergency. It includes the [deleted] the operations teams, and the [deleted]. All of these people together comprise these [deleted] persons.

FUNCTION OF AIRCRAFT

Chairman ELLENDER. They won't be flying except on notice of danger——

General GLASSER. That is absolutely correct, sir. The people who fly regularly would be the flight crew of seven people and, of course,

they would have to be duplicated because you can't have one crew always on alert.

Chairman ELLENDER. Will there be crew for the seven planes?

General GLASSER. Yes, sir.

Chairman ELLENDER. Whether they fly or not?

General GLASSER. There will be a number of crews that would be available to take care of the three aircraft here in Washington and another number of crews, somewhat smaller in size, available for the three aircraft at SAC headquarters.

PERSONNEL REQUIREMENT AND COST

Chairman ELLENDER. I wish you would put in the record the number of personnel required to be on hand and the cost of this operation.

General GLASSER. Yes, sir; we will develop that.

(The information follows:)

CREWS COST

In the case of the National Military Command System (NMCS) Aircraft, the National Emergency Airborne Command Post (NEACP), there would be three battle staffs of 39 men and three aircrews of seven each assigned permanently to the operations. There would be approximately 322 support personnel needed to support a ground alert operation around the clock seven days a week. The support squadron is essentially self-contained because of the nature of the Presidential support role. It has been estimated that the NEACP operation at Andrews AFB with three 747 aircraft would cost $11M per year.

At SAC, there would be four aircraft assigned to support a continuous airborne operation. This would require 6 battle staffs of 26 personnel each, permanently assigned with nine additional personnel per battle staff assigned from SAC Headquarters at declaration of [deleted] or higher. Battle staff members are normally rotated through the ground and air staff functions to maintain proficiency. There would be 12 aircrews of five men each assigned to the Advanced program to support the continuously airborne operation. There are approximately 250 support personnel assigned directly to the operation with significant support coming from the base maintenance and supply operations. The total cost of the four aircraft operation at Omaha has been estimated at $24 million per year.

SUPPLEMENTAL REQUEST

Chairman ELLENDER. Are there any questions?

Senator SYMINGTON. How much on this particular item are you asking for in this supplemental?

General GLASSER. Since it is a budget amendment, Senator Symington, it adds what was in the supplemental, $113.8 million, plus the $6 million for R. & D. to the fiscal year 1973 budget as previously submitted.

Senator SYMINGTON. Thank you.

Chairman ELLENDER. How much are you asking in money?

General GLASSER. The easiest way to say it is in aggregate, if you take what is in the 1973 program and add to that the budget amendment that has now been placed in the record and which we are addressing now, we are asking for a total of $217.6 million in the procurement accounts.

REPROGAMING REQUEST

Chairman ELLENDER. Now, as I understand the situation, you have $3 million reprograming for the advanced command post at this time.

General GLASSER. Yes, sir.

Chairman ELLENDER. Will you discuss that for us?

General GLASSER. That returns to the question that we were discussing yesterday as regards the status of the aircraft.

As I commented earlier, the Boeing Co. undertook to initiate the construction of three aircraft to preserve the schedules for us against the proposal that we submitted previously as a supplemental appropriation.

Those three aircraft are going down the line now in what we might call a neutral configuration. They have not yet been jelled as airborne command posts, nor as civilian aircraft.

The time is very rapidly arriving when that proposition will have to be undertaken. There is a considerable amount of design effort, production and engineering, if you will, that will have to precede that if they are to preserve these schedules.

The Boeing Co. does not feel it is appropriate for them to invest this money, $3 million, into developing those designs of the unique features of the command post aircraft without governmental support.

Chairman ELLENDER. I presume this represents the cost of special items not on the regular commercial aircraft.

General GLASSER. Yes, sir.

Senator MAGNUSON. The $3 million?

General GLASSER. The $3 million——

COST OF 747 AIRCRAFT

Chairman ELLENDER. How much do these planes cost?

General GLASSER. Approximately $23 million each. That is what a Boeing 747 costs, whether we buy it or the commercial people buy it. What we are describing here is not the cost of aircraft but the preparation of modifications to make those capable as command posts.

Chairman ELLENDER. Is this going to be done by Boeing?

General GLASSER. Yes, sir.

Chairman ELLENDER. That will be in addition to the regular cost that they would charge a commercial company?

General GLASSER. It is in addition, because it is unique to us. Similarly, there are costs like this when any airline goes to Boeing; they have certain unique features they want and they pay those costs for the unique features.

COST DIFFERENTIAL

Chairman ELLENDER. What is the difference in the cost price of these planes as compared to what privately owned companies would pay, exclusive of these specialties that you speak of?

General GLASSER. I would like to investigate that a little more carefully, answer that a little more carefully, than I can do here, Mr. Chairman.

The quick answer is that the Government usually ends up buying aircraft from a commercial corporation cheaper than does an airline.

But there are a lot of other caveats that should be put in when you say that because there are things that we buy that add costs; there are things that we don't buy that subtract costs.

Senator MAGNUSON. They would be items that you would want in the airplane, hardware that you might furnish yourself, or the cost of installing equipment.

General GLASSER. That is exactly so.

Senator MAGNUSON. Some changes run $3 million or $4 million over the base price. Different airlines want different seating arrangements or different items of equipment. But this is the basic 747.

Senator GLASSER. Yes, sir.

Senator MAGNUSON. Some airlines buy them for that price and do the work themselves.

General GLASSER. The point I wanted to make is that as a general rule of thumb the basic airplane the Government buys cheaper than does an airline.

(The information follows:)

GOVERNMENT COST VERSUS PRIVATE COST OF PURCHASING THESE PLANES

This results from the large quantities usually involved in a government purchase. The cheaper price represents the economies associated with quantity buys. In the case of the Advanced Airborne Command Post, the small quantity involved (seven) does not permit a discount price and we are, therefore, paying the same price as the airlines ($23 million in 1973) for the basic airplane. Since we are buying the airplane without the passenger support additions (seats, coat racks, lounge, etc.), it is some $3 million less expensive than a fully equipped commercial airliner.

NO FUTURE COMMITMENT IN $3 MILLION REQUEST

Senator YOUNG. Mr. Chairman.

Chairman ELLENDER. Senator Young.

Senator YOUNG. If this $3 million is provided, does this bind the Federal Government in any way to go through with the rest of the purchase?

General GLASSER. No, sir. I should have mentioned that, Senator Young. This is what you might call underwriting by the Air Force to preserve the opportunity to later contract for these aircraft. If we walk away from this, the maximum we could lose is the $3 million and we would lose that only in the event that we never go through with the purchase. We are preserving the opportunity to buy them on schedule if the 1973 bill is approved as proposed.

RESEARCH, DEVELOPMENT, TEST, AND EVALUATION

Chairman ELLENDER. If there are no further questions on the amendment for aircraft procurement, we will proceed with the consideration of the $39 million amendment for "Research, development, test, and evaluation." As I stated earlier the original fiscal 1973 request for this appropriation was $3,193,177,000 and the amended request is $3,232,177,000. The summary information on pages 70 through 73 of the justifications will be included in the record.

(The information follows:)

PROGRAM AND FINANCING

[In thousands of dollars]

	Fiscal year 1973 budget plan (amounts for R.D.T. & E. actions programed)			Obligations fiscal year 1973		
	Request pending	Proposed amendments	Revised request	Request pending	Proposed amendments	Revised request
Program by activities: Direct:						
1. Military sciences	146,280	0	146,280	149,300	0	149,300
2. Aircraft and related equipment	1,327,060	16,000	1,343,060	1,321,201	16,000	1,337,201
3. Missiles and related equipment	387,400	8,000	395,400	383,190	8,000	391,190
4. Military astronautics and related equipment	345,700	0	345,700	355,950	0	355,950
6. Ordnance, combat vehicles, and related equipment	100,580	0	100,580	96,250	0	96,250
7. Other equipment	501,992	15,000	516,992	499,333	15,000	514,333
8. Programwide management and support	384,165	0	384,165	386,753	0	386,753
Total direct	3,193,177	39,000	3,232,177	3,191,977	39,000	3,230,977
Reimbursable (total)	180,340	0	180,340	181,540	0	181,540
Total	3,373,517	39,000	3,412,517	3,373,517	39,000	3,412,517

2. AIRCRAFT AND RELATED EQUIPMENT

Project title	Project element code	Project number	Fiscal year— 1971 actual	1972 budget	1973 request pending	1973 proposed amendment	1973 revised request
Advanced development	6.3						
Advanced STOL transport	6.32.36.F			6,000	46,000	5,800	51,800
Engineering development	6.4						
EF-111A	6.42.20.F					10,200	10,200
Total aircraft and related equipment						16,000	

Advanced STOL transport.—These additional funds are required for a competitive approach to the Advanced STOL Transport prototype development. In discussion with the House Appropriations Committee Staff, they reiterated the Committee's direction on competition between two airframe contractors. This program is included in Category 3 because it is to attack the high cost of weapon systems by initiating new programs that offer lower cost alternative methods of accomplishing necessary missions.

EF–111/A.—These funds will provide for the design, integration, modification and flight test of two prototype EF–111A's incorporating the ALQ–99 ECM subsystem which will provide an improved electronic countermeasure capability for our tactical forces. This is included under Category 1 because of the increased threat from Soviet radars and SAM missiles.

3. MISSILES AND RELATED EQUIPMENT

Project title	Project element code	Project number	Fiscal year 1971 actual	Fiscal year 1972 budget	Fiscal year 1973 request pending	Fiscal year 1973 proposed amendment	Fiscal year 1973 revised request
Advanced development	6.3						
Advanced ballistic reentry system	6.33.11F		100,000	95,800	104,000	8,000	112,000
Evasion technology			(8,530)	(22,562)	(37,500)	(8,000)	(45,500)
Total missiles and related equipment						8,000	

7. OTHER EQUIPMENT

Engineering development	6.4						
Systems survivability	6.47.11.F		3,100	3,100	13,500	9,000	22,500
Electromangetic pulse simulator		1209				(8,300)	(9,000) (17,300)
Advanced airborne command post	6.47.23.F		1,400		26,000	6,000	32,000
Total other equipment						15,000	

Note: ABRES [deleted]. This is included in category 1 because it provides the technology required to penetrate the postulated Soviet ABM (antiballistic missile) defenses.

Systems survivability.—These funds will be used to initiate and accelerate an Electromagnetic Pulse (EMP) simulator of sufficient size to test adequately avionics in full size aircraft at close to the EMP threat level. This is included in Category 2 because it will provide realistic testing of the EMP effects on various Air Force systems.

Advanced airborne command post.—The AABNCP will require an additional $6.0 million RDT&E funds to update the current obsolete and inadequate systems. The funds will be utilized for design effort for the test bed aircraft, to prepare Request for Proposals for the Command, Control and Communications package and lease one Boeing 747 aircraft for the Electromagnetic Pulse Test (EMP). This is included in Category 1 in order to provide efficient command and control of our strategic forces in time of emergency.

ADVANCED STOL AIRCRAFT

Chairman ELLENDER. The first item is an additional request for $5.8 million for the "Advanced STOL Transport Aircraft," which is one of the Air Force's advanced prototype programs. The original request for this program was $46 million which includes $16 million for the new engine. The revised request is $51.8 million. This program was discussed earlier in the hearings and this discussion is found on page 814 of the hearings. The revised descriptive summary will be included in the record at this point.

(The information follows:)

FY 1973 BUDGET AMENDMENT RDT&E DESCRIPTIVE SUMMARY

Budget Activity 2 Title: Aircraft and Related Equipment Date: March 1972

Program Element No. 63236F Title: Advanced Short Takeoff and Landing (STOL) Transport

Project No. A Sub-Project Title: Advanced STOL Transport

RDT&E Category: Advanced Development

DESCRIPTION: The Advanced Development prototype concept will place more reliance on the performance of hardware and less reliance on paper analysis. This concept will permit evaluating both the feasibility and utility of new weapons with hardware demonstrations in advance of production commitments. The objectives of the program are: (1) design, fabricate, and evaluate a prototype transport which will demonstrate in hardware, new technology which after additional engineering development will provide a medium sized (C-130 type) jet STOL Transport; (2) provide a low cost development option for modernization of the tactical airlift force; (3) obtain visibility on costs associated with short field performance; (4) define STOL operational rules, safety rules, and related design criteria.

FY 1973 Program - FY 1973 Budget Amendment. The FY 1973 Budget Amendment would increase the FY 1973 cumulative amount from $30.0 million to $35.8 million, an increase of $5.8 million. The increased funding will support a competitive prototype effort as recommended by Congress. Design studies and analyses to include trade-off studies to assist in selecting the aircraft configuration for the preliminary design phase will be accomplished in FY 1972. Trade-off studies and analyses are necessary to investigate sensitivity of design parameters to stated design goals.

RESOURCES: ($ in Millions)

	FY 71	FY 72	BASIC FY 73	BUD ADMEND FY 73	TOTAL FY 73	ADD'L TO COMP	TOTAL EST'D COST
RDT&E Funds	0	6.0	30.0	5.8	35.8	158.2	200.0

Prototype Program

General Glasser. The second program is the advanced STOL transport. An additional $5.8 million is required to conduct a competitive prototype program, which was specified by the Congress.

The advanced STOL transport is one of the new prototype programs intended to evaluate hardware and lessen the reliance on paper analyses. Competitive contracts will be awarded to two corporations.

The funds requested are for design studies and analyses, including tradeoff studies, to assist in selecting the best aircraft configurations for competition in the preliminary design phase of the program.

STOL Replacement

Chairman Ellender. What will this plane replace, if it is produced?

General Glasser. This will replace the combination of aircraft that we have at the moment, the C–7A, the C–123's, and primarily the C–130's.

Chairman Ellender. These are transport planes?

General Glasser. Yes, sir; these are tactical transport aircraft.

Chairman Ellender. To be used by——

General Glasser. In support of the Army but mostly in support of the tactical air forces. These are the aircraft that are used for generally in theater deployment and redeployment of the troops and their equipment and to then supply and resupply them as they maneuver.

Army VTOL Effort

Senator Young. The Army is planning to acquire VTOL planes of a type different from the Air Force planes. Are you working with the same companies?

General Glasser. Senator Young, I am not familiar with the Army procuring any VTOL transports. They are working on some helicopter programs for supply and those, of course, augment, supplement—complement, I guess is the best word—the transport programs, but they do not have a transport program.

Senator Young. I thought the Army was discussing VTOL planes rather than helicopters in their testimony the day before yesterday.

Mr. Woodruff. They were discussing a tilt rotor prop, under their advanced helicopter program.

General Glasser. That is a different topic.

The tilt transport is a very small airplane. I think they are modeling this after the CL–84. That is a very small aircraft, with a tilt wing; that is used as a VTOL; it is like a helicopter but it can convert and fly as an airplane that can carry a few people, a few hundred pounds of cargo. This is a bigger airplane like the C–130 or even larger.

Navy and Marine Corps VTOL Effort

Senator Young. Aren't the Navy and Marines interested in this VTOL area, too?

General Glasser. The Navy and Marines are interested in the VTOL fighter. The Marines already have some procurement of the Harrier.

The Navy is now actively investigating a VTOL fighter aircraft to be used onboard their so-called sea control ships which would obviate the necessity for large carriers and would allow them to operate from much smaller ships with a vertical mode aircraft, again not in any way similar to what we are talking about here.

Senator YOUNG. They would be entirely different?

General GLASSER. Entirely different. This is a very large aircraft for the transport of troops and equipment, whereas there you are talking about either a very, very small utility transport in the case of the CL–84, or you are talking about fighter aircraft in the case of the Harrier.

Senator YOUNG. Thank you.

COST OF STOL TRANSPORT

Chairman ELLENDER. As I understand, $5.8 million is to be used solely for the prototype you mentioned.

General GLASSER. That is correct, sir.

Chairman ELLENDER. What do you figure will be the entire cost?

General GLASSER. Proceeding with two aircraft with two competitors each, the cost of the program is currently estimated at approximately $200 million. The $5.8 million that we are describing now arises from the fact that we had in the 1972 program $6 million to initiate this and the Congress directed that we have a competitive program that would have two contractors rather than one.

Chairman ELLENDER. For each plane?

General GLASSER. Yes, sir.

Chairman ELLENDER. You say that is going to cost——

General GLASSER. That simply doubles our cost. The $5.8 million is the approximate doubling of the $6 million that is currently in the 1972 program.

Chairman ELLENDER. Congress approved that last year?

General GLASSER. In the 1972 bill.

USE OF 1973 FUNDS

Chairman ELLENDER. Why couldn't you use some of the $30 million requested in the original budget of 1973 to make these prototypes?

General GLASSER. The money in the 1973 program is in and of itself too short. To lay that out again, an increment was needed for the second year for one contract. That has now been estimated to require more nearly $40 milion. In fact, you have to double that because of the requirements for two contractors. So that, far from there being any surplus in the 1973 budget request, it is actually less by something more than half of what would be required.

PROTOTYPE DOUBLING

Chairman ELLENDER. Did the Congress propose doubling the prototypes?

General GLASSER. Yes. This was initiated in the House Appropriations Committee and was agreed to in conference. It says that there shall be two contractors competitively selected. So, it is both. Two contractors competitively selected.

Chairman ELLENDER. But not for each prototype?

General GLASSER. No. There is only one prototype program for the STOL transport; the instructions from the Congress were that we should have two contractors build two airplanes apiece and that we should competitively select those contractors.

Chairman ELLENDER. Let us put the language in the record.

(The information follows:)

LANGUAGE REQUIRING TWO PROTOTYPES

The following is quoted from House Report No. 92-666 (November 11, 1971), Pages 14 and 15:

"The Committee also supports the Advanced Medium STOL transport aircraft effort as proposed by the Air Force and directs that this program be carried out under a competitive prototype effort in which two manufacurers each develop prototype aircraft and a competitive flyoff is held before any production decision is made."

PROTOTYPE COST

General GLASSER. It was to be done, in other words, in analogous form to the A–X program.

Chairman ELLENDER. You indicated that under this new method the cost is doubled for the prototypes, amounting to a total of $200 million?

General GLASSER. That is correct, sir.

Chairman ELLENDER. What is planned when that is done?

General GLASSER. At that point, you have the opportunity to select between these two and decide which of them, if either, you would like to complete the development and put them into production.

SYSTEMS SURVIVABILITY

Chairman ELLENDER. The next item is the request for an additional $9 million for the program entitled, "Systems Survivability." The original request included $13.5 million for this program and the revised request is $22.5 million. Our earlier discussion of this program is found on page 930 of the hearings. The revised descriptive summary will be included in the record at this point.

(The information follows:)

FY 1973 Budget Amendment RDT&E Descriptive Summary

Budget Activity No. 7i | Title: Other Equipment | Date: March 1972

Program Element No. 64711F | Title: Systems Survivability

Project No. 1209 | Sub-Project Title: Electromagnetic Pulse Simulation Testing

RDT&E Category: Engineering Development

DESCRIPTION: This program was established to provide a means to assess the survivability/vulnerability of Air Force operational aerospace systems that may be required to operate in nuclear environments. The assessment of systems to nuclear weapons effects will involve: analysis to determine modes of energy coupling and identify critical or potentially vulnerable components; and simulation testing to verify predictions, determine the levels of inherent hardness, and provide a basis for recommending corrective action. The system requirements are provided by the using commands; i.e., Strategic Air Command, Aerospace Defense Command and Tactical Air Command.

FY 1973 Program - FY 1973 Budget Amendment

The FY 1973 Budget Amendment request will increase FY 1973 funding for PE 64711F from 13.5M to 22.5M, an increase of $9.0 million. The entire amount is requested for Project 1209. Within Project 1209, $4.0 out of $9.0 million is to initiate and accelerate the Initial Operational Capability (IOC) of the threat level electromagnetic pulse (EMP) test facility for assessing the vulnerability of aircraft to EMP. The remaining $5.0 million on Project 1209 will be used to provide hardness design data for such strategic systems as the B-1, Advanced Airborne Command Post (AABNCP) and the Airborne Warning and Control System (AWACS). Specifically for the test facility, pulser design studies, pulser prototype development, initial pulser fabrication and test stand design will be initiated. The aircraft hardness design data will be initiated through a series of low level EMP tests on both a B-52G operational aircraft and an AABNCP-type aircraft. These studies would be accelerated to understand EMP coupling into the B-1, AABNCP and AWACS aircraft. Additional studies would include black box testing of command control and communications (C^3) systems that will be used in the AABNCP. The amount requested is a consequence of the accelerated development/procurement schedule for AABNCP and the increased emphasis on validating nuclear hardness of strategic aircraft hardness through more realistic OT&E testing.

Budget Activity: 7 - Other Equipment
Program Element (Budget Subactivity): #64711F, Systems Survivability (Cont'd)

EMP Threat Level Simulator
(Milestones $ in Millions)

Event	Date	Estimated Cost to Reach Completion
Pulser Preliminary Design	Sept 72	.6
Pulser Fabrication	Jan 74	13.3
Electromagnetic Test Stand	Feb 74	21.7
Transmission Line (Waveguide) Installation	July 74	24.3
Command Control Installation	July 74	26.5
Initial Operation Capability	Nov 74	27.4

RESOURCES: ($ in Millions)

	FY 71	FY 72	Basic FY 73	Amendment FY 73	Total FY 73	Additional to Completion	Total Est Cost
RDT&E Funds							
64711F	3.1	3.1	13.5	9.0	22.5	Continuing	NA
Project 1209		0	(8.3)	(9.0)	(17.3)	Continuing	NA

BUDGET REQUEST

Chairman ELLENDER. Proceed.

General GLASSER. Next is the "Systems survivability program."

An additional $9 million, for a total fiscal year 1973 program of $22.5 million, is requested.

This program was established to provide a means to increase the survivability of operational systems in a nuclear environment.

Four of the requested $9 million is to initiate and accelerate the initial operational capability of an electromagnetic pulse (EMP) test facility. The remaining $5 million will be used to provide hardness design data for such systems as the B–1, Advanced Airborne Command Post, and Airborne Warning and Control System. It is most important that these programs be accelerated so that an early understanding of the EMP coupling is developed for use in the design analysis and test of new strategic aircraft.

The EMP facility should be available during the Advanced Airborne Command Post category II tests.

Chairman ELLENDER. The original budget included funds for the project entitled "Survivability." How much of this is for electromagnetic pulse facilities?

General GLASSER. $8.3 million, sir.

Chairman ELLENDER. When do you expect to have this facility operational, assuming that this additional $4 million is made available, and when would you expect to have the facility operational, assuming this additional $4 million is not made available?

General GLASSER. It will be August 1974, if it is made available. I don't have the precise answer to the other question but I would anticipate it is a day-for-day's slip until we identify the source of funds.

(The information follows:)

SLIPPAGE IF ADDITIONAL EMP FUNDS ARE NOT AVAILABLE

It will be August 1975 if the additional funds are not made available.

HARDNESS DESIGN DATA

Chairman ELLENDER. You indicate that the balance of $5 million would be used to provide hardness design data for such systems as the B–1, advanced airborne command post, and the airborne warning and control system. How much is included in the original fiscal year 1973 budget for this effort?

General GLASSER. There is not any funding for this purpose at this time, sir.

Chairman ELLENDER. Why do you not use funds that are appropriated especially for the B–1, the advanced airborne command post and the airborne warning and control system for this purpose?

General GLASSER. That could be done in that fashion. It has been a general practice that the analysis topics are handled under a program called system survivability. The purpose of that program is to do the analysis here and then if an analysis reveals that modification is required or further development work is required, that is funded within the B–1 or AWACS line items.

Chairman ELLENDER. This is all an additional funding request?

General GLASSER. Yes, sir.

EF–111A AIRCRAFT

Chairman ELLENDER. The next item is the request of $10.2 million for the initiation of a new effort entitled "EF–111A Aircraft". The descriptive summary will be included in the record.

(The information follows:)

FISCAL YEAR 1973 BUDGET AMENDMENT R.D.T. & E. DESCRIPTIVE SUMMARY

AIRCRAFT AND RELATED EQUIPMENT—EF–111A

Description.—The objective of this program is to develop, prototype and test two EF–111A tactical support jamming aircraft. An EF–111A is an F–111A modified to incorporate the ALQ–99 electronic countermeasures subsystem as an internal installation, thus preserving the high performance characteristics of the aircraft. The system, by jamming enemy air defense radars, will increase the probability of survival of tactical attack and reconnaissance aircraft. The ALQ–99 was developed by the Navy for use in their EA–6B support jamming aircraft. The EF–111A development program, which will encompass [deleted] months, will provide for extensive ground tests and prototype aircraft flight tests prior to a decision to modify follow-on aircraft.

EB–66 aircraft, the current Air Force tactical support jamming aircraft, are obsolete. They are programmed to phase out of the inventory by the end of FY [deleted]. The Air Force recently completed an assessment of support jamming concepts, requirements and alternative systems. A support jamming system is urgently needed that has the capability and versatility to cope with the enemy air defense systems that tactical aircraft will encounter.

Fiscal year 1973 program—fiscal year 1973 budget amendment.—The FY 73 Budget Amendment would increase the funds on the program element from $0 to $10.2 million. The program is a "New Start" in FY 73. The funds will be used to initiate engineering design of an EF–111A and to procure ALQ–99 long lead components and associated test equipment. This will encompass: studies to define the location of operator controls/displays, radome analysis design, identification and analysis of potential ALQ–99 electromagnetic interference/compatability problems with other aircraft subsystems, analysis of operator workload and computer softwave programs, and the development of engineering data and drawings for integrating the ALQ–99 into the F–111A airframe.

Milestones:

Issue request for proposal	September 1972
Award development contract	January 1973
Prototype aircraft available	[Deleted]
Ground/flight test of prototype aircraft	[Deleted]

Resources (in millions of dollars):

R.D.T. & E. funds for fiscal year 1971, $0; fiscal year 1972, $0; basic fiscal year 1973, $0; budget amendment fiscal year 1973, $10.2; total fiscal year 1973, $10.2; additional funds to completion, $58.5; and the total estimated cost is $68.7.

BUDGET REQUEST

General GLASSER. The fourth program request is for $10.2 million to initiate development of the two prototype EF–111A tactical support jamming aircraft. The EF–111A will be an F–111A modified to incorporate the ALQ–99 electronic countermeasures subsystem. The ALQ–99 subsystem was developed by the Navy for their EA–6B electronic warfare aircraft.

It is important that development and test information be obtained to assist in planning a replacement for the EB–66, our current tactical support jamming aircraft. The EB–66's have reached the limit of their useful life, and they do not have the requisite survivability or speed to accompany strike aircraft into heavily defended areas. The EB–66's are programed to phase out of the inventory by fiscal year [deleted].

NEW PROGRAM

Chairman ELLENDER. I understand this is a new program, and that no funds were included in the original 1973 request for this program.

General GLASSER. That is correct, sir.

Chairman ELLENDER. What is the total cost of this new effort?

General GLASSER. Our current estimate is $68.7 million.

Chairman ELLENDER. You mention two prototype aircraft in your statement. When will these be available for flight testing?

General GLASSER. The first aircraft would be available [deleted].

ADVANCED BALLISTIC REENTRY SYSTEM

Chairman ELLENDER. The next item is the additional request of $8 million for the "advanced ballistic reentry system." The original request included $104 million for this program, and the revised request is $112 million. Our earlier discussion of this program is found on page 839 of the hearings. The revised descriptive summary will be included in the record at this point.

(The information follows:)

FISCAL YEAR 1973 BUDGET AMENDMENT R.D.T. & E. DESCRIPTIVE SUMMARY

MISSILES AND RELATED EQUIPMENT—ADVANCED BALLISTIC REENTRY SYSTEMS (ABRES)

Description.—The Advanced Ballistic Reentry Systems (ABRES) program is the single Department of Defense program which provides for advanced development of reentry vehicles and penetration aids. It is managed and funded by the Air Force, but the program scope and progress are monitored and directed by D.D.R. & E. Presently, ABRES is applying technology to the following areas: maneuvering reentry vehicles for evading defenses, small multiple reentry vehicles, [deleted] reentry vehicles, decoys, electronic and optical countermeasures, advanced chaff, and technology for reentry subsystems. Laboratory, underground, and flight tests are performed as appropriate. ABRES also provides priority support to operational reentry systems for upgrading and system fixes. In addition, ABRES provides technology support to the intelligence community and to strategic defensive system programs.

Fiscal year 1973 program—Fiscal year 1973 budget amendment.—The FY 1973 Budget Amendment would increase the FY 1973 amount from $104.0 million to $112.0 million, an increase of $8.0 million. These funds will be applied to the Evasion Technology project. In this project an additional flight test would be added to evaluate a [deleted] nose tip for maneuvering vehicles, and effort would also be increased on hardened component technology for the evader guidance system. The nose tip presently planned for the first several evader flights is [deleted] and represents a conservative test bed. A [deleted] nose tip design flown on the initial evader series will allow a direct comparison of performance without extrapolation to a smaller size vehicle as is presently planned. The data derived from the proposed flight should provide early confidence in a nose tip design and accelerate the advanced development of this near term program. Since the evader program is considered urgent and its schedules are being compressed, any confidence gained early in the program will lead to reduced weapon systems cost if this concept is carried into engineering development.

Another [deleted]. Since evader guidance is one of the pacing items in the evader program, the proposed additional effort in this area would accelerate the evader program.

[Deleted].

Resources (In million of dollars):

R.D.T. & E. funds for fiscal year 1971, $100; fiscal year 1972, $95.8; basic fiscal year 1973, $104; amendment fiscal year 1973, $8; total fiscal year 1973, $112; additional funds to completion are continuing; and the total estimated cost is not available.

Evasion technology funds amended for fiscal year 1973 are $8.

BUDGET REQUEST

General GLASSER. The last program for which funds are requested is the advanced ballistic reentry system.

An additional $8 million is required. This will increase fiscal year 1973 funds from $104 million to $112 million. These additional funds will provide for a flight test to evaluate a [deleted] nose tip for maneuvering reentry vehicles and increase long-lead efforts to harden the guidance components for maneuvering vehicles. These efforts are primarily in support of the [deleted] although the developments will also support other missile systems. We also need to proceed with [deleted] and decoys and provide additional ground tests and a flight test on the Athena H upper stage.

This completes my statement on Air Force programs in the fiscal year 1973 budget amendment request.

The additional funds requested total $39 million in R.D.T. & E. and $113.8 million in Aircraft Procurement.

Chairman ELLENDER. Any questions or further comments on the ABRES program?

Senator YOUNG. No questions, Mr. Chairman.

ADVANCED AIRBORNE COMMAND POST

Chairman ELLENDER. General, did you discuss the additional $6 million request for R. & D. on the advanced airborne command post when you presented the amendment for the procurement of these aircraft?

General GLASSER. Yes, I did, Mr. Chairman.

Chairman ELLENDER. As I understand, the original request included $26 million for this program and the amendment includes an additional $6 for a total of $32 million.

General GLASSER. That is correct, Mr. Chairman.

Chairman ELLENDER. I want to call attention to our earlier discussion of this program found on page 933 of the hearings. The revised descriptive summary will be included in the record at this point.

(The information follows:)

5. When procured, the last three aircraft will have the configuration developed by the fourth aircraft with the improved C^3 package and will constitute the initial operational capability (IOC) of the AABNCP for the National Military Command System. Subsequently, the first three aircraft will be modified to the IOC configuration.

FY 1973 Program ---FY 1973 Budget Amendment. This request would increase the FY 1973 amount from $26.0M to $32.0M to initiate specific actions in order to meet the near term program objectives. These actions, which are required for acquisition of aircraft and initiation of an improved C^3 package development program, include preparing requests for proposals, preparing and submitting formal program management documentation, and beginning contract efforts.

RESOURCES: ($ in Millions)

	FY 71 and Prior	FY 1972	Basic FY 73	Budget Amend FY 73	Total FY 73	Add'l to Compl	Total Est'd Cost
RDT&E Funds	2.8	-	26.0	6.0	32.0	55.0	89.8
Procurement:							
Funds	-	3.0*	111.0	113.8	224.8	155.7	383.5
Quantities			(2)	(4)	(6)	(1)	(7)
Military Construction	-	-	4.2	-	4.2**	4.2***	8.4

* Being reprogrammed.
** Hangar, ramp and taxiway construction - Andrews AFB.
*** Hangar, ramp and taxiway construction - Offutt AFB.

FY 1973 BUDGET AMENDMENT RDT&E DESCRIPTIVE SUMMARY

Budget Activity No. 7 Title: Other Equipment Date: March 1972

Program Element No. 64723F Title: Advanced Airborne Command Post (AABNCP)

RDT&E Category Engineering Development

DESCRIPTION: The AABNCP program objectives are to obtain early operational experience with new aircraft to assist in equipment designs and to obtain electromagnetic pulse (EMP) - resistant Airborne Command Posts with advanced command, control and communications (C^3) at an early date (early 1975). The program consists of the following major actions:

a. Procure **six** Boeing 747 aircraft during FY 1973 with an additional procurement of **one aircraft** in FY 1974.

b. Modification of first three aircraft as interim National Emergency Airborne Command Posts (NEACP) by transferring equipment now in EC-135 ABNCP aircraft. Operation of this fleet will provide functional, operational, and interior layout information to the C^3 design program. The fourth aircraft will be used for developing the equipment, defining the final configuration of the AABNCP, testing the improved C^3 package and determining the EMP effects on the aircraft and electronics. It will be reconfigured for operational use at completion of the program. These early aircraft will contain essentially the same equipment as the current aircraft but support staffs will be significantly increased. Operation of this system will develop experience both with new concepts, the larger staffs, and improved hardware which will assist in designing and building a more advanced command, control and communications package through a concurrent engineering design program. The design program will be strongly supported by Electromagnetic Pulse (EMP) design and test effort and will be oriented towards reducing the susceptibility of the AABNCP to EMP effects from high altitude nuclear detonations.

c. Define, construct, and test an improved C^3 package incorporating a modular concept to facilitate incremental additions of advanced equipment and required personnel.

d. Conduct threat level EMP tests of the aircraft and C^3 package during Category II testing of the fourth aircraft.

Chairman ELLENDER. We thank you very much, General Glasser.
General GLASSER. I thank you.
(Whereupon, the subcommittee proceeded to other business.)

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